North West Shelf Phase 1 Plug and Abandonment and TPA03 Well Intervention Environment Plan

Projects Australia – Decommissioning

February 2025

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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), proposes to undertake the following activities within Production licence(s) WA-1-L, WA-3-L, and WA-5-L:

- plugging and abandonment of:
  - three production wells (AP2, AP3, and AP4) in the Angel field in WA-3-L
  - two production wells (PER-02 and PER-04) in the Perseus over Goodwyn (PoG) field in WA-1-L
- well intervention activity on the TPA-03 well located in WA-5-L
- inspection, maintenance, and repair (IMR) activities in preparation for plugging and abandonment of the wells listed 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).

This EP meets the commitment made in Section 3.3 and further detailed in Section 7.3.4 of the Angel Facility Operations EP Rev 17, accepted 25 June 2024, to develop an EP covering the plug and abandonment of three production wells in the Angel field (AP2, AP3, and AP4). Plug and abandonment activities are currently planned to commence by 1 December 2025, subject to approvals and vessel availability. Well intervention activities are scheduled for approximately five to fourteen days between Q4 2025 and Q3 2026. The timing and duration of the activities are subject to vessel availability, weather, and other unforeseen circumstances.

This EP is not intended to be the final decommissioning EP for Woodside's property in WA-1-L and WA-3-L, as such Section 270 of the OPGGS Act and title surrender requirements are not included in this EP. A future decommissioning EP will be developed to address remaining infrastructure in the Angel and PoG fields post cessation of production. Any well infrastructure remaining above the mudline following the end of this EP will be included in the relevant field inventory and managed under the overarching permissioning documents for these operating fields.

1.2 Purpose of the Environment Plan (EP)

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) 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* [EPBC Act]).

1.3 EP summary

Table 1-1 summarises the content of this EP, as required by Regulation 35(6).

Table 1-1: EP summary

EP summary material requirement	Relevant section of this EP containing EP summary material
The location of the activity	Section 3.3
A description of the receiving environment	Section 4

EP summary material requirement	Relevant section of this EP containing EP summary material
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 7.5
Response arrangements in the oil pollution emergency plan	Section 7.11
Consultation already undertaken and plans for ongoing consultation	Section 5
Details of the titleholder's nominated liaison person for the activity	Section 1.5.1

1.4 Structure of the EP

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 Regulation 24: • Other information in the EP	The principle of 'nature and scale' is applicable throughout the EP	Section 2 Section 3 Section 4 Section 5 Section 6 Section 7
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(c): • 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
Regulation 34(d): Provides for appropriate Environmental Performance Outcomes, environmental performance standards and	Regulation 21(7): • Environmental Performance Outcomes and standards	Environmental performance outcomes (EPOs) Environmental performance standards (EPSs) Measurement criteria (MCs)	Section 6

Criteria for acceptance	Content requirements/relevant regulations	Elements	Section of EP
measurement criteria			
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 scientific monitoring • ongoing consultation	Section 7
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: – (a) the world heritage values of a declared World Heritage property within the meaning of the EPBC Act; – (b) the national heritage values of a National Heritage place within the meaning of that Act; – (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	No activity, or part of the activity, undertaken in any part of a declared World Heritage property	Section 3 Section 4 Section 6
Regulation 34(g): (i) the titleholder has carried out the consultations required by Regulation 25 (ii) the measures (if any) that the	Regulation 25: • Consultation with relevant authorities, persons and organisations, etc Regulation 24(b):	Consultation undertaken in the preparation of this EP.	Section 5

Criteria for acceptance	Content requirements/relevant regulations	Elements	Section of EP
titleholder has adopted, or proposes to adopt, because of the consultations are appropriate	• A report on all consultations between the titleholder and any relevant person		
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* (OPGGS Act) and the Environment Regulations	Section 1.5.1 Section 7.5

Table 1-3 outlines how the relevant decommissioning requirements of the OPGGS Act have been addressed in this EP. As WA-1-L, WA-3-L and WA-5-L also include infrastructure covered under the accepted Angel Facility Operations EP and Goodwyn Alpha (GWA) Facility Operations EP, this EP is intended to address requirements only in relation to the infrastructure covered in Section 3.

Table 1-3: Relevant decommissioning requirements of the *Offshore Petroleum and Greenhouse Gas Storage Act 2006* (OPGGS 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 to this EP. Section 270 and title relinquishment requirements will be addressed in the final decommissioning EPs for these operating fields
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.	IMR activities are outlined in Section 3 of the Angel and GWA Operations EPs
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: a) in the title area; and b) used in connection with the operations authorised by the permit, lease, licence or authority.	Planning for decommissioning is outlined in Section 7 of the Angel and GWA Operations EPs

1.5 Description of the Titleholder

Woodside is the titleholder for this activity, on behalf of the North West Shelf Joint Venture comprising:

- Woodside Energy Ltd
- BP Developments Australia Pty. Ltd
- Chevron Australia Pty Ltd
- Shell Australia Pty Ltd
- Woodside Energy (North West Shelf) Pty Ltd
- Japan Australia LNG (MIMI) Pty
- CNOOC NWS Private Limited.

Woodside's mission is to deliver superior shareholder returns through realising its vision of becoming a global leader in upstream oil and gas. Wherever Woodside works, it is committed to living its values of integrity, respect, working sustainably, discipline, excellence and working together.

Woodside's operations are characterised by strong safety and environmental performance in remote and challenging locations.

Since 1984, on behalf of the Joint Venture, the company has been operating the landmark Australian project, the North West Shelf (NWS), which is one of the world's premier liquefied natural gas (LNG) facilities.

Woodside has an excellent track record of efficient and safe production. Woodside strives for excellence in safety and environmental performance and continues to strengthen relationships with customers, partners, co-venturers, governments and communities. Further information about Woodside can be found at http://www.woodside.com.

1.5.1 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.

1.5.1.1 Titleholder

Woodside Energy Ltd

11 Mount Street

Perth, Western Australia

T: 08 9348 4000

ACN: 63 005 482 986

1.5.1.2 Nominated liaison person

Andrew Winter

Corporate Affairs Manager – Environmental Approvals

11 Mount Street

Perth, Western Australia

Telephone: 08 9348 4000

Email: feedback@woodside.com

1.5.2 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 two weeks or as soon as practicable.

1.6 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 these elements:

- Compass 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.

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 scalable wherever required. These key business activities are grouped into ‘management’, ‘support’, and ‘value stream activities’. The value stream activities capture, generate and deliver value through 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.

1.6.1 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.

Please note that the Environment and Biodiversity Policy is reviewed regularly and is 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.

1.7 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 activity and relevant to managing the risks and impacts of the Petroleum Activity are detailed in Appendix B and summarised in the following paragraphs.

1.7.1 *Offshore Petroleum and Greenhouse Gas Storage Act 2006*

The OPGGS Act legislates offshore petroleum activities beyond three nautical miles (nm) 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 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
- by which the environmental impacts and risks of the activity will be reduced to ALARP
- by which the 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.

1.7.2 *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)

The EPBC 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 EPBC Act as 'matters of national environmental significance' (MNES). The EPBC Act sets a regime which aims to ensure that actions taken are on (or impacting upon) Commonwealth land or waters are consistent with the principles of ESD.

In relation to offshore petroleum activities in Commonwealth waters, the requirements of the EPBC Act are administered by NOPSEMA. The Streamlining Offshore Petroleum Environmental Approvals Program Report (NOPSEMA 2014) requires any offshore petroleum activities, authorised by the OPGGS Act, to be conducted in accordance with an accepted EP whereby the definition of 'environment' covers all matters protected under Part 3 of the EPBC Act.

Development of the Angel gas and condensate field, which this EP has been developed under, was referred for assessment under the EPBC Act (EPBC 2004/1805) and the level of assessment was set as a controlled action. The action was approved 27 June 2005 with conditions. Conditions considered relevant to the scope of this EP are provided in Table 1-4. The expiry date of the approval is currently 1 June 2030, with a notification of extension of period of effect of approval received 12 April 2018.

Table 1-4: Conditions from Angel gas and condensate field (EPBC 2004/1805) relevant to the Petroleum Activity

Condition number	Condition	Relevant section of EP
1	The person taking the action must submit, for the Minister's approval, a plan (or plans) for managing the offshore impacts of the action. The plan (or plans) must include measures for the following individual activities: c) Drilling operations: i) Timetable for activities; ii) Drilling fluid type and disposal method; iii) Drill cuttings disposal method; iv) Fuel and chemical handling and transfer procedures; v) Cetacean interaction procedures for supply vessels and aircraft that are consistent with Part 8 of the Environment Protection and Biodiversity Conservation Regulations 2000 and cetacean report. d) Construction and installation: i) Design and construction that allow for the decommissioning and removal of all structures and components above the sea floor; ii) Hydrotest fluid type, handling and disposal; iii) Cetacean interaction procedures for supply vessels and aircraft that are consistent with Part 8 of the Environment Protection and Biodiversity Conservation Regulations 2000 and cetacean reporting. e) Operations: i) Produced formation water monitoring, management and verification; ii) If naturally occurring radioactive materials (NORMs) are found to be present, measures to manage their collection, handling and disposal; and iii) Interaction procedures for supply vessels and aircraft that are consistent with Part 8 of the Environment Protection and Biodiversity Conservation Regulations 2000 and cetacean reporting.	a) Section 3 b) Not relevant to this EP c) Sections 6.7 and 6.8

Condition number	Condition	Relevant section of EP
	Individual offshore activities must not commence until the plan (or plans) for that specific activity has been approved. The approved plan (or plans) must be implemented.	
2	The person taking the action must submit a decommissioning plan (or plans) for approval by the Minister prior to decommissioning of the development. The plan (or plans) must consider the complete removal of all structures and components above the sea floor. The approved plan (or plans) must be implemented.	Planning for decommissioning is outlined in Section 7.3 of the Angel Operations EP
8	A plan required by Conditions 1, 2 or 6 is automatically deemed to have been submitted to, and approved by, the Minister if the measures (as specified in the relevant condition) are included in an environment plan (or environment plans) relating to the taking of the action that: a) Was submitted to NOPSEMA after 27 February 2014; and b) Either: i) Is in force under the OPGGS Environment Regulations; or ii) Has ended in accordance with Regulation 46 of the OPGGS Environment Regulations.	The implementation of the Angel Operations EP is considered to meet the requirements of this condition
8B	Where an environment plan, which includes measures specified in the conditions referred to in Conditions 8 above, is in force under the OPGGS Environment Regulations that relates to the taking of the action, the person taking the action must comply with those measures as specified in that environment plan.	The implementation of the Angel Operations EP is considered to meet the requirements of this condition

1.7.3 Offshore Project Approval

The GWA facility commenced operations in 1995 and subsequent tie-ins have been referred for assessment under the EPBC Act. The TPA03 well was referred under the Greater Western Flank (GWF) Phase 1 Gas Development (2011/5980) and the decision by the Environment Minister determined the action is not a controlled action if undertaken in a particular manner.

1.7.4 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 respect to offshore petroleum activities in Commonwealth waters, these requirements are implemented by NOPSEMA. 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 all relevant recovery plans and threat abatement plans is contained in Section 6.8.

1.7.5 Australian Marine Parks

Under the EPBC Act, Australian Marine Parks (AMPs) are recognised for conserving marine habitats and the species that live and rely on these habitats. The Director of National Parks (DNP) is responsible for managing AMPs (supported by Parks Australia) and is required to publish management plans for them. Under Section 362 of the EPBC Act, other parts of the Commonwealth Government must not perform functions or exercise powers in relation to these parks that are inconsistent with management plans. Therefore, NOPSEMA is required to consider potential impacts from petroleum activities on AMPs.

Specific zones within AMPs have been allocated conservation objectives based on the Australian International Union for Conservation of Nature (IUCN) reserve management principles outlined in Schedule 8 of the EPBC Regulations 2000. The principles for each zone determine what activities are acceptable within a protected area under the EPBC Act. Section 4 provides a description of the AMPs that are overlapped by the environment that may be affected (EMBA) and the relevant zones that the Petroleum Activity is likely to interact with.

The EMBA by the Petroleum Activity does not overlap any AMPs.

1.7.6 World Heritage Properties

Australian World Heritage Properties (WHP) are listed as MNES under the EPBC Act and are required to be assessed accordingly in EPs.

Schedule 5 of the EPBC Act establishes the Australian World Heritage management principles, which are designed to ensure World Heritage Properties within Australia are managed in a way that maintains their values. Table 1-5 outlines the principles that are relevant to assessing impacts from the Petroleum Activity on World Heritage Properties within the EMBA/Operational Areas, which are identified in Section 4.

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: Assessment of significant impact on World Heritage values is included in Section 6. 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.	3.02: Assessment of significant impact on World Heritage values is included in Section 6. Principles are met by the submitted EP.
	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 c) provide for adequate opportunity for public consultation.	3.03 (a) and (b): World Heritage values are identified in Section 6 and considered in the assessment of impacts and risks for the Petroleum Activity in Section 6. 3.03 (c): Relevant stakeholder consultation and feedback received in relation to impacts and risks to the World Heritage Properties are outlined in Section 6.
	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: Principles are considered to be met by the acceptance of this EP.
	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.	3.05: Principles are considered to be met by the acceptance of this EP.

Number	Principle	Relevant section of the EP
	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.	3.06: Principles are considered to be met by the acceptance of this 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.

1.8 Decommissioning Options Analysis

Planning for the future decommissioning the Angel and Perseus of Goodwyn fields is documented in Section 7 of the overarching permissioning documents for these operating fields, the Angel Operations EP and the Goodwyn Alpha (GWA) Operations EP. No additional information on decommissioning options has been provided in this EP.

2. EP 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 environmental performance outcomes (EPOs) and EPS. This section also describes Woodside's risk management methodologies applicable to implementation strategies applied during the activity.

2.2 EP process

Figure 2-1 illustrates the EP development process. Each element of this process is discussed further in the following sections.

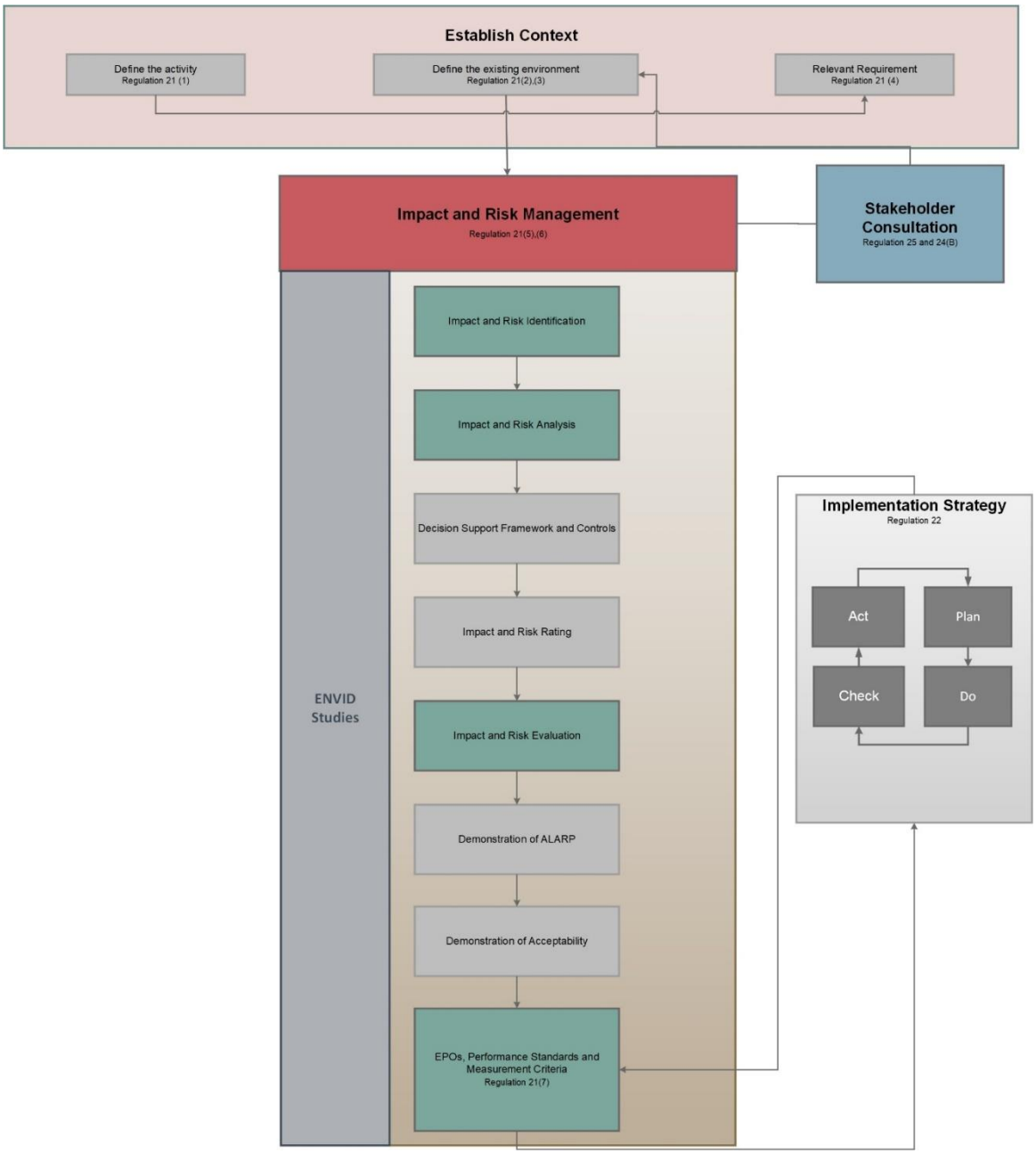

Figure 2-1: EP development process

2.2.1 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 evaluating 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 – which allows environmental aspects for each activity to be identified.

2.2.2 Describe the existing environment

The values and sensitivities relevant to environment where the Petroleum Activity is proposed to be undertaken have been identified in Section 3.8, to the extent required to inform potential impacts to environmental receptors from the Petroleum Activity.

A full description of the relevant values and sensitivities relevant to the Petroleum Activity is contained within the Master Existing Environment document provided at Appendix C.

2.2.3 Environmental legislation and other requirements

Relevant legislation and other requirements that apply to the Petroleum Activity are presented in Section 1.7 and Appendix B. These requirements have been considered throughout the development of this EP.

2.2.4 Impact and risk management

2.2.4.1 Impact and risk identification and analysis

The first step of impact and risk management is to identify all credible sources of environmental impacts and risks, include those directly and indirectly associated with the Petroleum Activity and potential emergency and accidental events. This may include environment impacts and risk that are a consequence of the proposed activity but are not 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'.

Impacts and risks presented in this EP were identified during an environment identification workshop (ENVID) and informed by recent and historic hazard identification and ENVID workshops for similar activities, relevant requirements, activities described in Section 3, and the existing environment that the Petroleum Activity has a potential to impact. The ENVID was undertaken by multidisciplinary teams comprising relevant operational 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.

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 risk and impact assessment section of this EP (Section 6).

2.2.4.2 Decision support framework

To support the impact and risk assessment process and Woodside's determination of acceptability, Woodside's health, safety, and environment (HSE) risk management procedures include using a decision support framework based on principles set out in the Guidance on Risk Related Decision Making (Oil and Gas UK 2014). Application of the decision support framework confirms:

- activities do not pose an unacceptable environmental 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 and impacts 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 2-2 summarises the framework, criteria, and resulting level of assessment for Decision Type A, B and C, which are discussed further below.

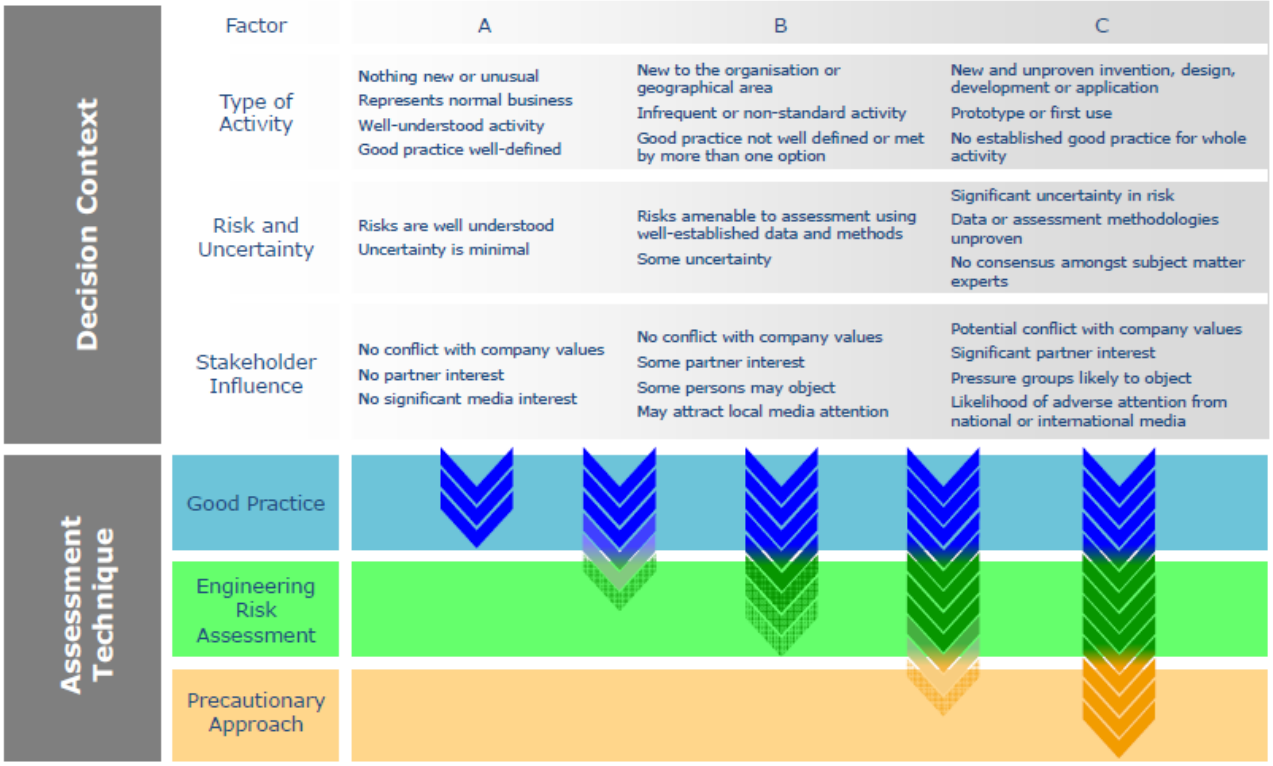

Figure 2-2: Risk-related decision-making framework

Source: Ref. (Oil and Gas UK, 2014)

2.2.4.2.1 Decision Type A

Decision Type A risks and impacts 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.

2.2.4.2.2 Decision Type B

Decision Type B risks and impacts 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.

2.2.4.2.3 Decision Type C

Decision Type C risks and impacts 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, significant project risk or exposure, or may elicit negative stakeholder concerns. For these risks or impacts, 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 risk assessment process.

2.2.4.3 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.
- 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 the Woodside Compass. 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.

2.2.4.4 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.

2.2.5 Control measures

Once impacts and risks have been identified, the potentially impacted receptors have been identified and understood, and the decision type has been selected, impact and risk reduction measures (i.e. controls) can be 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[1].
- 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:

1 A hazard has the potential to cause harm to the environment.

  - 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.
- 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).

2.2.6 Impact and risk classification

Environmental impacts and risks are assessed to determine their potential impact significance 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.

2.2.6.1 Impact classification

Impacts are classified by significance level in accordance with the Environmental Impact Assessment Guidance Tool, whereby the significance levels are defined in the Woodside Environment Impact Assessment Guideline. Impact significance levels are assigned based on the magnitude of the potential impact and the receptor sensitivity as shown in Table 2-1. Where multiple receptors have the potential to be impacted, the worst-case impact significance level is carried into the final impact assessment and evaluation.

Table 2-1: Determination of impact significance level

Magnitude[1]	Receptor sensitivity[1]			Impact significance level[2]
	Low	*Medium*	*High*	
Catastrophic	B	A	A	Catastrophic (A) – Applicable limits or standards are substantially exceeded and/or catastrophic or major magnitude impacts are expected to receptors of medium/high or high sensitivity respectively.
Major	C	B	A	Major (B) – Applicable limits or standards are exceeded and/or moderate, major or catastrophic magnitude impacts are expected to occur to receptors of high, medium or low sensitivity respectively.
Moderate	D	C	B	Moderate (C) – Impacts are close to applicable limits or standards, or within standards but with potential for occasional exceedance. Minor, moderate or major magnitude impacts are predicted to occur to receptors of high, medium or low sensitivity respectively.
Minor	E	D	C	Minor (D) – Impact magnitude is within applicable standards but is considered to have significance. Slight, minor or moderate impacts are predicted to occur to receptors of high, medium or low sensitivity respectively.
Slight	F	E	D	Slight (E) – The receptor will experience a noticeable effect, but the impact magnitude is sufficiently small and well within applicable standards, and/or the receptor is of low value
No lasting effect	F	F	E	Negligible (F) – The receptor will essentially not be affected

[1] *Defined in the Environment Impact Assessment Guidance Tool*

[2] *Defined in the Woodside Environment Impact Assessment Guideline*

2.2.6.2 Risk classification

Risks are classified in accordance with the Environmental Risk Assessment Guidance Tool, which cross-refences to the Woodside Risk Matrix. The steps for risk classification are described in the subsections below.

2.2.6.2.1 Determine the risk consequence level

Table 2-2 describes the possible environmental and social-cultural consequence levels for each identified risk. Where multiple receptors have the potential to be impacted, the worst-case consequence level is carried into the final risk assessment and evaluation.

Table 2-2: Woodside risk matrix (environment and social and cultural) consequence descriptions

Environment	Social and cultural	Consequence level
Catastrophic, long-term impact (>50 years) on highly valued ecosystem, species, habitat or physical or biological attributes.	Catastrophic, long-term impact (>20 years) to a community, social infrastructure or highly valued areas/items of international cultural significance.	A
Major, long-term impact (10–50 years) on highly valued ecosystem, species, habitat or physical or biological attributes.	Major, long-term impact (5–20 years) to a community, social infrastructure or highly valued areas/items of national cultural significance.	B
Moderate, medium-term impact (2–10 years) on ecosystem, species, habitat or physical or biological attributes.	Moderate, medium-term impact (2–5 years) to a community, social infrastructure or highly valued areas/items of national cultural significance.	C
Minor, short-term impact (1–2 years) on species, habitat (but not affecting ecosystem function), physical or biological attributes.	Minor, short-term impact (1–2 years) to a community or highly valued areas/items of cultural significance.	D
Slight, short-term impact (<1 year) on species, habitat (but not affecting ecosystem function), physical or biological attributes.	Slight, short-term impact (<1 year) to a community or areas/items of cultural significance.	E
No lasting effect (<1 month). Localised impact not significant to environmental receptor.	No lasting effect (<1 month). Localised impact not significant to areas/items of cultural significance.	F

2.2.6.2.2 Select the likelihood level

Table 2-3 describes the possible likelihood levels for each identified risk. Likelihood is determined based on the chance of the selected worst-case consequence occurring.

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 at Woodside	Has occurred once or twice in Woodside or may possibly occur	Has occurred frequently at Woodside or is likely to occur	Has occurred frequently at the location or is expected to occur
Likelihood level	***0***	***1***	***2***	***3***	***4***	***5***

2.2.6.2.3 Calculate 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.

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

2.3 Impact and risk evaluation

In accordance with Environment Regulations 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.

2.3.1 Demonstration of 'as low as reasonably practicable' (ALARP)

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

Table 2-5: Summary of Woodside's criteria for ALARP demonstration

Risk	Impact	Decision type
Low and moderate (below C, D, E or F level consequence)	***Negligible, slight, 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.		

2.3.2 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	***Negligible, slight, 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	***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 ad 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.		

2.4 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, which are presented in Section 6.8. This assessment follows the following process:

- Identify relevant listed threatened species and ecological communities (Section 4.5).

- Identify relevant recovery plans and threat abatement plans (Section 3.2 of the Master Existing Environment).
- 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 6.8).
- 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 6.8).

2.5 Environmental performance outcomes, standards and measurement criteria

For each evaluated impact and risk, controls adopted during the ENVID and through demonstrating ALARP are paired with activity-specific environmental performance outcomes (EPO), performance standards (PS) and measurement criteria (MC). EPOs, PS and MC 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, PS and MC are defined for each identified credible impact and risk in Section 6.

2.6 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.

2.7 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. A copy of the full text correspondence is provided in Appendix F.

3. DESCRIPTION OF THE ACTIVITY

3.1 Overview

This section has been prepared in accordance with Regulation 21(1) of the Environment Regulations and describes the activities to be undertaken as part of the Petroleum Activity under this EP.

3.2 Project overview

Woodside proposes to undertake permanent plug and abandonment (P&A) and well intervention activities for a number of subsea wells associated with the NWS Development:

- P&A of three Angel field wells (AP2, AP3, and AP4) in production licence WA-3-L;
- P&A of two Perseus over Goodwyn (PoG) wells (PER-02, PER-04) in petroleum licence WA-1-L;
- Well intervention on the TPA-03 well in production licence WA-5-L.
- inspection, maintenance, and repair (IMR) activities in preparation for plugging and abandonment of the wells listed above.

Woodside proposes to undertake the following petroleum activities under this EP:

- Well intervention activities at the TPA-03 well to remediate a down-hole smart valve and restore production from the lower reservoir zone, as per the well design. A wireline intervention is planned using either slickline or electrical line (e-line) tooling from a MODU.
- Vessel -based activities to prepare wells for P&A prior to MODU mobilisation (activities may include cleaning, inspection, tree system testing, SCM changeout, mooring pre-lay, deployment of tethering system, mud mats, clump weights as required).
- Permanent plug and abandonment of five wells using a MODU.
- Removal of five subsea trees (AP2, AP3, AP4, PER02 and PER04) using the MODU at the end of the campaign
- Optional removal of three wellheads (AP2, AP3 and AP4) using the MODU under this EP or using a project support vessel under the Angel Subsea Infrastructure Removal Environment Plan.
  - PoG wellheads and flowbases will need to remain in place to facilitate flushing of PoG subsea infrastructure. The PoG pipeline system continues to be operational with the adjacent PER-01 and PER-03 wells being used for production. Due to the design, the PoG pipeline system can't be flushed until these wells have been shut-in. Flushing of PoG flowlines and removal of the PoG wellheads will be included in a separate future approval as outlined in Section 7 of the Goodwyn Alpha (GWA) Operations Environment Plan.

Other decommissioning activities in the operating Angel and PoG fields are beyond the scope of this EP and will be covered under separate EPs.

Table 3-1: Petroleum activity overview

Item	Description
Production licence	WA-1-L, WA-3-L and WA-5-L
Location	Northern Carnarvon Basin
Water depth	~80 m to 128 m
Number of wells/wellheads	5 shut-in production wells and 1 production well
Subsea infrastructure	Flowlines and umbilicals connect AP2, AP3 and AP4 wells to the Angel platform Flowlines and umbilicals connect PER-02, PER-04 wells to the Goodwyn Alpha platform Subsea Vertical Xmas Tree tied back to Goodwyn Alpha platform from TPA-03 well via a subsea manifold.

Item	Description
Vessels	Mobile offshore drilling unit (MODU) (moored, DP or hybrid) Up to three MODU support vessels, including anchor handling tug supply vessels (AHTSV) and general supply/support vessels IMR vessel (typically a multi-use support vessel (MPSV) or light construction vessel (LCV)
Key activities	Permanent plugging and abandonment of five NWS production wells: • three Angel wells (AP2, AP3, and AP4) • two PoG wells (PER-02 and PER-04) Well intervention activities at TPA-03 to remediate downhole valve Removal of five subsea trees Optional removal of three wellheads Preparation activities (eg. mooring pre-lay, tether installation, cleaning of wellheads and status check of valves, as required) IMR activities

3.3 Location

The Petroleum Activity is located in Commonwealth waters in the Northern Carnarvon Basin. WA-1-L, WA-3-L and WA-5-L are located approximately 123 km north, 119 km north, and 138 km north-west of Dampier respectively. Angel gas field is located approximately 49 km east of the North Rankin Complex in approximately 80 m water depth in production licence WA-3-L. Perseus gas field is located approximately 12 to 25 km north-east of the GWA platform in approximately 130 m water depth in production licence WA-1-L. The GWA platform is located within the Goodwyn gas field in approximately 113 m water depth in production licence WA-5-L. The approximate location coordinates and water depth of the subsea wells are provided in Table 3-2.

Table 3-2: Approximate location details for the Petroleum Activity including all relevant infrastructure

Activity	Water depth (approx. m LAT)	Latitude (WGS84)	Longitude (WGS84)	Production licence(s)
AP2	85	19° 29’ 59” S	116° 36’ 37” E	WA-3-L
AP3	78	19° 30’ 38” S	116° 36’ 18” E	WA-3-L
AP4	77	19° 31’ 18” S	116° 35’ 13” E	WA-3-L
PER-02	127	19° 31’ 11” S	116° 06’ 39” E	WA-1-L
PER-04	128	19° 31’ 06” S	116° 05’ 53” E	WA-1-L
TPA-03	113	19° 45’ 43” S	115° 53’ 23” E	WA-5-L

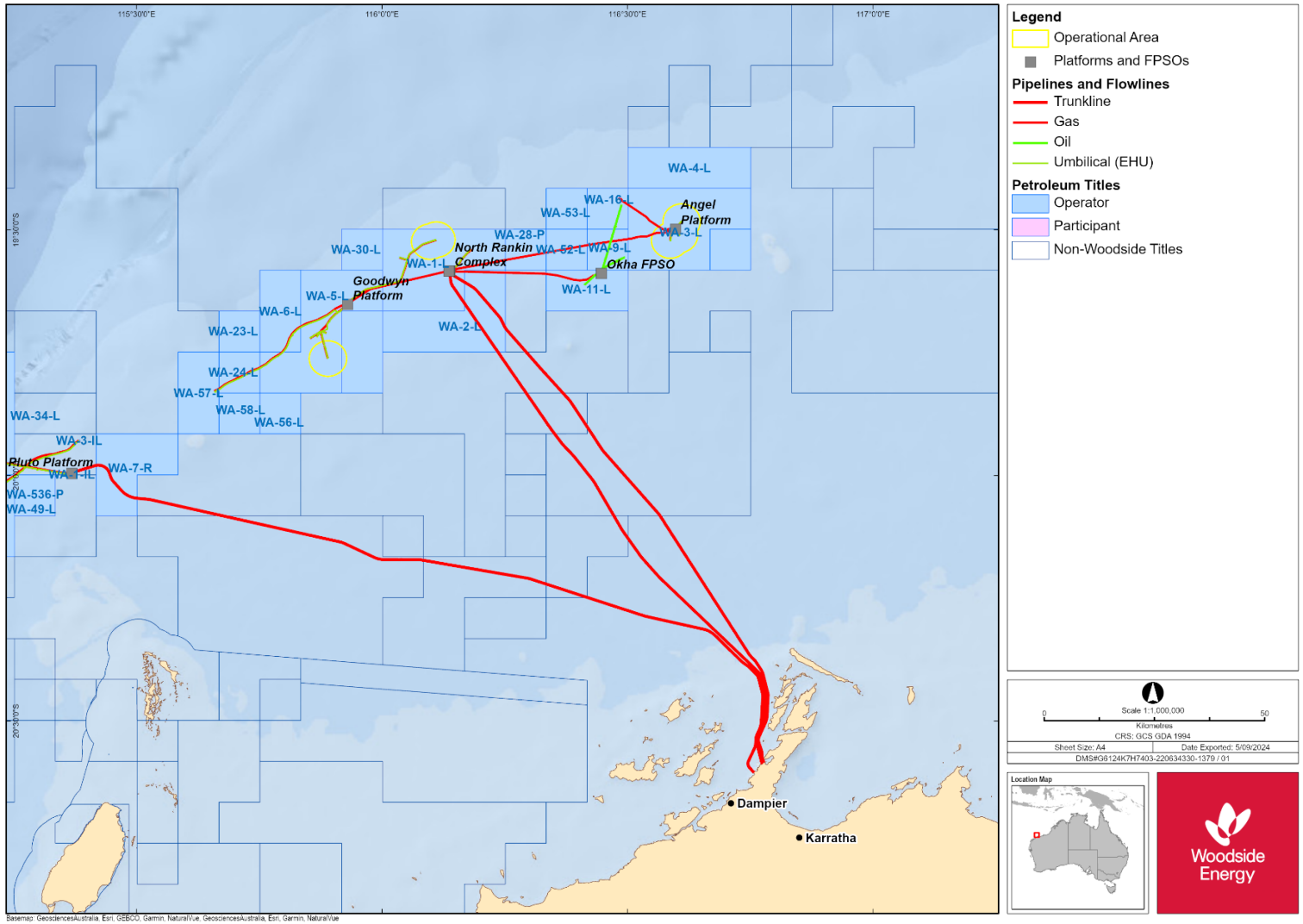

Figure 3-1: Location of the Petroleum Activity

3.4 Operational Areas

The Operational Areas applicable to the scope of this EP are shown in Figure 3-1 and include:

- Operational Area A, which comprises:
  - plugging and wellhead removal activities for two Perseus over Goodwyn (PoG) wells (PER-02, PER-04) in production licence WA-1-L
  - a radius of 4000 m around the two PoG wells, which allows for the installation of a temporary 8 to 12 point mooring system for a moored MODU and cannot be reasonably reduced
  - a temporary 500 m radius exclusion zone around the MODU during the petroleum activity to manage vessel movements
- Operational Area B, which comprises:
  - plugging and wellhead removal activities for three Angel field wells (AP2, AP3, and AP4) in offshore production licence WA-3-L
  - a radius of approximately 4000 m around the three Angel field wells which allows for the installation of a temporary 8 to 12 point mooring system for a moored MODU and cannot be reasonably reduced
  - a temporary 500 m radius exclusion zone around the MODU during the petroleum activity to manage vessel movements
- Operational Area C, which comprises:
  - well intervention activities at the TPA-03 well in production licence WA-5-L to remediate a down-hole smart valve and restore production from the lower reservoir zone
  - a radius of 4000 m around the TPA-03 drill centre, which allows for the installation of a temporary 8 to 12 point mooring system for a moored MODU and cannot be reasonably reduced.
  - A temporary 500 m radius exclusion zone around the MODU during the petroleum activity to manage vessel movements

All planned activities within the Petroleum Activity will be limited to within the Operational Areas. Vessel-related activities within the Operational Areas will comply with this EP. Vessels supporting the Petroleum Activity when outside the Operational Areas must adhere to applicable maritime regulations and other requirements. This EP applies to activities undertaken within the Operational Areas, as described in this section.

3.5 Vessels

Several vessel types will be required to complete the Petroleum Activity. These are summarised in Table 3-3.

All project vessels will be subject to Woodside's marine assurance requirements and will be assessed for compliance with the laws of the international shipping industry, which include safety and environmental management requirements, and maritime legislation including International Convention for the Prevention of Pollution from Ships 1973 as modified by the Protocol of 1978 (MARPOL) and other International Maritime Organization (IMO) standards.

For power generation, vessels may use diesel-powered generators and/or LNG. All vessels will display navigational lighting and external lighting on a 24-hour basis, as required for safe operations. Lighting levels will be determined primarily by operational safety and navigational requirements under relevant legislation, specifically the *Navigation Act 2012*.

Vessels may mobilise from the nearest Australian port or directly from international waters to the Operational Areas, in accordance with relevant biosecurity and marine assurance requirements.

Table 3-3: Project vessel overview

Vessel	Activities
MODU	A moored, DP or hybrid MODU will be used for both permanent plugging and well intervention activities. Typical specifications for a MODU are provided in Table 3-4.
Offshore support vessels	May include: • multipurpose support vessel (MPSV) or light construction vessel (LCV) with ROV capability to conduct preparatory activities for P&A and remove and recover well infrastructure above the mudline • anchor handling vessels (AHVS) to undertake mooring activities and support the MODU during operators • general support vessels, including cargo vessels and barges for transporting equipment and materials from port/staging area to the Operational Areas (e.g. equipment, fluids and cement) and for general resupply and support for the MODU. Offshore support vessels will not anchor within the Operational Areas due to water depth and therefore, the vessels will use DP. Typical specifications for support vessels are provided in Table 3-5.

3.5.1 Mobile offshore drilling unit

A MODU will be required to undertake the petroleum activities. The reference case is to use a MODU (Transocean Endurance) which is a moored MODU with dynamic positioning (DP) assistance that can operate during the cyclone season. Indicative specifications for the MODU are provided in Table 3-4. At least one support vessel will be in the field on standby duties near the MODU at all times.

Whilst the hybrid MODU has a DP thruster system capability to maintain station keeping as required, the MODU will be tethered via a mooring system anchored to the seafloor during drilling operations. The DP system will engage when the MODU has moved beyond safe limits during drilling operations but is not routinely active under normal operations. The thruster system will also be used to move the MODU between sites in the Operational Areas.

The MODU mooring systems consist of between 8 to 12 anchors ranging from 15 t to 30 t with an individual footprint of 30 m² to 60 m², although the final design of the mooring system will be dependent on the outcome of a detailed mooring analysis undertaken prior to the commencement of the activity. The mooring anchors may be pre-installed where practicable.

The capacity of the standard mooring system may be expanded to a 12-point mooring system, depending on the outcomes of the mooring analysis. Each of the mooring lines with be tethered to drum winches aboard the MODU enabling the tensioning of individual moorings to compensate for MODU movement during the activity. Multiple mooring spreads may be installed concurrently to facilitate efficient use of the MODU (i.e., 'leap-frogging' to pre-laid moorings when moving between drill centres).

The MODU will have a well fluid handling package, enabling the recovery, treatment and storage of fluids containing residual hydrocarbons. Residual liquid hydrocarbons will either be retained onboard for onshore disposal or flared. Residual gas will be either flared or cold vented. All hydrocarbons recovered from wells will be managed in accordance with the MODU Safety Case.

Combustion engines onboard the MODU (e.g. generators, cranes) will use diesel fuel.

The petroleum activity will result in discharges to the marine environment, in accordance with relevant requirements which include:

- utility discharges, such as sewage, grey water, cooling water, reverse osmosis brine and putrescible wastes
- drainage water that conforms to discharge standards
- ballast water

- fluids recovered from wells, such as water, brine, production tubing and annulus fluids
- excess drilling fluids and related materials that meet discharge standards, such as:
  - excess cement slurry (including cement unit test slurry)
  - excess brine and water-based drilling fluids
  - drilled formation cuttings

Materials that do not meet the discharge standards described in this EP will be disposed of onshore.

Table 3-4: Typical mobile offshore drilling unit specifications (based on Transocean Endurance)

Component	Specification
Station-keeping	Moored with DP assist
Accommodation (maximum persons on board)	140 persons (maximum persons on board)
Station keeping	8 to 12 point anchor mooring system
Bulk mud and cement storage capacity	~765 m³
Liquid mud storage capacity	1706 m³
Fuel oil storage capacity	Approximately 4000 m³
Drill water storage capacity	2457 m³

3.5.2 Offshore support vessels

The MODU will be accompanied by at least one, but up to three, offshore support vessels. Support vessels will primarily be used to deploy and recover anchors, towing and supply (e.g., fuel, provisions, consumables etc.), but may perform other duties as required (e.g., well infrastructure removal and recovery, emergency response).

Support vessels are expected to transit to and from the Operational Areas to ports in the region (most likely to be Dampier or Exmouth), however at least one support vessel will remain with the MODU at all times on standby duties.

Support vessel activities outside the Operational Areas are beyond the scope of this EP. Support vessels will use dynamic positioning (DP) when working in proximity to the MODU.

Support vessels will make routine discharges to the sea in accordance with relevant requirements, such as:

- utility discharges, such as sewage, grey water, cooling water, reverse osmosis brine and putrescible wastes
- deck drainage
- bilge water
- cooling water
- ballast water.

Table 3-5: Typical specifications for offshore support vessels

Parameter	Indicative specification
Draft (max) (m)	8 to 9
Length (m)	110 to 130
Berths (persons)	130
Gross tonnage (t)	3000
Fuel type	MDO

Parameter	Indicative specification
Total fuel volume (m^3)	3000
Volume of largest fuel tank (m^3)	250

3.5.3 Remotely operated vehicles

The MODU, IMR vessel, and subsea support vessels are typically equipped with an ROV system that is maintained and operated by a specialised contractor aboard the vessel. ROVs will be deployed, operated and recovered using a tether management system. ROVs may be used for activities such as:

- pre and post well intervention survey
- visual inspections/observations
- seabed and hazard survey
- anchor hold testing
- transponder deployment
- subsea intervention equipment land-out and recovery
- blow out preventer (BOP) installation, testing, operation and recovery (including tether deployment and recovery, if required)
- pressure testing subsea infrastructure
- placement of ROV tool baskets and mud mats on the seabed
- corrosion survey
- Xmas tree or wellhead connector preparation
- Xmas tree or wellhead disconnection
- Xmas tree control system installation and functioning
- open water tool observation and guidance
- hydrate remediation of Xmas trees and flowline cavities
- marine growth removal and cleaning
- sediment relocation
- subsea rigging, handling and cutting
- manual valve functioning
- wellhead tooling and cutting
- de-coupling of existing flowline and flying leads (hydraulic and electrical)
- recovery of dropped objects
- as-left seabed survey.

An ROV can be fitted with various tools and camera systems that can be used to capture permanent records (both still images and video) of the operations and immediate surrounding environment. An ROV may also be used in an incident to deploy the Subsea First Response Toolkit. This is discussed further in Appendix H.

3.6 Helicopters

During the Petroleum Activity, crew changes will be performed using helicopters as required. Helicopter operations within the Operational Areas are limited to helicopter take-off and landing on the helideck. Helicopters may be refuelled on the helideck.

3.7 Timing

Proposed timing of the Petroleum Activity is outlined below, with approximate timings and durations for the activities provided in Table 3-6. Plug and abandonment activities under this EP for Angel and PoG wells are currently planned to commence by 1 December 2025 subject to approvals and vessel availability.

The MODU and support vessels are expected to remain within the Operational Areas for approximately eight months, including mobilisation, demobilisation and contingency. When underway, activities will be 24 hours per day, seven days per week. There are no concurrent drilling activities under the EP.

Well intervention activities under this EP for the TPA-03 well are currently scheduled to occur between Q4 2025 and Q3 2026 and are expected to take between five to 14 days. When underway, activities will take place 24 hours, 7 days a week.

The timing and duration of all activities under this EP is subject to change due to project schedule requirements, metocean conditions, MODU and vessel availability, unforeseen circumstances, and weather.

This EP has risk-assessed activities throughout the year (all seasons) to provide operational flexibility for requirements and schedule changes, as well as vessel availability. This provides operational flexibility for requirements and schedule changes and vessel/MODU availability. The timeframes are therefore subject to change within the defined calendar years and, as no particular time periods have been nominated for avoidance based on environmental or stakeholder sensitivities, changes to the above will not be interpreted as ‘new stages’ against Regulation 39(1).

Table 3-6: Summary of the timing of the Petroleum Activity

Activity	Approx. timing (and cumulative duration in the field)
Well preparation activities, exact scope to be confirmed after further evaluation. Common activities include wellhead cleaning, inspection and testing of subsea trees, verification of barriers, disconnection of ancillary equipment e.g. flying leads (as required), subsea control module communications testing and changeout and installation of temporary equipment for P&A (mooring pre-lay, tether installation) as required	Estimated to be between Q2 and Q4 2025. Conducted approximately one to six months prior to plug and abandonment activities. Some preparatory activities may be ongoing once the MODU arrives on location. 7-10 days per well.
Permanent plug and abandonment	Estimated to be between Q4 2025 and Q3 2026. 19 to 33 days per well.
Removal of well infrastructure (subsea trees and wellheads)	Estimated to be conducted in Q2 to Q4 2026. Commencement any time after P&A activity completed. 1 to 5 days per well, if removed by the MODU under this EP.
Recovery of ancillary equipment, including pre-laid moorings and BOP tether system (if used).	Estimated to be conducted in Q3 to Q4 2026. Within about one month following MODU demobilisation. 1 to 2 days per well.
Well intervention	Estimated to be conducted in Q4 2025 to Q3 2026. 5 to 14 days in total.

3.7.1 Simultaneous operations

No simultaneous P&A operations (SIMOPS) activities – as in, more than one MODU in the Operational Areas simultaneously – are planned within the scope of this EP and the manifold may be shut during activities. Some preparatory activities conducted on a project vessel may still be ongoing once the MODU mobilises and commences plugging activities within the Operational Areas.

There is potential for simultaneous operations (SIMOPS) to occur between the Petroleum Activity and other activities occurring in the Operational Areas:

- Angel flowline flushing activities defined in the Angel Operations EP, anticipated to commenced in Q3 2025
- subsea removal activities defined in the Angel Subsea Decommissioning EP, anticipated to commence in Q3 2026 following the completion of NWS P&A campaign
- geophysical and geotechnical survey activities defined in the Angel Carbon Capture and Storage (CCS) Geophysical and Geotechnical Survey EP, anticipated to commence in Q1 2025 for a total of 100 days
- integrated wellhead removal activities defined in the NWS and Julimar Wellhead Decommissioning EP (which includes wells in WA-3-L and WA-5-L), anticipated to occur between 2024 and 2028 for approximately 10 days per well
- routine vessel IMR operations under the Goodwyn Alpha Facility Operations Environment Plan in WA-1-L and WA-5-L
- routine vessel IMR operations under the Angel Operations Environment Plan in WA-3-L

If SIMOPs were to occur, up to four vessels and the MODU may be in the field at the same time based on:

- MODU (moored, DP or hybrid)
- up to three MODU support vessels, including AHVs and general supply/support vessels
- IMR vessel, typically a multi-use support vessel (MPSV) or light construction vessel (LCV).

3.8 Infrastructure overview

The details of the infrastructure included in the scope of the Petroleum Activity, including well history and composition is summarised in Table 3-7.

Table 3-7: Well Infrastructure Overview

Well Name	Well History		Current Status and Residual Fluids			Well Infrastructure
	Well Description	Drilling Fluids	Current Status	Production Tubing Contents	Production Annulus Contents	
PER-02	Near vertical big bore gas production well with 7" C&P completion. The well was spudded on 25 November 2006 and sidetracked to PER02ST1 on 06 July 2007. The well produced from 2007 to 2016.	The well was drilled with a water-based mud system.	Well was shut-in due to loss of communication in the subsea control system. Shut in via SCSSV and tree valve closure. Valves inflow tested to acceptance. SCSSV control line isolated at SIV HP2 following routine IMR inspection.	Predominantly reservoir fluids.	Completion brine	7” Vertical XT Flowbase 18 3/4" high pressure wellhead and 30" low-pressure wellhead housing Temporary guidebase (TGB)
PER-04	Deviated variant slick big bore (VSBB) gas production well with ESS completion. The well was spudded on 22 November 2006 and produced from 2007 to 2016.	The well was drilled with predominately water-based mud system, with the 12.25" and 8.5” section drilled with a synthetic based mud.	Well was shut-in due to loss of communication in the subsea control system. Shut in via SCSSV and tree valve closure. Valves inflow tested to acceptance. SCSSV control line isolated at SIV HP2 following routine IMR inspection.	Predominantly reservoir fluids.	Completion brine	7” Vertical XT Flowbase 18 3/4" high pressure wellhead and 30" low-pressure wellhead housing Temporary guidebase (TGB)
AP2	Near Horizontal variant slick big bore (VSBB) gas production well with ESS completion. The well was spudded on 6 April 2007 and produced from 2008 to 2020.	The well was drilled with predominately water-based mud system, with the 12.25" and 8.5” section drilled with a synthetic based mud.	Well was shut-in in 2020 due to high water cut. Shut in via SCSSV and tree valve closure. Valves inflow tested to acceptance. SCSSV control line proactively isolated at SIV HP2 during routine IMR inspection.	Prior to flushing, predominantly reservoir fluids. Post flushing, predominantly reservoir fluids with potential for residual seawater (800 ppm hydrasure)	Completion brine	7” Vertical XT Flowbase 18 3/4" high pressure wellhead and 30" low-pressure wellhead housing Temporary guidebase (TGB)

Well Name	Well History		Current Status and Residual Fluids			Well Infrastructure
	Well Description	Drilling Fluids	Current Status	Production Tubing Contents	Production Annulus Contents	
AP3	Near Horizontal variant slick big bore (VSBB) gas production well with ESS completion. The well was spudded on 29 January 2007 and produced from 2008 to 2020.	The well was drilled with predominately water-based mud system, with the 12.25" and 8.5" section drilled with a synthetic based mud.	Well was shut-in in 2020 due to high water cut.	Prior to flushing, predominantly reservoir fluids. Post flushing, predominantly reservoir fluids with potential for residual seawater (800 ppm hydrasure)	Completion brine	7" Vertical XT Flowbase 18 3/4" high pressure wellhead and 30" low-pressure wellhead housing Temporary guidebase (TGB)
AP4	Near Horizontal variant slick big bore (VSBB) gas production well with ESS completion. The well was spudded on 29 November 2006 and produced from 2008 to 2020.	The well was drilled with predominately water-based mud system, with the 12.25" and 8.5" section drilled with a synthetic based mud.	Shut in via SCSSV and tree valve closure. Valves inflow tested to acceptance.	Prior to flushing, predominantly reservoir fluids. Post flushing, predominantly reservoir fluids with potential for residual seawater (800 ppm hydrasure)	Completion brine	7" Vertical XT Flowbase 18 3/4" high pressure wellhead and 30" low-pressure wellhead housing Temporary guidebase (TGB)
TPA-03	TPA-03 was drilled in two phases. Phase 1 drilling was carried out in 2012, Phase 2 drilling was completed in 2016, with subsea trees installed and connected to the Tidepole manifold. The well was spudded on 4 October 2012 and produced from	The well was drilled with predominantly water-based mud system, with the 8.5" section drilled with a synthetic based mud.	Well requires remediation of downhole valve. Once the TPA03 well intervention has been completed, the well will be shut-in until production is required. The shut-in and subsequent return to production will be managed under the accepted Goodwyn Alpha Facility Operations Environment Plan.	Reservoir fluids	Completion brine	7" Vertical XT Flowbase 18 3/4" high pressure wellhead and 30" low-pressure wellhead housing Temporary guidebase (TGB)

3.8.1 Angel field overview

The three Angel gas production wells (AP2, AP3 and AP4) are tied back to the Angel facility via rigid flowlines that are no longer producing from the Angel reservoir due to high water content. The three Angel wells are subsea satellite variable slick big bore wells that access the Angel reservoir. Production ceased from these Angel wells in December 2020.

Flushing and disconnection of Angel flowlines is planned to be conducted as a separate activity under the Angel Operations Environment Plan in Q3 2025 prior to well P&A, with additional isolation plugs to be installed into flowbase outlets once flowlines are removed to provide further environmental isolation from the wellbore.

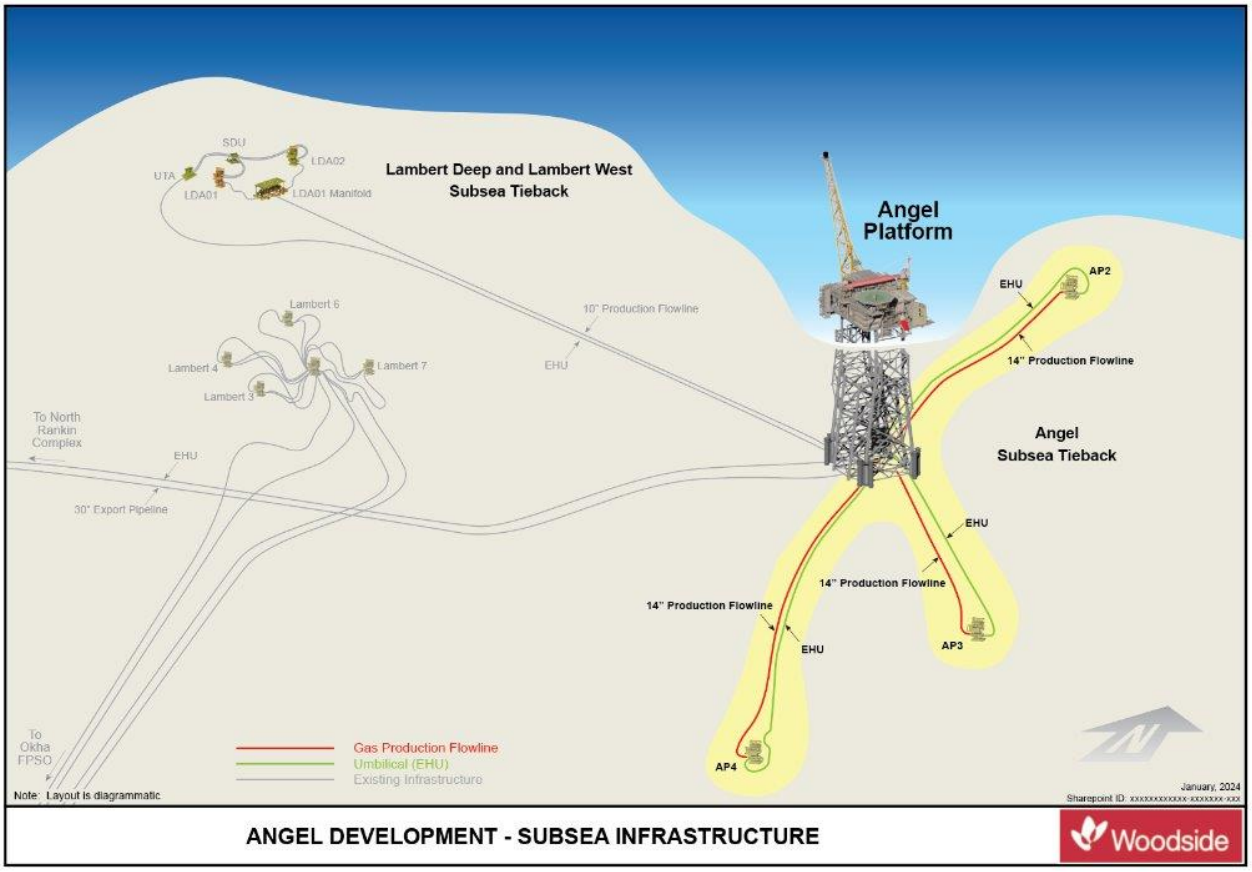

Figure 3-2: AP2, AP3, and AP4 subsea infrastructure layout

3.8.2 Perseus over Goodwyn overview

The PoG project consists of four wells (PER-01, PER-02, PER-03 and PER-04) tied-back to the GWA platform via a single 16-inch, 24.2 km, subsea pipeline. The two PoG Wells (PER-02 and PER-04), located upstream of the pipeline end manifold, have been non-producing since 2016 due to a loss of communication in the subsea control system. The two PoG wells are subsea satellite variable slick big bore wells that access gas from the Perseus field. PER-02 was drilled to intersect both the Legendre reservoir and the deeper underlying Searipple reservoir. Consequently, a single permanent abandonment crossflow barrier will be required to isolate between the two reservoir intervals.

The other two wells (PER-01 and PER-03) are producing with expected CoP around 2030, these wells are out of scope of this EP. The PoG pipeline connecting the PoG wells with the GWA platform remains in use transporting well fluids from production wells (PER-01 and PER-03). The PoG pipeline and producing wells (PER-01 and PER03) are managed under the accepted GWA Facility Operations EP.

Due to the subsea architecture at PoG and the ongoing production from the remaining 2 wells in the field (PER-01 and PER-03), flushing of the PER-02 and PER-04 flowlines prior to well P&A is not considered viable. Instead, these flowlines will be partially depressured and valve isolations implemented to isolate the well from the production system. During well P&A activities, once the Enhanced Vertical Subsea Tree (EVXT) has been removed, a ROV deployed isolation cap will be installed onto the flowbase hub to provide an additional long term environmental isolation to the production infrastructure. Flushing and disconnection of the flowlines will then be conducted as part of a future decommissioning scope at End of Field Life (EoFL). Wellheads and flowbases shall not be removed from PER04 and PER02 as these are required for future system flushing operations.

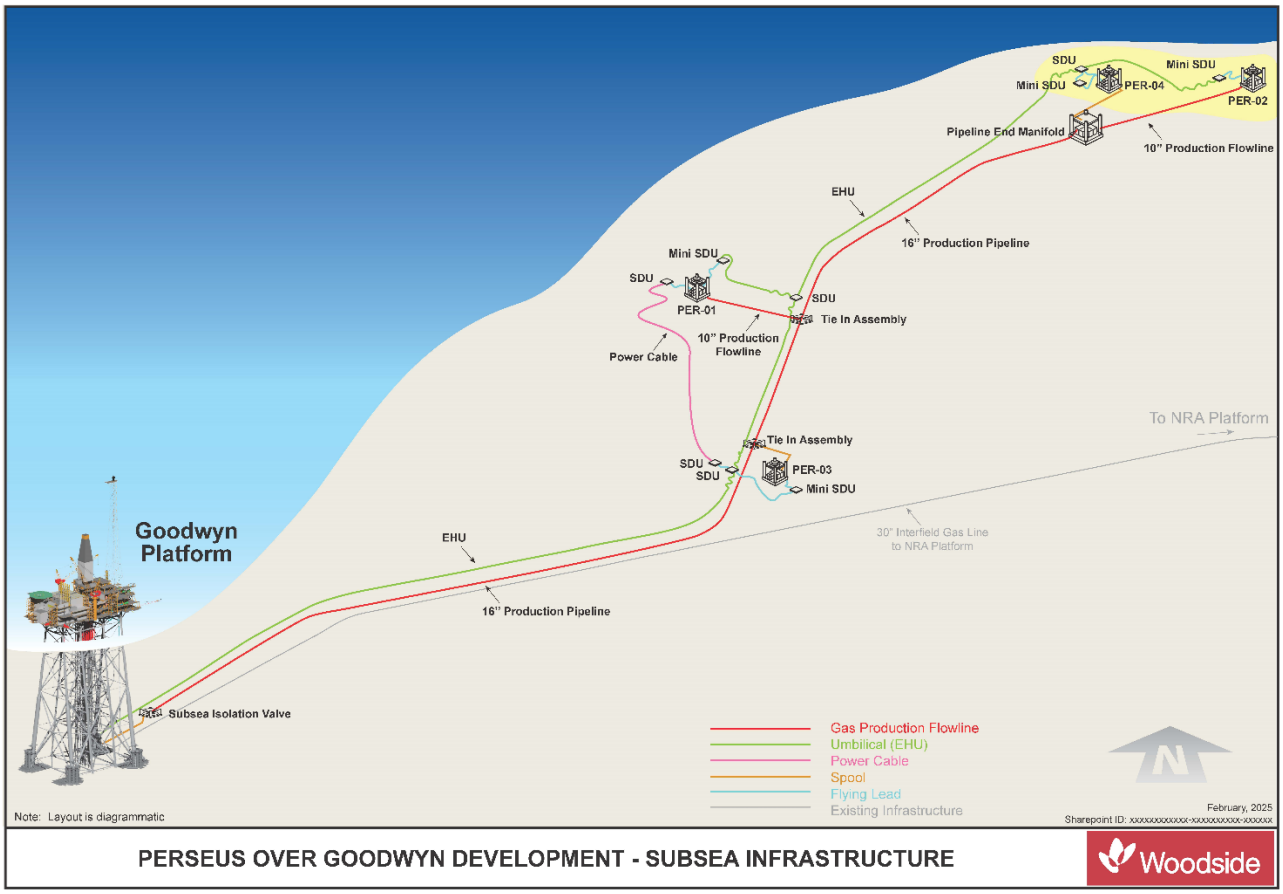

Figure 3-3: PER-02 and PER-04 subsea infrastructure layout

3.8.3 Tidepole reservoir

The TPA-03 production well is a dual zone well connected to the Tidepole manifold and forms part of the subsea production infrastructure for the Goodwyn Alpha Platform via subsea tieback before being exported to the interfield line (IFL) and to the Karratha Gas Plant for processing. The well intervention activities involve remediating a down-hole smart valve to restore production from the lower reservoir zone, as per the well design. Once the TPA-03 well intervention has been completed, the well will be started up and operated under the GWA Facility Operations EP as part of ongoing operations.

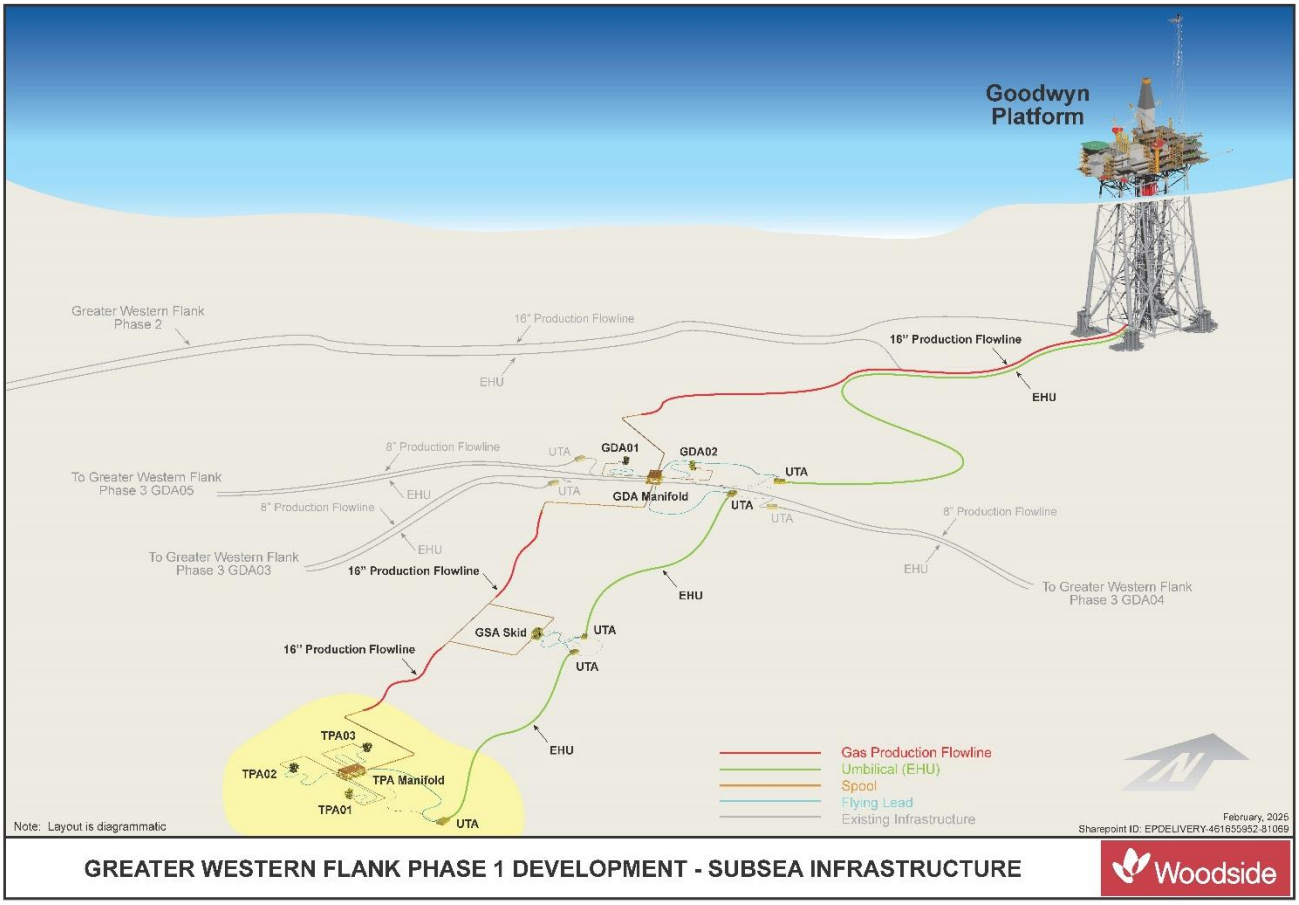

Figure 3-4: TPA-03 subsea infrastructure layout

3.9 Project vessel-based activities

3.9.1 Support activities

A variety of materials are routinely bulk transferred from general support vessels to the MODU or subsea support vessel including equipment, well intervention fluids, and cements. A range of bulk transfer stations and equipment is in place to accommodate the bulk transfer of each type of material. There is also a capacity to bulk transfer well intervention fluids and waste oil to be undertaken between vessels and between a vessel and the MODU within the Operational Areas. Support vessels may undertake transfers or equipment, material and consumables to and from the MODU, or between support vessels. Loading and back-loading is undertaken using cranes to lift materials in appropriate offshore rated containers (International Organization for Standardization [ISO] tanks, skip bins, containers) or as bundles (tubulars) between the MODU and a support vessel. There is also capacity for standby duties during well intervention activities, which may include but is not limited to periods of helicopter operations and working over the side activities while in the field.

Potable water, primarily for accommodation and associated domestic areas, will be generated on the main project vessels using a reverse osmosis plant. This process will produce brine, which is diluted and discharged at the sea surface.

The vessels will also discharge deck drainage from open drainage areas, bilge water from closed drainage areas, putrescible waste, treated sewage, and grey water. Hazardous and non-hazardous wastes generated are removed from the vessels and disposed of onshore.

3.9.2 Mooring installation and anchor holding testing

The MODU mooring system includes chain/wire/fibre and anchors, and can be pre-laid before the MODU arrives in the Operational Areas, or upon MODU arrival. Prior to the MODU arriving in the production licence a 'Rig Move and Position Plan' will be developed outlining the appropriate mooring configuration necessary to keep the MODU securely on location for the duration of the P&A activity. A mooring analysis is undertaken to determine the appropriate mooring pattern for the 8 to 12 point anchors, which are placed in a radius around the MODU. The final mooring configuration and design will be dependent on the outcome of this assessment.

Mooring may require an 8 to 12 point pre-laid mooring system at each well location, depending on the time of year. Moorings are typically placed in a radius around the well of up to approximately 4 km. Transponders may be required to inform anchor positioning. The expected frequency (Hz) and source level (dB re 1 µPa @ 1 m) of the signal from transponders is 18-26 kHz, 196 dB (ref. 1 µPa @ 1 m).

Installation and proof tensioning of anchors involves some disturbance to the seabed. AHVs are used in the deployment and recovery of the mooring system. As part of mooring preparations, anchor holding testing may be conducted at the well locations.

Anchor hold testing may consist of an AHTSV or similar vessel deploying an anchor at a potential mooring location. The AHTSV would then tension the anchor to determine its ability to hold, embed and not drag at the location. This may have to be repeated several times at each location. An ROV may also be used to judge how deep the anchor has embedded and independently verify the seabed condition. Anchor hold testing activities would occur before the MODU arrives on location.

Soil analysis may also be necessary to provide data about composition and rock/substrate strength, as an input into the mooring or conductor design, and verify seabed conditions for anchor hold. Soil analysis could include taking a physical sample of the seabed using ROV or other tools, or using measuring devices such as a cone penetrometer.

On completion of the well P&A program, the mooring anchors may be pulled or released and the MODU will depart the Operational Areas. Any released anchors will be retrieved by a subsea support vessel.

3.9.3 Blow out preventer tether system installation

To manage wellhead fatigue during P&A activities, a BOP tether system may be required to limit BOP movement. A typical BOP tether system uses four to eight clump weights or similar anchoring system, weighing about 25-47 tonnes each, although final number and weight of the clump weights may differ depending on seabed and current conditions. These clump weights are deployed to the seabed about 20 to 40 m away from the wellhead, usually from an anchor handler tug. A ROV will then connect tethers between the clump weights and the BOP, which are subsequently tensioned to limit BOP movement. Suction piles may be used instead of clump weights, with typically four 160" diameter piles used per tether system. Both types of BOP tether will be removed at the end of the activity along with any pre-laid moorings. The requirement for BOP tethering will be subject to the outcomes of a well specific wellhead fatigue analyses.

3.9.4 Refuelling/bunkering

All vessels and MODU will utilise diesel-powered generators for power generation and will be refuelled via support vessels, approximately weekly during activities within the Operational Areas and has been included in the risk assessment for this EP. Other fuel transfers may occur within the Operational Areas including refuelling of cranes, helicopters or other equipment as required. All project vessels will run on marine diesel oil (MDO); no intermediate or heavy fuel oils will be used. Refuelling will only commence in daylight hours. The general support vessels do not require refuelling offshore.

3.9.5 Dynamic positioning

DP uses satellite navigation and radio transponders in conjunction with thrusters to maintain the position of the MODU and offshore support vessels at the required location. Information about the position of the MODU is provided via a number of seabed transponders, which emit signals that are detected by receivers on the MODU and used to calculate position. The transponders are typically deployed in an array on the seabed for

the duration of the drilling at each well and well intervention activities, and are recovered at the end, generally by ROV. Clump weights are recovered post installation.

The offshore support vessels described in Section 3.5 will not anchor within the Operational Areas and will use DP to maintain position when working in proximity to the MODU.

3.9.6 Holding Station: Rig Anchor Release MODU

The hybrid MODU scenario is such that the MODU is DP capable though predominantly holds station via pre-laid mooring system. If a hybrid MODU is used to conduct drilling, it will likely have a rig anchor release (RAR) system integrated. The moorings are typically pre-laid as described in Section 3.9.2, though a RAR device couples the MODU mooring components with the anchor mooring components. The RAR is an acoustic release connecting link that can be installed in a mooring line to enable a rapid disconnection of a MODU from the mooring system. Each mooring leg would have one RAR installed in the mooring line. The acoustic release process is instigated from a command unit on the MODU that, when activated, transmits a low frequency signal (9 – 11 kHz) that is received by the RAR transducer in the mooring line and activates the primary hydraulic actuator. The hydraulic cylinder then releases the RAR and the mooring line is disconnected. The MODU then recovers the wire/chain ready for transit (under its own propulsion) and the subsea mooring leg remains in place, which may be buoyed off to reduce interaction with infrastructure if required.

To reconnect the MODU with the mooring system, the AHV will recover the MODU mooring line from the MODU to replace the chaser collar and anchor/chaser stopper with RAR and the trigger sleeve before connecting to the pre-laid line, with assistance from a ROV.

3.9.7 Preparation activities

Preparation activities are typically conducted by an Offshore Support Vessel prior to plug and abandonment and well intervention being undertaken by a MODU. Conducting preparation activities facilitates an efficient and informed approach to rig based activities.

reparation activities that may be conducted include:

- inspections and as found visual surveys to validate condition of well infrastructure prior to P&A
- marine growth removal, cleaning of mineral deposits and sediment relocation as required around the well infrastructure in preparation for the MODU to secure access to the well
- disconnection of hydraulic flying leads and electrical flying leads from subsea trees to enable clear access for P&A (where required)
- installation of subsea tree control and well access hardware
- subsea tree function and pressure testing
- validate wells barriers by bleeding off residual hydrocarbons from tree cavities and SCSSV control lines to the marine environment
- interrogating subsea control modules to confirm functionality and gauge communications
- deployment of mud mats for temporary placement of subsea trees during P&A as required
- deployment of pre-laid mooring for the MODU and BOP tether system (if required)
- subsea control module (SCM) change-out

These activities may occur between one to six months prior to the MODU mobilising to the Operational Areas and may be ongoing once the MODU has commenced plugging activities.

All project vessels and MODUs used to undertake the Petroleum Activity will be subject to pre-mobilisation checks as part of Woodside's Marine Management Procedure.

3.9.7.1 Marine growth removal

Excess marine growth and mineral deposits may need to be removed from well infrastructure using an ROV before performing permanent plugging activities. Marine growth removal may also be required for the MODU throughout the campaign. Table 3-8 lists the different cleaning techniques that may be used. Sulfamic (or equivalent) acid may be used to clean any calcium deposits that may have built up over time on the subsea tree interfaces.

Table 3-8: Marine growth removal methods

Activity/equipment	Description
Water jetting	Uses high-pressure water to remove marine growth
Brush systems	Uses brushes attached to an ROV to physically remove marine growth
Acid (typically sulfamic acid)	Chemically dissolves calcium deposits

3.9.7.2 Sediment relocation

If sediment build up around subsea infrastructure has the potential to impede the Petroleum Activity, a water jet or ROV-mounted suction pump may be used to move the sediment in the immediate vicinity of the infrastructure (i.e., within the existing footprint), to allow work to be performed.

3.9.7.3 Disconnection of jumpers and flying leads

Disconnection of any remaining equipment attached to the subsea trees may be required to facilitate safe and effective P&A and removal of well infrastructure.

For the three Angel wells, the majority of redundant flowlines and jumpers will be flushed and disconnected from the subsea trees as part of the Angel flushing campaign in Q3 2025, this campaign is being completed under the Angel Operations EP. Angel flushing and disconnection is out of scope of this EP, the environmental impact and risk assessment for flushing and disconnection of jumpers and flying leads was assessed in the accepted Angel Operations EP.

For the two PoG wells, the flowlines, jumpers and wellheads will remain attached during the plug and abandonment activities and a blanking cap will be installed to the flowline hub connection.

There is a hydraulic flying lead and an electrical flying lead attached to each of the subsea trees, that require disconnection via ROV. During disconnection of the hydraulic flying leads the fluid retained within the line may drain to the marine environment including volumes of water based hydraulic fluid, hydrocarbons or chemical injection fluids (eg. methanol, demulsifier, mono-ethylene glycol (MEG). No discharge is expected from the subsea tree due to checked couplers on the tree interface preventing fluid loss. There is no fluid retained within the electrical flying leads, therefore no discharge association with their disconnection. If lines cannot be disconnected ROV operated cutting tools may be required to sever the remaining connected flying leads and jumpers from the subsea tree which generates minor volumes of metal and plastic swarf.

3.9.7.4 Subsea tree preparation

The well infrastructure has been left in a state of preservation and certain inspections and testing activities will need to be conducted to verify well barriers and ensure infrastructure is prepared for efficient and successful P&A. Preparatory activities are defined in Table 3-9, including any relevant discharges. Further details on the associated discharges of these activities are assessed in Section 3.11.

Table 3-9: Summary of the subsea preparatory activities required for well plug and abandonment

Activity	Description
Removal or replacement of subsea Xmas Tree Caps	When the Xmas Tree Cap is removed, there may be some gas, residual well fluids and residual chemicals from the well released to the environment. This is estimated to be up to 1000m^3 of residual gas, 0.5m^3 of residual liquid hydrocarbons and 10L of residual chemicals (eg. control fluids).

Activity	Description
Valve testing and barrier validation	Pressure testing the subsea tree valves via ROV through the Xmas Tree Cap. There is potential for approximately 10L of MEG based hydraulic fluid to be released to the environment per test.
Function testing and potential subsea control module (SCM) change-out	Function testing the SCM on the subsea trees (hydraulic and electrical testing). The SCMs may require recovery and replacement. Estimated release of control fluid for function testing is expected to be 6L per valve function. If SCM recovery and replacement is required, an estimated release of control fluid is expected to be 10 L.
Flow base testing and preservation	Testing the subsea tree flowline hubs and installing protective caps where required for preservation.
Mud mat installation	Mud mats may be temporarily installed on the seabed adjacent to the subsea trees, to store the subsea trees on once they have been disconnected by the MODU. The mud mats are used to provide stability to wet stored structures due to the nature of seafloor sediments. The carbon steel mud mats are approximately 3.5 m × 3.5 m, with exact sizing is dependent on further engineering work. The mud mats, if deployed, will be recovered along with the subsea trees at the end of the MODU campaign.

3.9.8 Subsea inspection, maintenance, and repair activities

Subsea well infrastructure has been designed and left in a state of preservation that will not require any significant degree of IMR activities. The IMR activities for subsea infrastructure, including once the well infrastructure becomes redundant following permanent plugging, maintains equipment in good condition and repair for permanent plugging and to enable future removal.

The requirement for subsea well inspection and maintenance activities is managed under the NOPSEMA accepted WOMP, which outlines the approach to inspection and maintenance activities to verify the ongoing integrity of the wells. An ongoing risk-based process is prescribed under the WOMP. This process involves assessing well integrity status, inspection data and threats, then using this data to re-evaluate risks and define inspection frequencies and determine if maintenance or repair is required.

Subsea activities are typically undertaken from a subsea support vessel and use ROV.

Maintenance and repair activities may require the deployment of frames/baskets which are temporarily placed on the seabed. These typically have a perforated base with a seabed footprint of about 15 m². This temporary equipment is removed from field via recovery to project vessels at the completion of IMR activities.

3.9.8.1 Inspections

Inspection of subsea well infrastructure is the process of physical verification and assessment of components in order to detect changes to the condition by comparison to initial state following installation and previous inspections.

An as-found survey using an ROV may be conducted on the well infrastructure prior to P&A. This survey aims to identify any issues with the infrastructure (e.g., burial, integrity) which have the potential to affect the approach to P&A and final removal. The as-found survey may also identify miscellaneous debris for recovery. ROVs may also be used to conduct an as-left survey as discussed in Section 3.13.

3.9.8.2 Maintenance

Maintenance activities on subsea wells infrastructure may be required at regular or planned intervals to prevent deterioration or integrity failure of infrastructure, or due to specific requirements. Typical maintenance activities may include:

- cycling of valves
- marine growth removal

- leak and pressure testing.

Maintenance activities may be conducted as part of P&A preparatory activities outlined in Section 3.9.7.

Repair activities are those required when a subsea system or component is degraded, damaged, or has deteriorated to a level outside of acceptance limits. Damage sustained may not necessarily pose an immediate threat to continued system integrity but may present an elevated level of risk to environment or production reliability. Due to the design of subsea infrastructure and materials used, repairs will be undertaken on an as needs basis. The requirements and frequency of these repairs will be dictated by the outcome of the inspection and maintenance regimes as managed under the WOMP.

3.10 Mobile offshore drilling unit based subsea well intervention activities

Planned well intervention on TPA-03 will be carried out to restore production from the lower reservoir zone in the well. Well intervention work will be carried out with appropriate barriers, i.e. a Work-over Control System/Work-over Riser System (WOCS/WORS) or equivalent and Wireline Pressure Containing Equipment. The objective of the intervention is to remove the blanking plug from the lower smart valve in the well.

The primary scope of well intervention is likely to involve:

- Connecting subsea intervention equipment, connecting wireline pressure containing equipment, and pressure testing;
- Running a toolstring to equalise pressure either side of the blanking plug;
- Running a toolstring to pull the equalised blanking plug from the well;
- Closing valves, pressure testing, disconnecting subsea intervention equipment and wireline pressure containing equipment and re-installing the Xmas Tree Caps.

Potential contingency activities during this well intervention may include:

- Drift runs, to confirm no downhole obstructions are present;
- Running tooling to perform real-time downhole diagnostics;
- Pumping an inhibited brine / MEG package to assist with equalising pressures either side of the blanking plug;
- Running a stroker and tractor assembly on e-line, a contingency to provide high pulling force;
- Running a wire-cutter, to sever the slickline / e-line in the event of stuck equipment downhole;
- Fishing runs, to collect any equipment lost downhole.

Potential environmental impacts from intervention activities have been included in this EP, including discharge of suspension fluids, brines, venting at surface and small volume gas releases subsea due to removal of Xmas Tree Caps which may be in place if the well was previously shut-in.

During intervention activities, local control of the Xmas tree from the MODU will be required. Valve actuation of the trees will result in small releases of subsea control fluids to the marine environment.

3.10.1 Inspection

Subsea infrastructure inspections physically verify and assess components to detect changes to the as-installed location and condition by comparing them to previous inspections. The scope and frequency of subsea inspections are determined using risk-based inspection (RBI) methodology, resulting in detailed RBI plans. Table 3-10 lists typical relevant subsea infrastructure inspections/surveys.

Table 3-10: Typical inspections/surveys

Type of Inspection/Survey	Purpose
General visual inspections	Check general infrastructure integrity
Close visual inspections	Investigate certain subsea infrastructure components

Type of Inspection/Survey	Purpose
Cathodic protection	Check for corrosion
Wall thickness surveys	Monitor the condition of subsea infrastructure. (i.e. ultrasonic testing)
Non-destructive testing	Evaluate the properties of material/items using electromagnetic, radio graphic, acoustic resonance technology, ultrasonic, or magnetic equipment
Anode sampling	Take samples of anode materials for testing
Laser surveys	Conduct dimensional checks on trees etc. and measure proximity

Inspection methods will not directly result in environmental aspects which could lead to impacts on the environment and are therefore not discussed further. Vessel and ROV operations associated with inspections are described in Section 3.5.

3.10.2 Monitoring

Subsea infrastructure monitoring surveys the physical and chemical environment that a subsea system or component is exposed to, to determine if and when damage may occur, and (where relevant) predict the rate or extent of that damage.

Monitoring activities may include corrosion probes, corrosion mitigation checks, metocean and seismic monitoring, and cathodic protection testing.

Monitoring will not directly result in environmental aspects which could lead to impacts on the environment and are therefore not discussed further. Vessel and ROV operations associated with monitoring are described in Section 3.5.

3.10.3 Subsea Control Systems

Intervention of TPA-03 will commence with the deployment of an integrated WOCS/WORS to provide a physical connection between the well (Xmas tree) and MODU. In conjunction with topside wireline pressure containing equipment, this enables a contained conduit to be maintained, where fluids can be circulated from the well bore back to the MODU through the workover riser (WORS). The only fluids planned to be used in this activity are drill water and a brine/MEG mix. The exception to this is for control fluids used in the workover control system (WOCS) as the WOCS operates in an open loop with the Xmas tree. The Xmas tree valves will be controlled by the MODU via an umbilical and ROV, if required.

The WOCS/WORS, comprising of a Lower Riser Package (LRP) and Emergency Disconnect Package (EDP), include a series of independent barriers to seal the well in addition to the Xmas tree, to prevent loss of containment. WOCS/WORS well control valves will be pressure tested similarly to a BOP. Various system tests of both the WOCS/WORS and the Xmas tree will be completed following connection of the WOCS/WORS, and when establishing communications with the Xmas tree.

At the surface, wireline pressure containing equipment (including a wireline BOP and lubricator package) will be rigged up to provide well barriers and control pressure during wireline operations.

Barrier pressure testing will be conducted upon connection of the WOCS/WORS to the Xmas tree. Following this, there will be a function test about every 7 days and a barrier pressure test about every 21 days thereafter. Each of the tests will result in 1000 – 3000 L of hydraulic / control fluids (e.g. HW443) being discharged per well, depending on the level of testing required. These tests may be standalone tests or may be incorporated into operational procedures.

3.10.4 Fluid Circulation Pits

There are typically a number of tanks on the MODU that provide a capacity to mix, maintain and store fluids required for activities. The only fluids likely required for this activity include a MEG/brine mix and drill water. The pits and associated equipment/infrastructure are typically cleaned out at the completion of operations. Tank wash residue is operationally discharged with less than 1% oil contamination by volume, with no contamination expected. Tank wash residue over 1% oil by volume is sent to shore for disposal.

Following the intervention or during an Emergency Disconnect Sequence (EDS), fluids contained within the riser may be routed back to stock tanks during depressuring and flushing the WOCS/WORS. These fluids will be tested and returned to shore if concentration of oil by volume is >1%.

3.10.5 Air Emissions

During well intervention activities, surface returns of small volumes of hydrocarbon gas from annular spaces will be cold vented in a controlled and safe manner via a choke manifold or through degassing of the stock tank returns. Due to the small volume of the gas, it is not feasible that this gas could be flared.

3.10.6 Subsea Equipment Preservation Chemicals

Following well intervention activities, subsea equipment may contain preservation fluids including monoethyleneglycol (MEG) to prevent corrosion and any other deterioration of the equipment prior to production re-commencing.

3.10.7 Shut-In prior to Return to Production

Following intervention activities, the well will be shut-in pending return to production operations Xmas tree valves will be shut, the WOCS/WORS will be disconnected and retrieved to surface, and an Xmas Tree Cap will be installed. Well control will be handed back over to the Goodwyn-A Facility where it will remain shut-in until the well resumes production.

3.10.8 Underwater Acoustic Positioning

An array of long base line (LBL) transponders may be installed on the seabed as required to support intervention activities. The LBL array provides accurate positioning by measuring ranges to three or more transponders deployed at known locations on the seabed and structures. Alternatively ultra-short baseline transponders (USBL) may be installed on the seabed or mounted to the wellhead as required. Transmissions from USBL transponders are similar to LBL transponders.

An array of transponders is proposed within a radius of 500 m from the proposed location of the wells. Transmissions are not continuous but consist of short ‘chirps’ with a duration that ranges from 3 to 40 milliseconds. Transponders will not emit any sound when on standby and are planned to only actively emit sound for about six hours per well. When required for general positioning, they will emit one chirp every five seconds (estimated to be required for four hours at a time). When required for precise positioning, they will emit one chirp every second (estimated to be required for two hours at a time). Transmissions from USBL transponders are similar to LBL transponders.

Transponders may be deployed to the seabed either by a clump weight or mounted on a seabed frame. The standard clump weights used, made of cement or steel, will likely weigh about 80 kilogram (kg). A typical seabed frame is 1.5 m × 1.5 m × 1.5 m in dimension and weighs about 40 kg. On completion of the positioning operation the transponders, clump weights and seabed frames will be removed by ROV.

3.10.9 Repair

Repair activities are required when a subsea system or component is degraded, damaged, or has deteriorated to a level outside acceptance limits. Damage sustained may not necessarily pose an immediate threat to continued system integrity, but presents an elevated level of risk to safety, environment, or production. Typical subsea repair activities include:

- Xmas tree or component/cap repair and/or replacement
- corrosion protection.

Some environmental discharges are expected during subsea repair activities. Table 3-11 lists typical discharge volumes during repair activities.

Table 3-11: Typical discharge volume during repair activities

Activity	Typical Discharge
Pressure/leak testing	Chemical dye >10 L

Activity	Typical Discharge
Valve functioning	0.5 L to 5 L per valve actuation
Flushing	Residual hydrocarbon or chemical releases volume depends on injection port size, component geometry, and pumping rates
Hot stab changeout	Hydrocarbons or control fluid <10 L.
Xmas tree 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.

Excess marine growth may need to be removed before undertaking activities. An ROV is used for this activity; Table 3-12 lists the different techniques used.

Table 3-12: Marine growth removal

Activity/Equipment	Description
Water jetting	Uses high-pressure water to remove marine growth
Brush systems	Uses brushes attached to an ROV to physically remove marine growth
Acid	Chemically dissolves calcium deposits

3.11 Mobile offshore drilling unit based permanent plugging activities

3.11.1 Permanent plugging

The permanent plugging activities for the Angel and PoG wells, including designing and installing permanent well barriers, will be completed in accordance with the NOPSEMA-accepted Well Operational Management Plan (WOMP) as required under the OPGGS (Resource Management and Administration) Regulations 2011.

The planned permanent plugging scope for the Angel and PoG wells includes the following steps:

- Position the MODU over well and anchor or connect to pre-laid anchors (Section 3.9.2).
- Clean and prepare Xmas tree connector, if not completed by AHTSV (Section 3.9.2).
- Establish control of Xmas tree via connection of completion workover riser system (CWORS) (Section 3.11.1.1).
- Bullhead kill and/or circulate well fluids from well as required; vent and/or flare hydrocarbons as required during this operation (Section 3.11.1.1).
- Install suspension plugs and test integrity, cut tubing as required.
- Recover CWORS.
- Disconnect Xmas tree from wellhead and recover to MODU or temporarily wet park for future recovery (may require deployment of mud mat).
- For the PoG wells, where the production flowbase will remain in place with flowlines attached, a blanking cap will be installed to the flowline hub connection.
- Run BOP on marine riser and connect to wellhead.
- Recover upper completion to MODU, as required.
- Assess casing and annulus cement integrity at abandonment interval as required; remediate poor or insufficient annulus cement as required (Sections 3.11.1.7, 3.11.1.10, and 3.11.2).
- Some wells may require removal of (part of the) lower completion and/or intermediate completion to facilitate permanent plugging (Section 3.11.1.3).
- Set and verify reservoir abandonment plugs (Section 3.11.1.7).
- Recover production liner and whipstock in PER-02/ST1 to gain access to motherbore.

- If required, install environmental plug to isolate NWBM in the 9 5/8" annulus from seabed.
- Recover BOP (Section 3.11.1.9).
- The P&A activities described above, as being performed through the BOP and marine riser, may be performed through the CWORS with wireline and coil tubing. This is subject to further engineering analysis and may remove the requirement to run BOPs and recover completion tubing from the well.
- Option to cut and recover the well infrastructure (wellhead and flowbase) above the mudline from the MODU directly following permanent plugging of the well. Recovery of the wellheads is described in Section 3.12.4.
- Recover anchors or disconnect from pre-laid anchors.
- Repeat for each well.
- Perform as-left survey using ROV (Section 3.13).
- Recover anchors and leave Operational Areas (Section 3.9.3).
- Recover pre-laid anchors and tether systems may be conducted after MODU has departed field.

3.11.1.1 Subsea control systems

Permanent plugging of the Angel and PoG wells commences with deployment of a CWORS to provide a connection from the well to the MODU. This enables a closed circulation system to be maintained, where fluids can be circulated from the well bore back to the MODU through the WORS. The exception to this is for control fluids used in the control system which operates in an open loop with the Xmas tree.

The CWORS also functions as a BOP to prevent loss of containment during initial steps of permanent plugging and will be pressure tested similarly to the BOP. Various system tests of both the CWORS and the Xmas tree will be completed following connection of the CWORS and when establishing communication with the Xmas tree. Barrier testing will be duration based with a barrier function test about every seven days and barrier pressure test about every 21 days. Each of these tests will result in up to 1000 – 3000 L of hydraulic/control fluid (e.g. HW443) being discharged per well, depending on the level of testing required. These tests may be standalone tests or may be incorporated into operational procedures.

3.11.1.2 Well kill

Following connection of the subsea test tree, well kill fluid will be pumped into the formation via the CWORS. This is to control the residual pressure from the formation and to bullhead well fluids into the reservoir. The well kill fluid will be a weighted brine or seawater which may contain additives to reduce reservoir permeability post well kill. The type of brine and additives will be assessed and will comply with the approved chemical assessment process outlined in Section 7.2.1.

Any fluids (gas and liquids) in the tubing-annulus may be bullheaded into the tubing and subsequently the reservoir, bled off or circulated to the MODU. Fluids returned to the MODU during well kill operations will pass through a fluid handling bleed off package. The bleed off package is designed to take fluids through a choke and into a liquid knock out vessel or a surge tank (pressure rated). The knock out vessel includes a separator which allows for gas and liquids to be separated. The gas, dependant on pressures and volumes, will be flared via the burner boom or cold vented from a safe location overboard. Liquids from the knock out vessel or surge tank can be pumped to the burner head and burned via air atomisation or be diverted to a water treatment package. Fluids able to be treated via the water filtration package to less than 30 ppm oil in water content will be discharged overboard. Where 30 ppm is not achievable, fluids will be toted into tanks for onshore disposal.

During well kill operations, the volumes returned to the MODU will depend on how much can be bullheaded into the formation successfully. The maximum volumes that could be returned to the MODU are up to about 1.5 MMscf of gas per well which may be flared/vented from the MODU, and up to about 50 m^3 of produced liquid hydrocarbons per well may be returned for processing through the fluid handling and bleed off package. All flaring would occur at limited volumes given the activity is to permanently plug the well (e.g., in comparison to well unloading operations).

3.11.1.3 Installation of temporary barriers

Once well kill operations have concluded, temporary mechanical barriers are planned to be installed in the well to provide isolation for removal of the EVXT and installation of the BOP. Annular cement evaluation on wireline may be performed to inform the position of the mechanical barriers. Additional operations to prepare the tubing and packers for removal will also be conducted at this time.

3.11.1.4 Recovery of completion workover riser system and Xmas tree

Following installation of suspension barriers, the CWORS will be disconnected and recovered to the MODU. The Xmas tree will be removed and either recovered or temporarily wet stored for recovery at the end of the MODU campaign (Section 3.12.4). Wet parking may require placement of a mud mat, subject to engineering assessment of seabed stability.

3.11.1.5 Installation of blow out preventer

Following removal of CWORS, a BOP and marine riser will be installed directly on the wellhead. The operation of the BOP components uses open hydraulic systems, using water-based BOP control fluid. Each time the BOP is operated (including pressure testing about every 21 days and function testing about every seven days, excluding the week in which a pressure test is conducted), the volume of BOP control fluid that will be released to the marine environment per test is up to 90 L. A BOP tether system may be required, involving deployment of a subsea winch and clump weights which will be recovered if practicable to do so or may be left in situ for later recovery.

3.11.1.6 Tubing recovery

With the BOP established onto the well, the tubing and upper completion components will be recovered from the well. Any residual hydrocarbons that might still be present in the well after well kill operations have been completed and the tubing is pulled, could be circulated out. The residual hydrocarbons and water-based mud (WBM), brine or treated seawater returned to the MODU during this operation will be routed via the MODU's mud system. If returned fluids are to be discharged, it will be treated prior to discharge to less than 1% by volume oil content. If discharge specification cannot be met, the fluid will be returned to shore.

In addition, the intermediate and potentially the lower completion may require removal on some wells to gain access to the interval required for permanent abandonment. This will involve cutting the packer and tubing and retrieving to MODU.

3.11.1.7 Installation of permanent barriers

Installation of the permanent barriers involves downhole casing and cement integrity being verified via wireline logging if required. A risk exists of inadequate annulus cement to enable placement of internal P&A plug(s). If this risk materialises, annulus cement remediation operations will be required. If the remediation of poor or insufficient annulus cement is required, casing may be perforated and cement circulated behind the casing or the casing may be cut or milled (refer to Section 3.12.2). Following this, permanent abandonment cement plugs will be installed and verified. There is potential that the installation of permanent barriers may be performed through the CWORS using wireline and coil tubing, depending on the prior logging operations, which could reduce/eliminate the BOP installation and tubing recovery scopes described above.

Cement is planned to be used for the permanent plugging of the Angel and PoG wells. Upon arrival at the Operational Areas, the MODU is typically required to perform a cement unit test to test the functionality of the cement unit and the MODU bulk cement delivery system before performing an actual cement job. Proper functioning of the cement system is important for ensuring well integrity. This operation is usually performed after a MODU has been out of operation for a length of time (warm-stack or cold-stack), if maintenance on the cement unit has been performed, or if it is the first time a MODU is being used in-country and commissioning of the cement unit system is required.

A cement unit test involves mixing a cement slurry at surface, and once functionality of the cement unit and delivery system has been confirmed, the slurry is discharged through the usual cement unit discharge line (which may be up to 10 m above the sea surface) or through drill pipe below the sea surface. The slurry is usually a mix of cement and water; however, may contain stabilisers or chemical additives in low concentrations.

Cementing fluids will generally consist of Portland cement with additives (such as inorganic salts, lignins, bentonite, barite, silicates, defoamers and surfactants). Cementing fluids are not routinely discharged to the marine environment, however, volumes of about 5 m³ per well will be released when surplus fluids require disposal after cementing operations at the surface.

3.11.1.8 Installation of environmental plug

After installation of the reservoir permanent abandonment plugs an environmental cement plug will be placed adjacent to annular cement to contain remaining NWBM from 9 5/8" B-annulus. This could be within 13-3/8" casing or 20" casing.

Any NWBM and clean-out fluids from this operation will be routed via the MODU's mud system. Clean-up brine contaminated with NWBM, will be discharged if content is less than 1% by volume oil. If discharge specification cannot be met (i.e., is greater than 1% by volume oil content), the fluid will be returned to shore. Up to 160 m³ of fluid containing greater than 1% oil from NWBM may be returned to the MODU per well and taken to shore for disposal.

3.11.1.9 Moving between wells

Initial well suspension activities conducted with the CWOR may be conducted as batch operations across all or subset of wells with the MODU in DP mode. Mooring will be required for all operations with the BOP deployed onto the subsea tree and/or wellhead. Once the well abandonment cement plugs have been set, tested and verified, the MODU riser and BOP will be disconnected from the well before disconnecting from or recovering anchors and moving to next well location. The BOP may be recovered back to the MODU, or hung off in the moonpool if batching operations.

3.11.1.10 Wireline and slickline operations

Wireline or slickline activities that may occur for permanent plugging activities include gamma ray and casing collar locator logging for depth correlation, ultrasonic imaging and cement bond logging to measure cement integrity and running of other tools in hole such as SCSSV hold-open sleeves, drifts, plugs, punch perforators/cutters etc., plug removal and installation. Wireline and slickline work will be performed within the riser or CWOR through the subsea test tree or BOP with appropriate isolation barriers in place. If wireline work is required to occur where there is a risk of barrier failure, the operation will be performed with full pressure control equipment at the surface.

3.11.2 Cement, barite, and bentonite discharge

Excess cement, barite and bentonite (dry bulk) after well operations are completed, will either be held onboard and used for subsequent wells, provided to the next operator at the end of the program, or if these options are not feasible, discharged to the marine environment. Towards the end of the campaign, if re-use, transfer or on-sale of the dry bulk stocks becomes not feasible, Woodside will implement stock reduction measures to reduce the volume dry bulk stock requirement, to that necessary for well control, as defined in relevant well control procedures.

Excess cement, barite and bentonite that does not meet technical requirements during the Petroleum Activity may also be bulk discharged to the environment. Bulk discharges of cement may occur as a slurry through the usual cement discharge line or blown as dry bulk and discharged. Woodside requires that mercury and cadmium concentration in stock barite be below 1 mg/kg and 3 mg/kg, respectively. Documentation of heavy metal analysis is planned to be undertaken for all individual batches of barite and used to verify compliance with these concentrations.

3.11.3 Mud pits

There are typically mud pits (tanks) on the MODU that provide a capacity to mix, maintain and store fluids required for drilling and permanent well plugging activities. The mud pits form part of the fluid circulation system. The mud pits and associated equipment/infrastructure are cleaned out at the completion of operations. Mud pit wash residue is operationally discharged with less than 1% by volume of oil. Mud pit residue over 1% by volume of oil is sent to shore for disposal.

3.11.4 Well tubing

During well plugging and abandonment activities, production tubing and production liner (PER-02) recovered to surface will be assessed for contamination (e.g. NORM and mercury). In the case contamination is identified, the tubing will be managed as per Woodside procedures appropriate for the contamination type and level.

Recovered tubing will be disposed of onshore. The tubing may require special management and treatment during the surface handling, transport and disposal process, depending on the level of contamination. All waste will be handled and disposed of in accordance with federal, state, and international requirements.

3.12 Additional potential activities for permanent plugging of wells

The following activities may be required, if operational or technical issues occur during the Petroleum Activity. These additional activities have been considered within the relevant impact assessment sections and do not represent significant additional risks or impacts, but may generate additional small volumes of drilling fluids, and drilled cement, and metal swarf being operationally discharged, which have been assessed as part of the Petroleum Activity.

3.12.1 Marine riser clean out

There is potential for the marine riser and BOP to be susceptible to rust and other minor build up between wells. This can lead to multiple deployments of subsea test trees or other large diameter pulling tools, as this type of debris, albeit small volumes, can prevent successful land out of tools.

To mitigate potential debris issues, the following activities may be performed as required:

- Ensure riser is clean prior to initial deployment for the P&A of the first well.
- Run riser brushes and magnets while the riser and BOP are installed onto a well.
- Implement a BOP flushing sequence prior to landing the BOP on the subsea tree.
- Once the BOP and riser are landed out, use available cleaning tools to clean the interface surfaces where debris build-up might take place.

In case of significant debris issues, the marine riser might be recovered to deck and inspected. Equipment will be available on the MODU to enable cleaning of the riser joints before being redeployed. Cleaning will be done over a bunded area, with fluids returned to tanks on the MODU.

Should debris continue to be a problem after brushing and circulation to the mud pits, then the riser might be disconnected from the Xmas tree and an ROV will be used to flush the remaining debris from around the top of the Xmas Tree Cap.

3.12.2 Milling

If the cement on the outside of the casing does not meet well barrier requirements, casing or tubing liners may need to be removed either by cutting and pulling or milling. These operations are done through the marine riser with milling debris returned to the MODU and will only be performed if needed.

Milling operations involve removing steel casing, annulus cement and formation to expose fresh formation. The methods used include milling tools that create chips or ribbons of steel (swarf), chips of cement and chips of formation. Milling is typically performed at a controlled rate (1 to 1.5 m/hr), to enable steel swarf to be removed effectively from the milling site to minimise the risk of ‘birds nesting’ of steel swarf, which may block fluid returns and jam equipment. Milling tools become worn during milling operations and will require tripping for new/redressing about every 30 to 50 m. As a result, the rate of milling is slower than normal drilling operations.

The primary solids control equipment (including shale shakers and ditch magnets, both upstream and downstream of the shakers) will separate swarf from the fluid system, however, any swarf particles which pass through this system will remain. The milling fluids, including up to an additional 2 m^3 of swarf, 3 m^3 of drilled cement and 3.5 m^3 of formation rock, will be discharged overboard per 100 m interval if milling is required. As a result of restricted milling speeds, the rate of swarf and cement will be generated over several days (the rate is expected to be about 1.5 m/h).

3.12.3 Drilling out a cement plug

During the permanent plugging operation, if the permanent cement plugs do not pass the verification test, then drilling out of this cement plug will be required so the cement plug can be reinstalled. WBM will be used, and the WBM and cement cuttings will be processed through the drilling muds process equipment on board the MODU and discharged overboard. This will generate about 25 m³ of cement cuttings per plug and use approximately 250 m³ of WBM.

3.12.4 Well infrastructure

Well infrastructure for the five production wells will be removed above the mud line as soon as practicable once wells are permanently abandoned in accordance with applicable regulatory requirements. The removal of five subsea trees will be completed as an activity under this EP. The removal of the three Angel wellheads using the MODU is an optional activity under this EP. If not removed by the MODU, wellheads will be removed using a construction support vessel under the proposed Angel Subsea Infrastructure Removal EP. Whilst the use of the MODU is a feasible option for wellhead infrastructure removal, there are technical, safety, cost and schedule benefits from utilising a subsea support vessel.

Any remaining well infrastructure will be recorded in the Angel field inventory and managed under the accepted Angel Operations EP until completion of all decommissioning activities in the Angel field. As the Angel wells are located in an operating field (preventing public access and fishing), navigational charts will be updated upon the completion of all decommissioning activities in the Angel field to ensure no infrastructure is left that presents a snagging risk to current of future fishing operations.

Options for removing and recovering the Angel wellheads are described in Table 3-13. The wellheads are planned to be cut below the seabed using abrasive water jet cutting, however if unsuccessful, the wellheads will be cut with an external diamond wire saw as close as practicable to the seabed. Once the wellheads are cut, the well infrastructure will be recovered to the MODU or construction support vessel and transported to shore for reuse or disposal in an acceptable manner.

The two PoG subsea trees will be removed by the MODU as part of this Petroleum activity, the two wellheads and flowbases will remain in place until the larger active PoG production system has ceased production. Flushing of PoG flowlines and removal of the PoG wellheads above the mudline will be included in a separate future approval as outlined in Section 7 of the Goodwyn Alpha (GWA) Operations Environment Plan. Any remaining well infrastructure will be recorded in the GWA field inventory and managed under the accepted GWA Operations EP until completion of all decommissioning activities in the field. As the PoG wells are located in an operating field (preventing public access and fishing), the wells will continue to be marked on navigation charts until the completion of all GWA decommissioning activities to ensure no infrastructure is left that presents a snagging risk to current or future fishing operations.

Table 3-13: Wellhead cutting methods

Method	Description	MODU/vessel type	Comment
Abrasive water jet (AWJ) cutting	Method: Method uses a system of high-pressure water entrained with grit and flocculant pumped via an umbilical from a vessel to a subsea cutting tool that is inserted into the inner well casing. Where possible, cut is made at a sufficient depth below the mudline (more than 3m) in accordance with international Well standard practice, e.g. Oil and Gas UK Well Decommissioning Guidelines (OGUK, 2018). This may also allow for additional cut attempts. Uses: Suitable where an internal cut can be achieved and within water depths shallower than approximately 300 to 350 m, due to requirement for high pressure jetting. Not restricted by number of casing strings.	Subsea support vessel (IMR or AHV)	Preferred method given water depth within Operational Areas
External cutting using diamond wire saw	Method: Method uses a hydraulically driven motor and pulley system to operate an industrial diamond cutting wire via a vessel or ROV. Clamps to the outside of wellhead at the base and cuts externally. Uses: Suitable for wells within all water depths. Cut at or below mudline.	Subsea support vessel (IMR or AHV)	External cut to be made as close as practicable to the seabed.
Mechanical internal cutting	Method: Method uses mechanical cutting knives that are inserted into the inner well casing and rotated. Uses: Suitable for wells with up to two casing strings, where an internal cut can be achieved, and within all water depths.	MODU or subsea support vessel	Preferred method using the MODU.

3.13 As-left surveys

Woodside will undertake as-left surveys of the five wells following completion of the Petroleum Activity.

Damage to the seabed from the proposed permanent plugging activities are assessed in Section 6.6.2. This seabed disturbance is predicted to gradually infill over time, acting as depositional areas for suspended material in the area. As such no sediment sampling and/or seabed remediation is planned for the Petroleum Activity.

3.14 Unplanned contingency activities

3.14.1 Emergency disconnect sequence

An emergency disconnect sequence (EDS) may be implemented if the intervention vessel/MODU is required to rapidly disengage from the well. The EDS closes the BOP or WOCS/WORS valves (i.e. shutting in the well) and disconnects the riser to break the conduit between the BOP or Xmas tree and the MODU. Common examples of when this system may be initiated include when the MODU moves outside of its operating circle (e.g. failure of the dynamic positioning system or one or more of the moorings) or moves to avoid a vessel collision (e.g. third-party vessel on collision course with the MODU). The EDS aims to leave the well and Lower Riser Package (LRS) of the WOCS/WORS in a secure condition but will result in the loss of the fluids/gases in the riser after disconnection.

3.14.2 Temporary well suspension

During permanent plugging or intervention activities, a well may need to be temporarily suspended (e.g. in the case of adverse weather or unexpected well outcomes requiring additional time to plan the next operation). Suspension involves establishing suitable barriers, removing the riser and disconnecting the MODU from the well. The BOP may be left in place to act as a barrier or removed if sufficient barriers are present in the well itself. On return to a well after suspension, the MODU reconnects to the well via the riser and well plugging activities resume.

3.15 Project fluids

3.15.1 Drilling fluid system

The base case of the proposed Petroleum Activity includes using WBM, well kill brine, drilling fluids and wet cement and will produce tubing, tubing annulus and casing annulus fluids (containing residual brine or WBM, residual hydrocarbons and residual produced formation water). These fluids will be returned during well kill activities, well bore clean out, installation of permanent abandonment barriers, circulation of the casing-annulus and washing out of the mud pit. All chemicals selected for use will be assessed under Woodside's internal guidelines to ensure potential impacts are acceptable, ALARP and meet Woodside's expectation for environmental performance.

3.15.1.1 Water-based mud system

The WBM will either be mixed on the MODU or received pre-mixed, then stored and maintained in a series of pits aboard the MODU. WBM drilling fluids that cannot be reused (e.g. due to bacterial deterioration or do not meet required drilling fluid properties) or are mixed in excess of required volumes, may be operationally discharged to the ocean under the MODU's Permit to Work (PTW) system. Opportunities to reuse the WBM drilling fluids at the end of the Petroleum Activity are reviewed across current Woodside drilling activities.

Potential additional activities that may be required as part of the Petroleum Activity include milling, which will produce metal swarf, drilled cement and formation rock (Section 3.12.2).

All of the downhole plugging for permanent abandonment activities are conducted through the CWORS or marine riser. This is a closed system, meaning there are no planned discharges directly to sea during these activities. Planned discharges of the above fluids are only planned to occur after they have been received on the MODU and treated where required.

3.16 New technologies

Permanent abandonment plug(s) are typically cement pumped into the well bore at specified interval(s) determined through the well barrier design process. There may also be new material technologies that fulfil permanent well plugging for abandonment requirements that may be considered instead of or in combination with cement. These will be assessed using the management of change assessment described in Section 7.7.1 and, if required, the chemical selection and assessment process outlined in Section 7.2.1.

4. DESCRIPTION OF THE EXISTING ENVIRONMENT

4.1 Overview

In accordance with Regulations 21(1) of the Environment Regulations, this section describes the existing environment that may be affected by the activity (planned and unplanned, as described in Section 3, including details of the particular relevant values and sensitivities of the environment, which were used for the risk assessment.

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 event of the worst-case credible spill. The ecological impact thresholds used to delineate the EMBA are defined in Section 6.7.1.3. The worst-case credible spill scenario for this EP is a loss of well containment. The EMBA also includes any areas that are predicted to experience shoreline contact with hydrocarbons above threshold concentrations.

Woodside recognises that hydrocarbons may be visible beyond the EMBA at lower concentrations than the ecological impact thresholds defined in Section 6.7.1.3. These visible hydrocarbons are not expected to cause ecological impacts. In respect of this, an additional socio-cultural EMBA is defined, as the potential spatial extent within which social-cultural impacts may occur from changes to the visual amenity of the marine environment. Receptors relevant to the socio-cultural EMBA 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 EMBA for surface hydrocarbons encompasses an area fully within the boundaries of the EMBA for ecological impacts. The EMBA and socio-economic EMBA are shown in Figure 4-1 and described in Table 4-1.

The EMBA presented does not represent the predicted coverage of any one hydrocarbon spill or a depiction of a slick or plume at any particular point in time. Rather, the areas are 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 environment that may be affected (EMBA) for surface and in-water hydrocarbons

Hydrocarbon type	EMBA[1]	Socio-cultural EMBA[1]	Planning area for scientific monitoring
Surface	10 g/m² 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/m² 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 scientific monitoring (NOPSEMA guidance note: A652993, April 2019).	
Dissolved	50 ppb This represents potential toxic effects, particularly sublethal effects to highly sensitive species (NOPSEMA guidance note: A652993, April 2019). 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.		10 ppb This low exposure value establishes the planning area for scientific monitoring (based on potential for exceedance of water quality triggers) (NOPSEMA guidance note: A652993, April 2019). This area is described further in Appendix G: Figure 5-1. In the event of a spill, DNP will be notified if any AMPs may be contacted by hydrocarbons at this threshold Table 7-7.
Entrained	100 ppb This represents potential toxic effects, particularly sublethal effects to highly sensitive species (NOPSEMA guidance note: A652993, April 2019). As entrained hydrocarbons are within the water column and not		

Hydrocarbon type	EMBA[1]	Socio-cultural EMBA[1]	Planning area for scientific monitoring
	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/m² This represents the threshold that could impact the survival and reproductive capacity of benthic epifaunal invertebrates living in intertidal habitat.	10 g/m² This represents the volume where hydrocarbons may be visible on the shoreline but is below concentrations at which ecological impacts are expected to occur.	N/A

1 Further details including the source of the thresholds used to define the EMBA in this table are provided in Section 6.7.1.3.

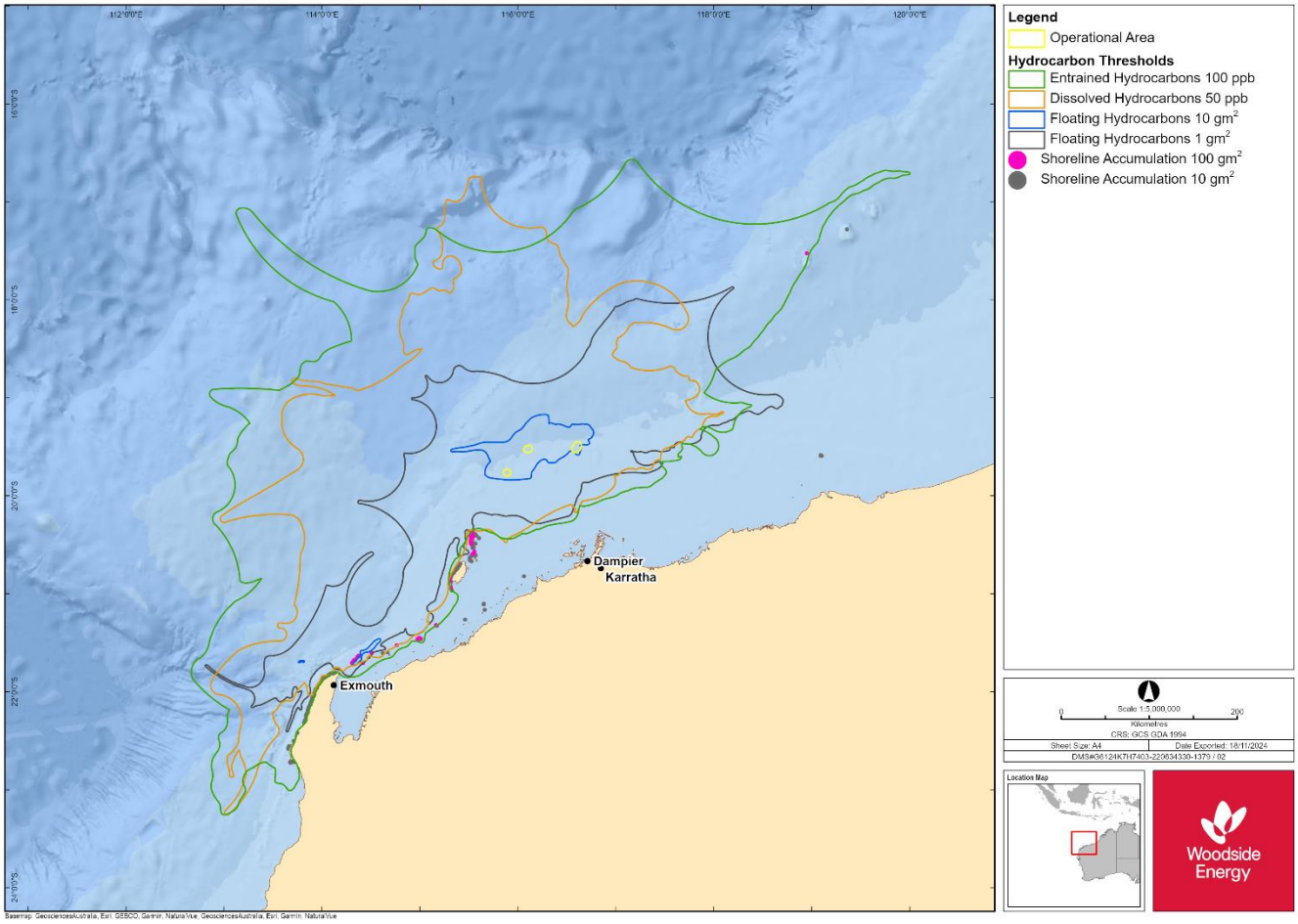

Figure 4-1: Environment that may be affected by the Petroleum Activity

4.2 Regional context

The Operational Areas are located in Commonwealth waters within the North-west marine region (NWMR), as defined under the Integrated Marine and Coastal Regionalisation of Australia (IMCRA v4.0) (Commonwealth of Australia, 2006), in water depths of approximately 80 m -128 m. Within the NWMR, the Operational Areas lie within the Northwest Shelf (NWS) Province (Figure 4-2). Woodside's Master Existing Environment (Appendix C) summarises the characteristics for the relevant marine bio-regions.

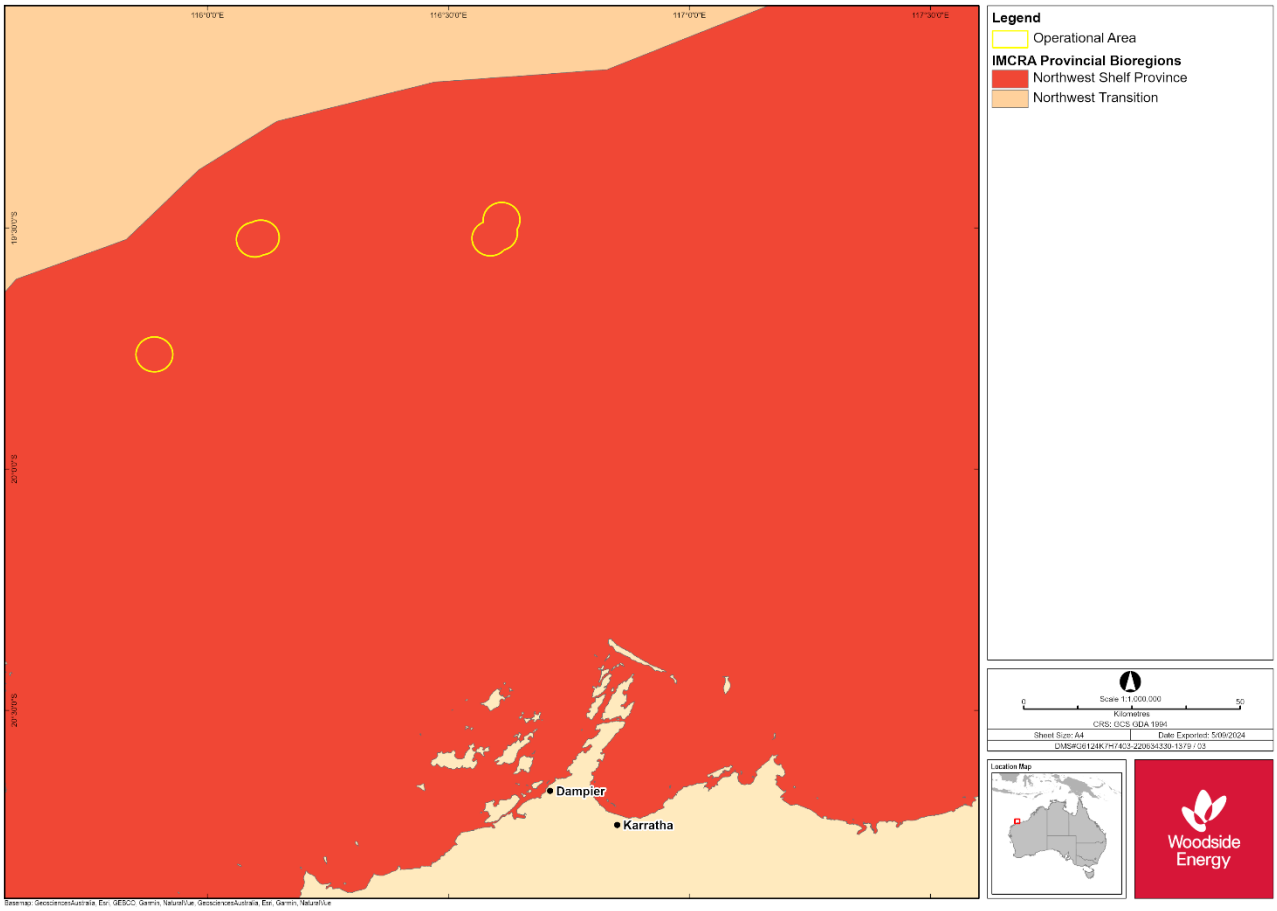

Figure 4-2: Location of the Operational Areas and relevant marine bio-regions

4.3 Matters of national environmental significance (EPBC Act)

Table 4-2 summarises the matters of national environmental significance (MNES) overlapping the Operational Areas and EMBA, according to Protected Matters Search Tool (PMST) results (Appendix D). It should be noted that the EPBC Act PMST is a general database that identifies areas in which protected species have the potential to occur. The PMST conducts searches to determine the presence/absence of MNES based on a conservative grid-based search function. Marine areas (>30 km) from the coast use 32 km × 32 km grid cells to determine the spatial overlap with listed MNES. Accordingly, the PMST report (Appendix D) can indicate the presence of MNES, that do not actually intersect with the Operational Areas or EMBA. To ensure the accurate consideration of any impacts from the North West Shelf Phase 1 Plug and Abandonment and TPA-03 Well Intervention on MNES, shapefiles (provided for by DCCEEW) have been assessed using geographic information system software to determine the actual presence and distance to MNES.

Additional information on these MNES is provided in the subsequent sections of this chapter and described in detail in Appendix D.

Table 4-2: Summary of relevant MNES identified by the EPBC Act Protected Matters Search Tool (PMST) as potentially occurring within the Operational Areas and EMBA

MNES	Number of MNES in Operational Area A	Number of MNES in Operational Area B	Number of MNES in Operational Area C	Number of MNES in EMBA	Relevant section
World Heritage Properties	0	0	0	1	Section 11.2 of the Master Existing

MNES	Number of MNES in Operational Area A	Number of MNES in Operational Area B	Number of MNES in Operational Area C	Number of MNES in EMBA	Relevant section
National Heritage Places	0	0	0	1	Environment (Appendix C) and Section 4.9.1
Wetlands of International Importance (Ramsar)	0	0	0	0	Not relevant to this EP
Commonwealth Marine Area	1	1	1	4	
Listed Threatened Ecological Communities	0	0	0	0	
Listed Threatened Species	20	23	20	52	Sections 3 to 8 of the Master Existing Environment (Appendix C) and Section 4.6
Listed Migratory Species	34	35	35	67	

4.4 Physical environment

The Operational Areas lie in waters approximately 130 m deep (Operational Area A), ~80 m deep (Operational Area B) and ~115 m deep (Operational Area C) on the continental shelf (Figure 4-3). The bathymetry within the Operational Areas 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 relatively steep outer slope approximately 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 1000 m to the north-west (James et al. 2004).

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

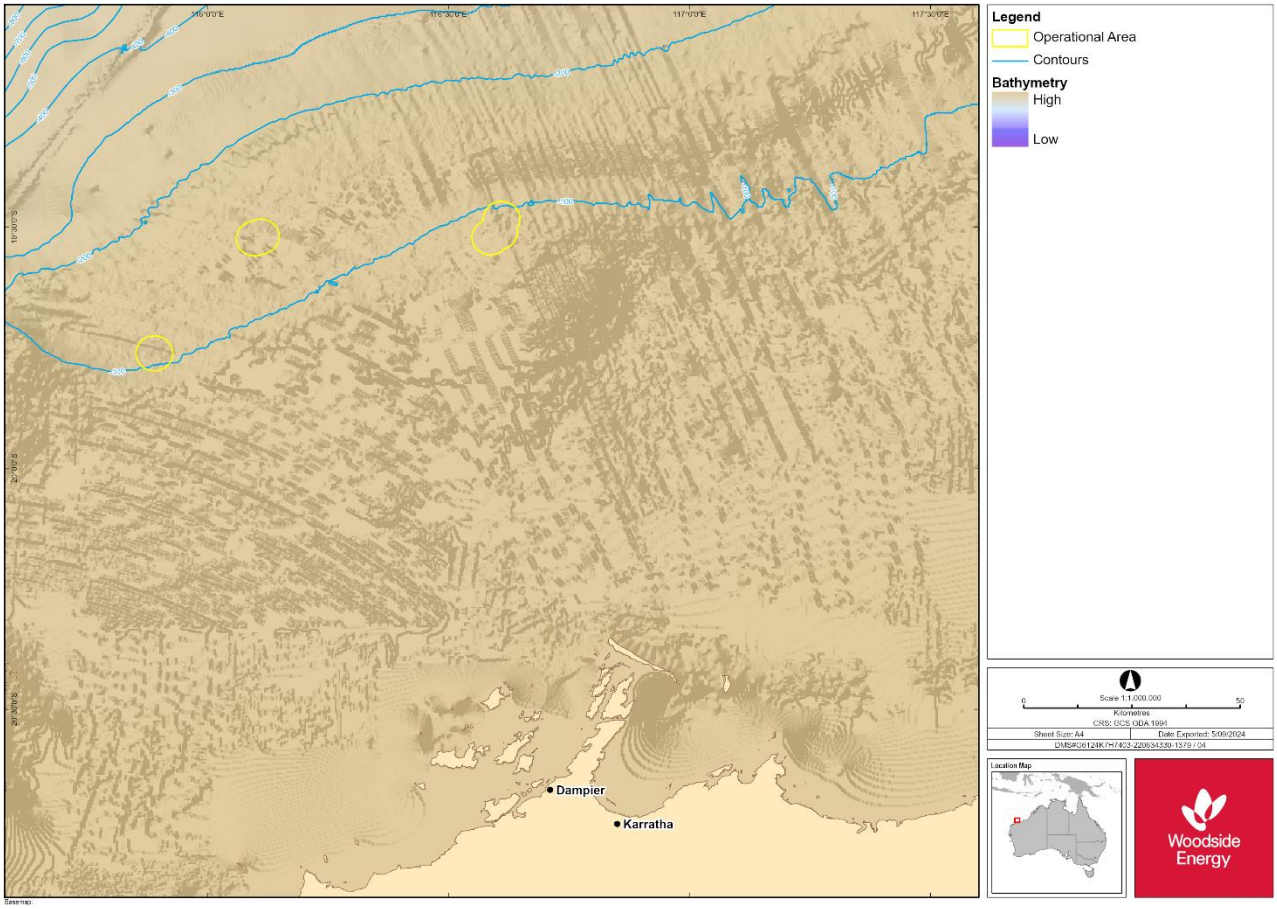

Figure 4-3: Bathymetry of the Operational Areas

4.5 Habitats and biological communities

Several Woodside seabed sampling programs have been undertaken within or near the Operational Areas at the Angel and GWA platforms and Glomar Shoal in recent years (BMT 2021, Australian Institute of Marine Science (AIMS) 2014a, BMT Oceanica 2015a). Sediments in the Operational Areas are expected to be 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 (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).

The majority of sediments in the Operational Areas are expected to be comprised primarily of fine sands, very fine sands, and silt, similar to those analysed at the Glomar Shoal KEF, which overlaps approximately 25% of Operational Area B (AIMS 2014a, BMT Oceanica 2015a). These submerged shoals are large (215 km^2), complex bathymetrical features on the outer continental shelf off the Pilbara. Glomar Shoal rises gently on the south-west side of the reef from 80 m depth to a single plateau at 40 m depth. The north-eastern side of the reef rises steeply from 70 m to 40 m depth. The shoals are relatively shallow, with water depths reaching 22 to 28 m at its shallowest point.

Glomar Shoal is considered to have a higher habitat diversity than the surrounding areas (Falkner et al. 2009). On a regional level, the Glomar Shoal is also known to be an important area for a number of commercial and recreational fish species. The shoal has relatively high seafloor temperatures and high biological productivity and has been identified as a KEF of the NWMR based on the limited existing data on demersal fish from depths of 50 to 70 m collected over 15 years ago (Falkner et al. 2009). Glomar Shoal is

recognised for its high regional biodiversity and productivity and is considered a unique habitat type at the local scale, although similar habitats occur across the broader region (DSEWPaC, 2012).

Approximately 2.53% of the KEF overlaps Operational Area B (Figure 4-11), in water depths between 65 m and 72 m. Together with Rankin Bank, these remote shallow water areas represent regionally unique habitats and are likely to play an important role in the productivity of the Pilbara region (AIMS 2014a, Wahab et al. 2018).

Benthic habitats of Glomar Shoal vary with depth and are characterised by coarse unconsolidated sediment at depths greater than 60 m to hard substrate supporting benthic communities comprising spare hard and soft corals sponges and macroalgae at depths < 40 m. Total cover of benthic taxa (hard coral, soft coral, sponges, and other benthic biota) is highest at depths < 40 m and decreases with depth (Wahub, 2018). At depths of 60-80 m benthic cover is low and approximately 2% and at depths greater than 80 m benthic cover is barely present with baseline survey data indicating 0.1% cover of benthic biota. The results of a baseline survey and habitat modelling undertaken by AIMS in 2013 indicate that the portion of the Glomar Shoal KEF overlapping Operational Area B is composed of soft sediment seabed and not areas of higher, phototrophic benthic biota (AIMS, 2014). Structurally complex biodiverse benthic habitats are mainly found within the north-eastern portion of Glomar Shoal KEF.

Overall, the benthic habitats of Glomar Shoal are considered pristine and hosts regionally distinct ecological communities. The fish abundance and diversity of the demersal fish communities of Glomar Shoal are influenced by the seabed habitat type, with genera associated with sandy habitats common, including threadfin breams (Nerripterus spp.) and triggerfish (Abalisters spp.). Species richness and abundance are influenced by habitat depth and the degree of coral cover. 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 (Wahab et al. 2018).

The Operational Areas overlap the Ancient Coastline KEF (refer to Figure 4-11), an ancient, submerged coastline, with areas of hard substrate which provides habitat that supports the KEF's higher diversity and enhanced species richness, relative to the surrounding area. The KEF is relatively poorly understood; however, the following fauna is associated with the escarpment: crinoids, molluscs, echinoderms, sponges, corals, and other benthic invertebrates representative of hard substrate fauna in the region. Within the Ancient Coastline KEF, several discrete areas of hard substrate exist, which play host to sessile filter feeding communities. Although several areas with sensitive habitat and features are present within the EMBA and Operational Areas, the majority of the seabed is characterised by relatively expansive areas of featureless sandy substrate.

Rankin Bank is on the continental shelf and within the EMBA, approximately 56 km south-west from Operational Area A, approximately 104 km south-west from Operational Area B at the closest point, and approximately 28 km north-west from Operational Area C. 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 (AIMS 2014a). Rankin Bank consists of three submerged shoals delineated by the 50 m depth contour with water depths of approximately 18 to 30.5 m (AIMS 2014a). 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) (AIMS 2014a). 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 (Heyward et al. 2012). Rankin Bank has been shown to support a diverse fish assemblage (AIMS 2014a). 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). The habitat surrounding Rankin Bank (<50 m) was mapped by AIMS on behalf of Woodside (2014a) and hosts filter feeding communities in areas of consolidated substrate interspersed by sand.

Habitats and ecological communities within the EMBA are identified in Table 4-3 and described in Appendix C.

Table 4-3: Habitats and communities within the environment that may be affected

Habitat/community	Key locations within the EMBA
Seabed characteristics	
Bare/unconsolidated sediments	The offshore environment of the NWMR, where the Operational Areas are located, comprises predominantly of soft sediments (sandy and muddy substrata with occasional patches of coarser sediments) and sparse benthic biota.
Banks and shoals	Shoals are a significant habitat within the EMBA, and a number of submerged banks and shoals are located throughout the EMBA associated with the Southern Pilbara Island group (e.g. Outrim Patches, Penguin Bank). Key shoals include Rankin Bank, located approximately 56 km south-west from Operational Area A, 104 km south-west from Operational Area B, and 28 km north-west from Operational Area C.
WA coastline communities	The EMBA includes contact with the WA mainland coastline, predominantly along the Ningaloo and Cape Range coastline. The nearshore and coastal environments of Ningaloo on the WA coastline are approximately 286 km south-west of Operational Area A, 320 km south-west of Operational Area B, and 286 km south-west of Operational Area C. Communities within the EMBA include sandy beaches, mangroves and rocky shores.
Glomar Shoals	Glomar Shoals is a shallow sedimentary bank comprised of coarser biogenic material than the surrounding seabed. The shoal is 26 to 70 m below the sea surface (Falkner et al. 2009) and overlaps Operational Area B. Glomar Shoals has also been identified as a KEF (Falkner et al. 2009). This KEF encompasses a wider area than the shoal feature itself.
Ancient Coastline at 125 m depth contour	The Ancient Coastline at 125 m depth contour (DAWE 2019a) overlaps the Operational Areas. Areas of this KEF comprise hard substrate and may occur within the Operational Areas. Hard substrate seabed habitats present within the Operational Areas 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. Seabed habitat comprising hard substrates were not identified during a video benthic habitat and box grab seabed sediment sampling survey of the Lambert Deep development area (Jacobs 2014). A previous geophysical survey of this area, however, had identified a scarp area in proximity to two of the sample locations (Fugro Survey Pty Ltd 2002, Jacobs 2014). Observations of old dead coral fragments and coral rubble were made at these same two sample locations during the 2014 survey (Jacobs, 2014). Hard substrate seabed habitats present within the Operational Areas 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.
Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula	The Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula KEF overlaps the EMBA and is located 260 km south-west of Operational Area A, 292 km south-west of Operational Area B, and 234 km south-west of Operational Area C. The Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula are defined as a key ecological feature as they are unique seafloor features with ecological properties of regional significance, which apply to both the benthic and pelagic habitats within the feature. The canyons on the slope of the Cuvier Abyssal Plain and Cape Range Peninsula are connected to the Commonwealth waters adjacent to Ningaloo Reef and may also have connections to Exmouth Plateau. Aggregations of whale sharks, manta rays, humpback whales, sea snakes, sharks, large predatory fish and seabirds are known to occur in this area and are related to productivity (Sleeman et al. 2007). Thus, the canyons, Exmouth Plateau and Commonwealth waters adjacent to Ningaloo Reef operate as a system to create the conditions for enhanced productivity seen in this region (Sleeman et al. 2007).
Commonwealth waters adjacent to Ningaloo Reef	The Commonwealth waters adjacent to Ningaloo Reef KEF overlaps the EMBA and is located 306 km south-west of Operational Area A, 339 km south-west of Operational Area B, and 269 km south-west of Operational Area C. The Commonwealth waters adjacent to Ningaloo Reef and associated canyons and plateau are interconnected and support the high productivity and species richness of Ningaloo Reef. The Leeuwin and Ningaloo currents interact on the seaward side of the reef, leading to areas of enhanced productivity which support aggregations and

Habitat/community	Key locations within the EMBA
	migration pathways of whale sharks, manta rays, humpback whales, sea snakes, sharks, large predatory fish and seabirds (Donovan et al. 2008; Gunn et al. 1999; Waples & Hollander 2008). Detrital input from phytoplankton production in surface waters and from higher-trophic consumers cycles back to the deeper waters of the shelf and slope (Brewer et al. 2007). Deepwater biodiversity includes fish, molluscs, sponges, soft corals and gorgonians. Some of these sponge and filter-feeding communities appear to be significantly different to those of the Dampier Archipelago and Abrolhos Islands, indicating that the Commonwealth waters of Ningaloo Marine Park have some particular areas of potentially high and unique sponge biodiversity (Rees et al. 2004).
Continental Slope Demersal Fish Communities	The Continental Slope Demersal Fish Communities KEF overlaps the EMBA and is located 62 km south-west of Operational Area A, 112 km south-west of Operational Area B, and 40 km north-west of Operational Area C. The diversity of demersal fish assemblages on the continental slope in the Timor Province, the Northwest Shelf Transition Province and the Northwest Shelf Province is high compared to elsewhere along the Australian continental slope. This species assemblage is recognised as a key ecological feature because of its biodiversity values, including high levels of endemism.
Exmouth Plateau	The Exmouth Plateau KEF overlaps the EMBA and is located 173 km south-west of Operational Area A, 224 km south-west of Operational Area B, and 153 km north-west of Operational Area C. Although the seascapes of this plateau are not unique (Falkner et al. 2009), it is believed that the large size of Exmouth Plateau and its expansive surface may modify deepwater flow and be associated with the generation of internal tides. Both may contribute to the upwelling of deeper, nutrient-rich waters closer to the surface (Brewer et al. 2007). The Exmouth Plateau is generally an area of low habitat heterogeneity; however, it is likely to be an important area of biodiversity as it provides an extended area offshore for communities adapted to depths of around 1000 metres. The Exmouth Plateau is defined as a key ecological feature as it is a unique seafloor feature with ecological properties of regional significance, which apply to both the benthic and pelagic habitats within the feature.
Mermaid Reef and Commonwealth waters surrounding Rowley Shoals	The Mermaid Reef and Commonwealth waters surrounding Rowley Shoals KEF overlaps the EMBA and is located 343 km north-east of Operational Area A, 298 km north-east of Operational Area B, and 276 km north-east of Operational Area C. Mermaid Reef and Commonwealth waters surrounding Rowley Shoals are regionally important in supporting high species richness, higher productivity and aggregations of marine life associated with the adjoining reefs themselves (Done et al. 1994). The Rowley Shoals contain 214 coral species and approximately 530 species of fishes (Gilmour et al. 2007), 264 species of molluscs and 82 species of echinoderms (Done et al. 1994; Gilmour et al. 2007). The reefs provide a distinctive biophysical environment in the region as there are few offshore reefs in the north-west. 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.
Marine primary producers	
Coral	Coral reef habitats have a high diversity of corals and associated fish and other species of both commercial and conservation importance. Coral reef habitats are an integral part of the marine environment within the NWMR. The nearest coral habitat is located at Glomar Shoal (which overlaps with Operational Area B). Other coral reef habitats in the EMBA include: • Rankin Bank (approximately 56 km south-west from Operational Area A, 104 km south-west from Operational Area B, and 28 km north-west from Operational Area C) • Glomar Shoal (45 km south-east of Operational Area A, overlaps Operational Area B, and 72 km north-east of Operational Area C) • Montebello Islands (107 km south-west of Operational Area A, 139 km south-west of Operational Area B, and 72 km south-west of Operational Area C)

Habitat/community	Key locations within the EMBA
	• Barrow Island (141 km south-west of Operational Area A, 170 km south-west of Operational Area B, and 106 km south-west of Operational Area C) • Ningaloo Coast (286 km south-west of Operational Area A, 320 km south-west of Operational Area B, and 286 km south-west of Operational Area C) • Muiron Islands (295 km south-west of Operational Area A, 327 km south-west of Operational Area B, and 255 km south-west of Operational Area C).
Seagrass beds and macroalgae	Seagrass beds and macroalgae habitats represent a food source for many marine species and also provide key habitats and nursery grounds (Department of Fisheries (DoF), 2011a). Seagrass beds and macroalgae habitats are present in several locations within the Northwest Shelf Province, where the Operational Areas are located. Key seagrass and macroalgae habitats nearest to the Operational Areas, and within the EMBA, are: • Montebello Islands (107 km south-west of Operational Area A, 139 km south-west of Operational Area B, and 72 km south-west of Operational Area C) • Barrow Island (141 km south-west of Operational Area A, 170 km south-west of Operational Area B, and 106 km south-west of Operational Area C) • Muiron Islands (295 km south-west of Operational Area A, 327 km south-west of Operational Area B, and 255 km south-west of Operational Area C) • Ningaloo Coast (286 km south-west of Operational Area A, 320 km south-west of Operational Area B, and 286 km south-west of Operational Area C) • Exmouth Gulf (405 km south-west of Operational Area A, 427 km south-west of Operational Area B, and 299 km south-west of Operational Area C).
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 NWMR. Mangrove forests can be found in: • Montebello Islands (107 km south-west of Operational Area A, 139 km south-west of Operational Area B, and 72 km south-west of Operational Area C) • Ningaloo Coast (286 km south-west of Operational Area A, 320 km south-west of Operational Area B, and 286 km south-west of Operational Area C) • Exmouth Gulf (405 km south-west of Operational Area A, 427 km south-west of Operational Area B, and 299 km south-west of Operational Area C).
Other communities and habitats	
Plankton	Phytoplankton within the Operational Areas and EMBA are generally expected to reflect the conditions of the NWMR. Primary productivity of the NWMR appears to be largely driven by offshore influences (as reported by Brewer et al., 2007), with periodic upwelling events and cyclonic influences driving coastal productivity with nutrient recycling and advection. There is a tendency for offshore phytoplankton communities in the NWMR to be characterised by smaller taxa (e.g. bacteria), whereas shelf waters are dominated by larger taxa such as diatoms (Hanson et al., 2007). Zooplankton within the Operational Areas and EMBA may include organisms that complete their lifecycle as plankton (e.g. copepods, euphausiids) as well 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 & Gilmour, 2008; Simpson et al., 1993) and fish larvae abundance can occur throughout the year. Within the EMBA, peak primary productivity 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 (MPRA, 2005) with periodic upwelling throughout the year.
Pelagic and demersal fish populations	Pelagic and demersal fish populations within the Operational Areas and EMBA are expected to be representative of the NWMR. Free swimming pelagic fish within the Operational Areas and EMBA are expected to include small pelagic fishes, broadly

Habitat/community	Key locations within the EMBA
	distributed throughout the tropical pelagic environment. Larger pelagic fish include migratory species (e.g. tunas, sharks etc.) as well as commercially important species. 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 is mapped as overlapping the Operational Areas), The Continental Slope Demersal Fish Communities KEF (62 km south-west of Operational Area A, 112 km south-west of Operational Area B, and 40 km north-west of Operational Area C), Rankin Bank and Glomar Shoal (including the Glomar Shoal KEF). Notably, the presence of subsea infrastructure associated with the GWA, Pluto and Angel facilities has resulted in the development of demersal fish communities that would otherwise not occur in the Operational Areas due to the generally featureless, soft substrate that is present (McLean et al. 2017).
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 Commonwealth Waters of Ningaloo Marine Park and at shoals within the EMBA. Discrete areas of hard substrate hosting sessile filter feeding communities may also be associated within the Ancient Coastline at the 125 m Depth Contour KEF, which overlaps the Operational Areas. However, no areas of hard substrate characteristic of this KEF have been identified within the Operational Areas (Jacobs 2014). Filter feeder communities within the Operational Areas are present on the subsea infrastructure, which provides hard substrate for attachment (Jacobs, 2014).

4.6 Protected species

A total of 79 EPBC Act listed species considered to be MNES were identified as potentially occurring within the EMBA, of which a subset of 39 species were identified as potentially occurring within Operational Area A, 42 species were identified as potentially occurring within Operational Area B, and 40 species were identified as potentially occurring within Operational Area C. The full list of marine species identified from the PMST reports is provided in Appendix D. 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. One conservation dependent species has also been identified with a potential to occur within the Operational Areas and EMBA. This species, the Scalloped Hammerhead Shark, is listed on the Species Profile and Threats Database (DAWE, 2021).

Species identified as potentially occurring within the Operational Areas and EMBA and biologically important areas (BIAs) or habitat critical to their survival (habitat critical) which overlap the Operational Areas and EMBA are listed in Table 4-4 to Table 4-12. Figure 4-4 to Figure 4-8 show the spatial overlap between relevant BIAs and habitat critical areas and the Operational Areas and EMBA. Species that have been identified as having ecologically significant interactions in the Operational Areas 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 15 EPBC Act listed threatened and migratory fish species have been identified to potentially occur within the EMBA, of which 12 occur in Operational Area A, 11 occur in Operational Area B, and 13 occur in Operational Area C (Table 4-4). A full list of EPBC Act listed species identified in the PMST search is provided in Appendix D.

BIAs that overlap the EMBA are presented in Figure 4-4 and in Table 4-5. The Operational Areas overlap the foraging (northward from Ningaloo along 200 m isobath) BIA for whale sharks (Figure 4-4, Table 4-5).

Further description of BIAs is provided in Appendix C.

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

Species name	Common name	*Environment Protection and Biodiversity Conservation Act 1999* (as per PMST report Appendix D)			*WA Biodiversity Conservation Act 2016*[2]	IUCN Red List of Threatened Species (non-statutory)[3]	Potential for interaction				EPBC Act Part 13 Statutory Instrument
		Threatened status	*Migratory status*	*Listed*	*Conservation status*	*Global status*	*Operational Area A*	*Operational Area B*	*Operational Area C*	*EMBA*	
Anoxypristis cuspidata	Narrow sawfish	N/A	Migratory	Marine	Specially Protected – Migratory Species	Critically Endangered	Species or species habitat may occur in area	Species or species habitat known to occur in area	Species or species habitat may occur within area	Species or species habitat known to occur in area	Refer to Master Existing Environment (Appendix C, Table 5-1)
Carcharhinus longimanus	Oceanic whitetip shark	N/A	Migratory	Marine	N/A	Critically Endangered	Species or species habitat likely to occur in area	Species or species habitat likely to occur in area	Species or species habitat likely to occur within area	Species or species habitat likely to occur in area	
Carcharias taurus	Grey nurse shark	N/A	Migratory	Marine	Threatened Species - Vulnerable	Critically Endangered as *Carcharias taurus* (Sand Tiger Shark)	N/A	N/A	Species or species habitat may occur within area	Species or species habitat likely to occur in area	
Carcharias taurus (west coast population)	Grey nurse shark	Vulnerable	N/A	Marine	N/A	Near threatened	Species or species habitat may occur in area	Species or species habitat likely to occur in area	Species or species habitat may occur within area	Congregation or aggregation known to occur in area	
Carcharodon carcharias	White shark	Vulnerable	Migratory	Marine	Threatened Species - Vulnerable	Vulnerable	Species or species habitat may occur in area	Species or species habitat may occur in area	Species or species habitat may occur within area	Species or species habitat known to occur in area	
Isurus oxyrinchus	Shortfin mako	N/A	Migratory	Marine	Specially Protected – Migratory Species	Endangered	Species or species habitat likely to occur in area	Species or species habitat likely to occur in area	Species or species habitat likely to occur within area	Species or species habitat likely to occur in area	
Isurus paucus	Longfin mako shark	N/A	Migratory	Marine	Specially Protected – Migratory Species	Endangered	Species or species habitat likely to occur in area	Species or species habitat likely to occur in area	Species or species habitat likely to occur within area	Species or species habitat likely to occur in area	
Lamna nasus	Porbeagle, mackerel shark	N/A	Migratory	Marine	Specially Protected – Migratory Species	Vulnerable	N/A	N/A	N/A	Species or species habitat may occur in area	
Mobula alfredi	Reef manta ray	N/A	Migratory	Marine	Specially Protected – Migratory Species	Vulnerable	Species or species habitat likely to occur in area	Species or species habitat likely to occur in area	Species or species habitat likely to occur within area	Species or species habitat known to occur in area	

[2] *Threatened and Priority Fauna List – https://www.dbca.wa.gov.au/management/threatened-species-and-communities.*

[3] *IUCN. 2024. The IUCN Red List of Threatened Species. Version 2024-1. https://www.iucnredlist.org.*

Species name	Common name	*Environment Protection and Biodiversity Conservation Act 1999* (as per PMST report Appendix D)			*WA Biodiversity Conservation Act 2016*[2]	IUCN Red List of Threatened Species (non-statutory)[3]	Potential for interaction				EPBC Act Part 13 Statutory Instrument
		Threatened status	*Migratory status*	*Listed*	*Conservation status*	*Global status*	*Operational Area A*	*Operational Area B*	*Operational Area C*	*EMBA*	
Mobula birostris	Giant manta ray	N/A	Migratory	Marine	Specially Protected – Migratory Species	Endangered	Species or species habitat likely to occur in area	Species or species habitat likely to occur in area	Species or species habitat likely to occur within area	Species or species habitat known to occur in area	
Pristis clavata	Dwarf sawfish	Vulnerable	Migratory	Marine	Specially Protected – Migratory Species	Critically Endangered	N/A	N/A	N/A	Species or species habitat known to occur in area	
Pristis pristis	Freshwater sawfish	Vulnerable	Migratory	Marine	Specially Protected – Migratory Species	Critically Endangered	Species or species habitat may occur in area	Species or species habitat may occur in area	Species or species habitat may occur within area	Species or species habitat likely to occur in area	
Pristis zijsron	Green sawfish	Vulnerable	Migratory	Marine	Threatened Species - Vulnerable	Critically Endangered	Species or species habitat known to occur in area	Species or species habitat known to occur in area	Species or species habitat known to occur within area	Species or species habitat known to occur in area	
Rhincodon typus	Whale shark	Vulnerable	Migratory	Marine	Specially Protected – Migratory Species	Endangered	Foraging, feeding or related behaviour known to occur in area	Foraging, feeding or related behaviour known to occur in area	Species or species habitat known to occur within area	Foraging, feeding or related behaviour known to occur in area	
Sphyrna lewini	Scalloped hammerhead shark	Conservation dependent	N/A	Marine	N/A	Critically Endangered	Species or species habitat likely to occur in area	Species or species habitat likely to occur in area	Species or species habitat likely to occur within area	Species or species habitat known to occur in area	

Table 4-5: Fish, shark and ray biologically important areas (BIAs) within the EMBA

Species	BIA type	Approx. distance and direction of BIA from Operational Area A (km)	Approx. distance and direction of BIA from Operational Area B (km)	Approx. distance and direction of BIA from Operational Area C (km)
Whale shark	Foraging (northward from Ningaloo along 200 m isobath)	Overlaps	Overlaps	Overlaps
	Foraging (Ningaloo Marine Park and adjacent Commonwealth waters)	328 km south-west	363 km south-west	295 km south-west

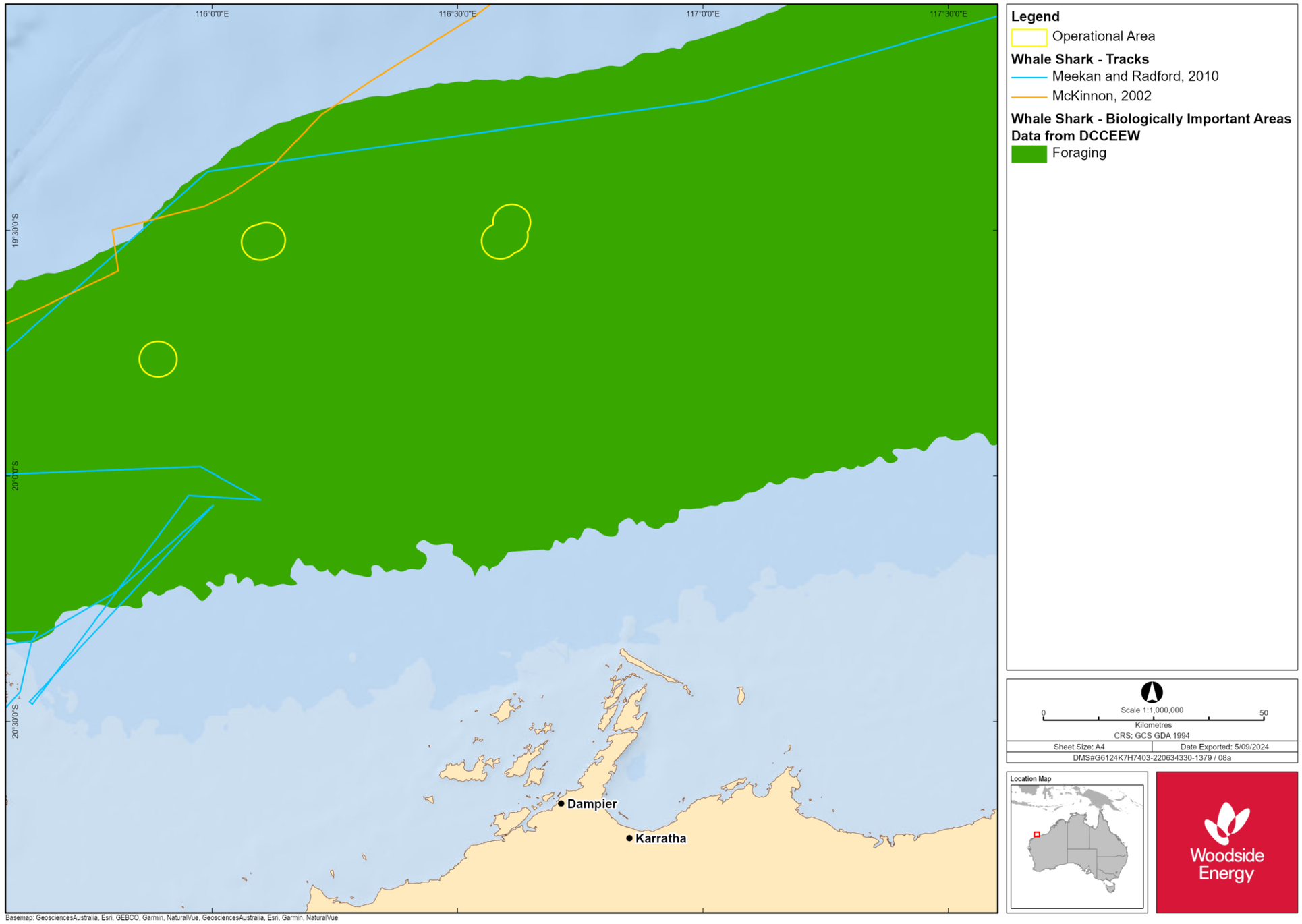

Figure 4-4: Whale shark BIAs overlapping the Operational Areas and EMBA and tagged whale shark satellite tracks between 2005 and 2008 (Meekan and Radford, 2010)

Sources: Meekan and Radford, 2010; McKinnon, 2002.

4.6.2 Marine reptiles

A total of 8 EPBC Act listed threatened and migratory marine reptile species have been identified to potentially occur within the EMBA, of which 6 occur in Operational Area A, 8 occur in Operational Area B, and 6 occur in Operational Area C (Table 4-6). A full list of EPBC Act listed species identified in the PMST search is provided in Appendix D.

BIAs that overlap the EMBA are presented in Figure 4-5 and Table 4-7. Habitat critical overlapping the EMBA is presented in Figure 4-6 and Table 4-8. Operational Area C overlaps with one internesting buffer BIA (Montebello Island - Hermite Island, NW Island, Trimouille Island). Operational Areas A and B do not overlap with any BIAs for marine reptiles, and no Operational Areas overlap with habitats critical for marine turtles (Figure 4-5, Figure 4-6, Table 4-8). Further description of BIAs is provided in Appendix C.

Table 4-6: Threatened and migratory marine reptile species predicted to occur within the Operational Areas and EMBA

Species name	Common name	*Environment Protection and Biodiversity Conservation Act 1999* (as per PMST report Appendix D)			*WA Biodiversity Conservation Act 2016*[4]	IUCN Red List of Threatened Species (non-statutory)[5]	Potential for interaction				EPBC Act Part 13 Statutory Instrument
		Threatened status	*Migratory status*	*Listed*	*Conservation status*	*Global status*	*Operational Area A*	*Operational Area B*	*Operational Area C*	*EMBA*	
Aipysurus apraefrontalis	Short-nosed seasnake	Critically endangered	N/A	Marine	Threatened Species – Critically Endangered	Data Deficient	N/A	Species or species habitat known to occur in area	N/A	Species or species habitat known to occur in area	Refer to Master Existing Environment (Appendix C, Table 6-1)
Aipysurus foliosquama	Leaf-scaled seasnake	Critically endangered	N/A	Marine	Threatened Species – Critically Endangered	Data Deficient	N/A	Species or species habitat likely to occur in area	N/A	Species or species habitat known to occur in area	
Caretta caretta	Loggerhead turtle	Endangered	Migratory	Marine	Threatened Species – Endangered	Vulnerable	Species or species habitat likely to occur in area	Species or species habitat likely to occur in area	Species or species habitat likely to occur within area	Breeding known to occur in area	
Chelonia mydas	Green turtle	Vulnerable	Migratory	Marine	Threatened Species - Vulnerable	Endangered	Species or species habitat likely to occur in area	Species or species habitat likely to occur in area	Species or species habitat likely to occur within area	Breeding known to occur in area	
Dermochelys coriacea	Leatherback turtle	Endangered	Migratory	Marine	Threatened Species - Vulnerable	Vulnerable	Species or species habitat likely to occur in area	Species or species habitat likely to occur in area	Species or species habitat likely to occur within area	Foraging, feeding or related behaviour known to occur in area	
Eretmochelys imbricata	Hawksbill turtle	Vulnerable	Migratory	Marine	Threatened Species - Vulnerable	Critically Endangered	Species or species habitat likely to occur in area	Species or species habitat likely to occur in area	Species or species habitat likely to occur within area	Breeding known to occur in area	
Natator depressus	Flatback turtle	Vulnerable	Migratory	Marine	Threatened Species - Vulnerable	Data Deficient	Congregation or aggregation known to occur in area	Congregation or aggregation known to occur in area	Congregation or aggregation known to occur within area	Breeding known to occur in area	
Crocodylus porosus	Salt-water crocodile	N/A	Migratory	Marine	Specially Protected – Migratory Species	Least Concern	Species or species habitat may occur in area	Species or species habitat may occur in area	Species or species habitat may occur within area	Species or species habitat may occur in area	

[4] *Threatened and Priority Fauna List – https://www.dbca.wa.gov.au/management/threatened-species-and-communities.*

[5] *IUCN. 2024. The IUCN Red List of Threatened Species. Version 2024-1. https://www.iucnredlist.org.*

Table 4-7: Marine turtle BIAs within the EMBA

Species	BIA type	Approx. distance and direction of BIA from Operational Area A (km)	Approx. distance and direction of BIA from Operational Area B (km)	Approx. distance and direction of BIA from Operational Area C (km)
Flatback turtle	Internesting buffer (80 Mile Beach)	306 km south-east	255 km south-east	327 km south-east
	Nesting, foraging, mating (Barrow Island)	139 km south-west	168 km south-west	104 km south-west
	Foraging, internesting, mating, aggregation (Coral reef habitat west of the Montebello group. Extends the entire length of Montebellos)	117 km south-west	150 km south-west	81 km south-west
	Internesting buffer (Dampier Archipelago (islands to the west of the Burrup Peninsula))	40 km south-east	15 km south	27 km south-east
	Foraging (De Grey River area to Bedout Island)	259 km south-east	208 km south-east	281 km south-east
	Internesting buffer (Delambre Island)	58 km south-east	29 km south-east	63 km south-east
	Internesting buffer (Dixon Island)	58 km south-east	29 km south-east	73 km south-east
	Internesting buffer (Intercourse Island)	55 km south-east	43 km south	44 km south-east
	Internesting buffer (Legendre Island, Huay Island)	46 km south-east	16 km south	45 km south-east
	Internesting buffer (Montebello Island – Hermite Island, NW Island, Trimouille Island)	23 km south-west	60 km south-west	Overlaps
	Foraging, mating, nesting (Montebello Island – Hermite Island, NW Island, Trimouille Island)	103 km south-west	137 km south-west	62 km south-west
	Internesting buffer (North Turtle Island)	206 km south-east	154 km south-east	230 km south-east
	Internesting buffer (Port Hedland, Paradise Beach)	206 km south-east	153 km south-east	221 km south-east
	Foraging (string of islands between Cape Preston and Onslow, inshore of Barrow Is)	138 km south	148 km south-west	113 km south-west
	Internesting buffer (Thevenard Island – South coast)	135 km south-west	161 km south-west	96 km south-west
	Nesting (Thevenard Island – South coast)	213 km south-west	239 km south-west	180 km south-west
	Internesting buffer (west of Cape Lambert)	81 km south-east	47 km south-east	79 km south-east
Green turtle	Internesting (Barrow Island)	139 km south-west	169 km south-west	103 km south-west
	Foraging, mating, aggregation, internesting (coral reef habitat west of the Montebello group; extends the entire length of Montebellos)	116 km south-west	150 km south-west	81 km south-west
	Foraging (De Grey River area to Bedout Is)	258 km south-east	208 km south-east	279 km south-east
	Foraging (inshore tidal and shallow subtidal areas around Barrow Island)	138 km south-west	168 km south-west	105 km south-west
	Nesting, mating, basking (Middle Is. West Coast Barrow Island West Coast and North Coast)	138 km south-west	168 km south-west	103 km south-east
	Internesting buffer (Middle Is. West Coast Barrow Island West Coast and North Coast)	118 km south-west	148 km south-west	84 km south-west
	Internesting buffer (Montebello Is – Hermite Is, NW Is, Trimouille Is)	84 km south-west	119 km south-west	68 km south-west
	Foraging, mating, nesting (Montebello Is – Hermite Is, NW Is, Trimouille Is)	103 km south-west	137 km south-west	68 km south-west
	Foraging, mating, nesting, internesting (Montebello Islands)	98 km south-west	131 km south-west	63 km south-west
	Internesting buffer (Montebello Islands)	78 km south-west	115 km south-west	44 km south-west
	Nesting (North and South Muiron Is)	290 km south-west	324 km south-west	254 km south-west
	Internesting buffer (North and South Muiron Is)	269 km south-west	302 km south-west	232 km south-west
	Nesting (North West Cape)	317 km south-west	349 km south-west	282 km south-west
	Internesting buffer (North West Cape)	295 km south-west	329 km south-west	262 km south-west
	Foraging (string of islands between Cape Preston and Onslow, inshore of Barrow Is)	139 km south-west	148 km south-west	113 km south-west
Hawksbill turtle	Internesting buffer (Ah chong and South East Is)	88 km south-west	120 km south-west	55 km south-west
	Nesting (Ah chong and South East Is)	107 km south-west	138 km south-west	74 km south-west
	Internesting buffer (Barrow Island)	117 km south-west	147 km south-west	83 km south-west

Species	BIA type	Approx. distance and direction of BIA from Operational Area A (km)	Approx. distance and direction of BIA from Operational Area B (km)	Approx. distance and direction of BIA from Operational Area C (km)
	Mating and nesting (Barrow Island)	138 km south-west	167 km south-west	106 km south-west
	Foraging (De Grey River area to Bedout Is)	259 km south-east	209 km south-east	280 km south-east
	Foraging (shallow water coral reef and artificial reef (pipeline) habitat)	138 km south-west	167 km south-west	105 km south-west
	Internesting buffer (Lowendal Island Group)	107 km south-west	138 km south-west	74 km south-west
	Foraging, nesting, internesting, mating (Lowendal Island Group)	102 km south-west	136 km south-west	93 km south-west
	Internesting buffer (Montebello Is – Hermite Is, NW Is, Trimouille Is)	84 km south-west	121 km south-west	50 km south-west
	Foraging, mating, nesting (Montebello Is – Hermite Is, NW Is, Trimouille Is)	96 km south-west	137 km south-west	68 km south-west
	Internesting buffer (Montebello Is, Trimoulle and NW islands)	99 km south-west	131 km south-west	65 km south-west
	Nesting (Montebello Is, Trimoulle and NW islands)	119 km south-west	149 km south-west	85 km south-west
	Internesting buffer (Ningaloo coast and Jurabi coast)	297 km south-west	334 km south-east	264 km south-west
	Nesting (Ningaloo coast and Jurabi coast)	316 km south-west	350 km south-west	281 km south-west
	Foraging (String of islands between Cape Preston and Onslow, inshore of Barrow Is)	138 km south-west	148 km south-west	113 km south-west
	Nesting (Thevenard Island)	236 km south-west	263 km south-west	202 km south-west
	Internesting buffer (Thevenard Island)	215 km south-west	248 km south-west	182 km south-west
	Nesting (Varanus Island)	131 km south-west	158 km south-west	98 km south-west
	Internesting buffer (Varanus Island)	111 km south-west	139 km south-west	78 km south-west
Loggerhead turtle	Foraging (De Grey River area to Bedout Is)	259 km south-east	208 km south-east	280 km south-east
	Internesting buffer (Lowenthal Island)	110 km south-west	139 km south-west	77 km south-west
	Nesting (Lowenthal Island)	130 km south-west	158 km south-west	96 km south-west
	Nesting (Montebello Islands)	111 km south-west	143 km south-west	77 km south-west
	Internesting buffer (Montebello Islands)	92 km south-west	126 km south-west	58 km km south-west
	Nesting (Muiron Island)	287 km south-west	320 km south-west	252 km south-west
	Internesting buffer (Muiron Island)	267 km south-west	301 km south-west	234 km south-west
	Internesting buffer (Ningaloo coast and Jurabi coast)	297 km south-west	331 km south-west	264 km south-west
	Nesting (Ningaloo coast and Jurabi coast)	317 km south-west	351 km south-west	281 km south-west

Table 4-8: Internesting habitat critical to the survival of marine turtle species predicted to occur within the Operational Areas and EMBA

Species	Genetic stock	Nesting locations	Approx. distance and direction from Operational Area A (km)	Approx. distance and direction from Operational Area B (km)	Approx. distance and direction from Operational Area C (km)	Internesting buffer	Nesting period	Hatching period
Green turtle	North West Cape	Exmouth Gulf and Ningaloo coast	295 km south-west	328 km south-west	41 km south-east	20 km	Nov to Mar (peak: Dec to Feb)	Jan to May (peak: Feb to Mar)
		Barrow Island, Montebello Islands, Serrurier Island and Thevenard Island	87 km south-west	122 km south-west	12 km south-west			
Loggerhead turtle	Western Australia	Exmouth Gulf and Ningaloo coast	295 km south-west	328 km south-west	265 km south-west	20 km	Nov to Mar (peak: Jan)	Dec to April
Flatback turtle	Pilbara	Dampier Archipelago, including Delambre Island and Huay Island	54 km south-east	31 km south-east	52 km south-west	60 km	Oct to Mar (peak: Feb to Mar)	Oct to Mar
		Barrow Island, Montebello Islands, coastal islands from Cape Preston to Locker Island	46 km south-west	78 km south-west	55 km south-west			
Hawksbill turtle	Western Australia	Cape Preston to mouth of Exmouth Gulf including Montebello Islands and Lowendal Islands	87 km south-west	122 km south-west	265 km south-west	20 km	All year (peak: Oct to Feb)	All year (peak: Dec to Feb)
Leatherback turtle	No overlap – nesting located in Northern Territory and North Queensland							
Olive Ridley turtle	No overlap – nesting located in Northern Australia and North Queensland							

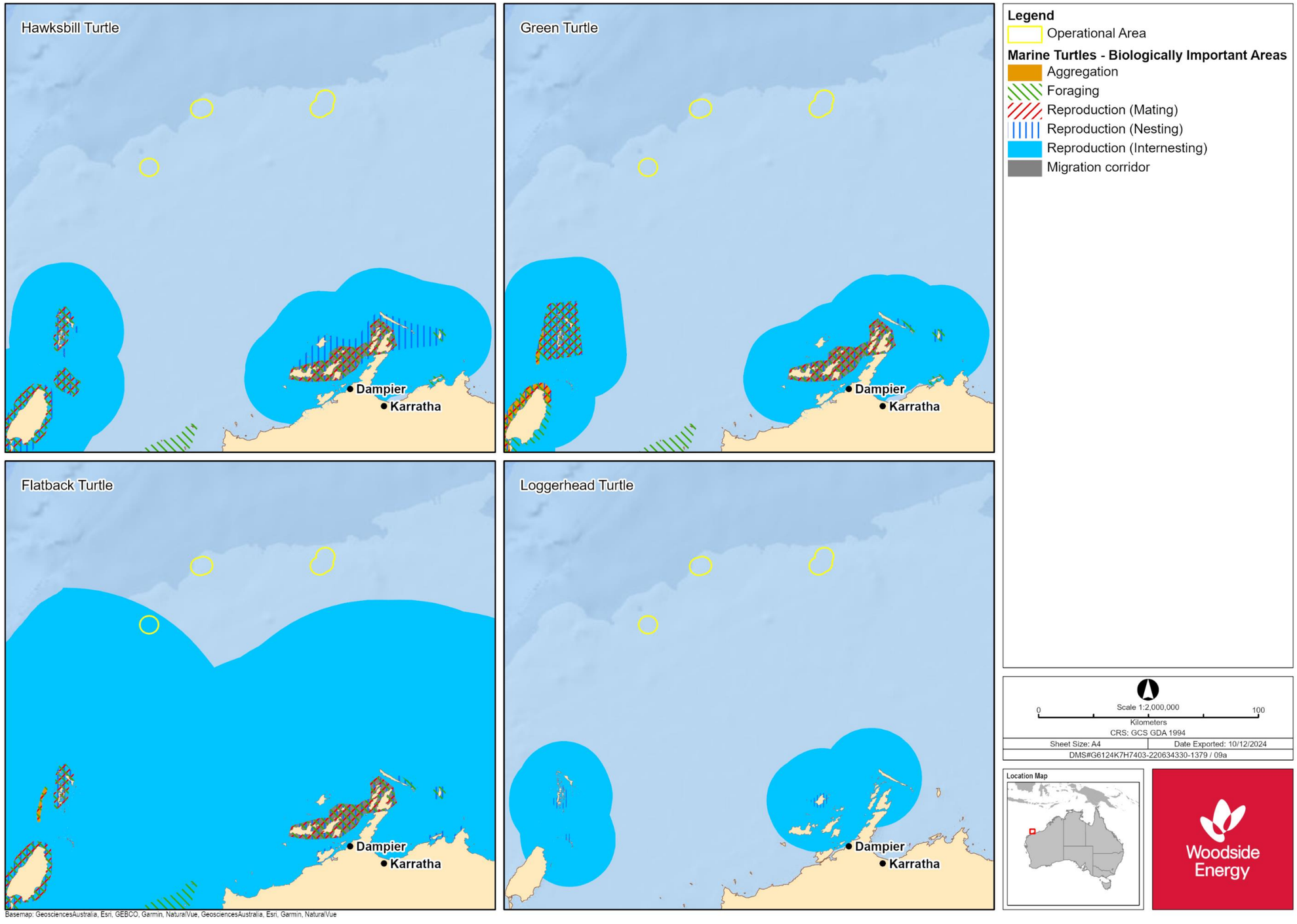

Figure 4-5: Marine reptile BIAs overlapping the Operational Areas or EMBA

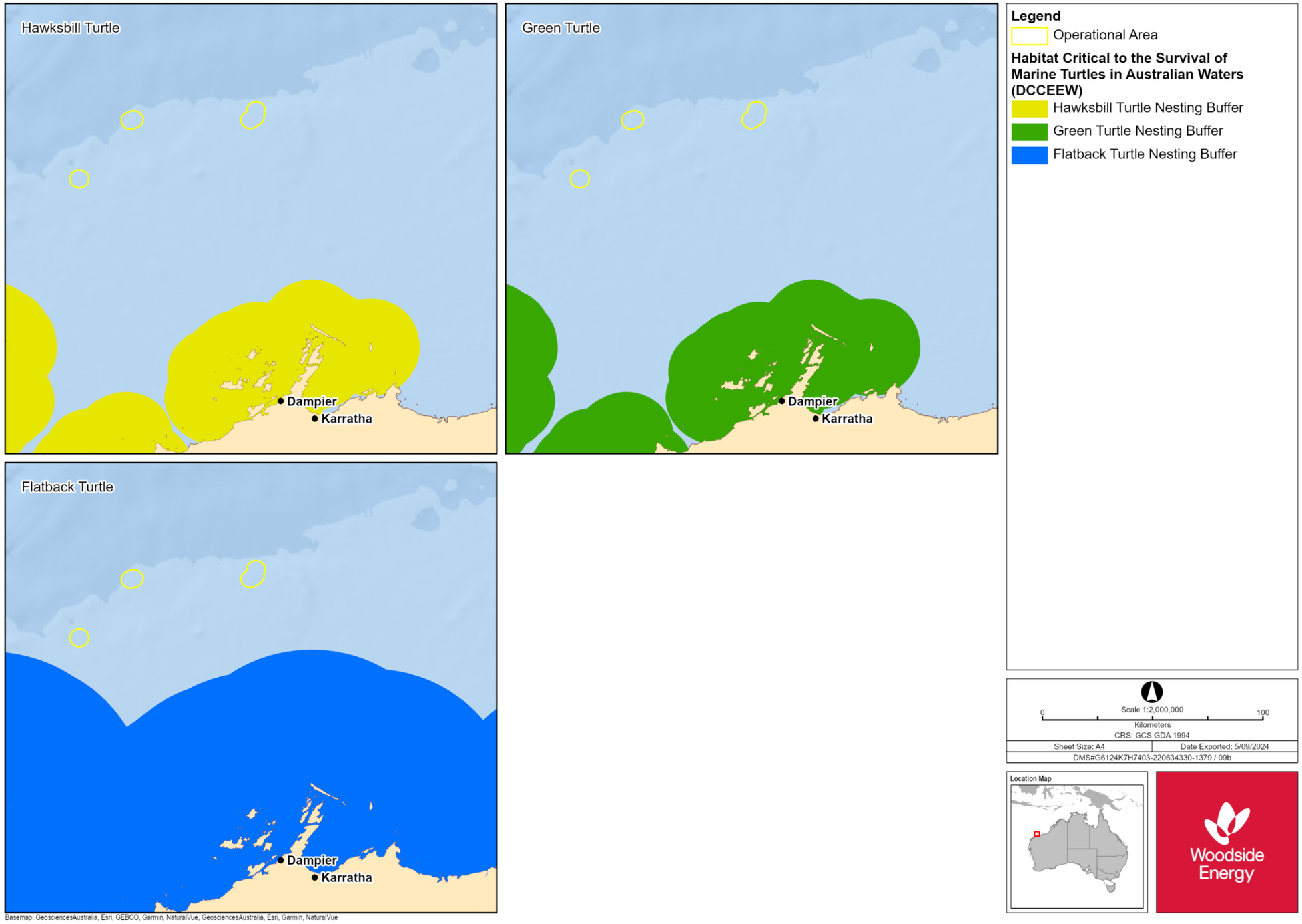

Figure 4-6: Habitat critical to the survival of marine turtles overlapping the EMBA

4.6.3 Marine mammals

A total of 13 EPBC Act listed threatened and migratory marine mammal species have been identified to potentially occur within the EMBA, of which eight occur in Operational Area A and B, and nine occur in Operational Area C (Table 4-9). A full list of EPBC Act listed species identified in the PMST search is provided in Appendix D.

BIAs that overlap the EMBA are presented in Table 4-10, Figure 4-7, Figure 4-8 and Figure 4-9. Further description of BIAs is provided in Appendix C.

The southern right whale is the only marine mammal which has habitat critical to the survival (HCTS) of a species defined, a description of this is also provided in Appendix C.

Table 4-9: Threatened and migratory marine mammal species predicted to occur within the Operational Areas and EMBA

Species name	Common name	*Environment Protection and Biodiversity Conservation Act 1999* (as per PMST report Appendix D)			*WA Biodiversity Conservation Act 2016*[6]	IUCN Red List of Threatened Species (non-statutory)[7]	Potential for interaction				EPBC Act Part 13 Statutory Instrument
		Threatened status	*Migratory status*	*Listed*	*Conservation status*	*Global status*	*Operational Area A*	*Operational Area B*	*Operational Area C*	*EMBA*	
Balaenoptera bonaerensis	Antarctic minke whale	N/A	Migratory	Cetacean	Specially Protected – Migratory Species	Near Threatened	N/A	N/A	N/A	Species or species habitat likely to occur in area	Refer to Master Existing Environment (Appendix C, Table 7-1)
Balaenoptera borealis	Sei whale	Vulnerable	Migratory	Cetacean	Threatened Species - Endangered	Endangered	Species or species habitat likely to occur in area	Species or species habitat likely to occur in area	Species or species habitat likely to occur within area	Foraging, feeding or related behaviour likely to occur in area	
Balaenoptera edeni	Bryde's whale	N/A	Migratory	Cetacean	Specially Protected – Migratory Species	Least Concern	Species or species habitat likely to occur in area	Species or species habitat likely to occur in area	Species or species habitat likely to occur within area	Species or species habitat likely to occur in area	
Balaenoptera musculus	Blue whale	Endangered	Migratory	Cetacean	Threatened Species - Endangered	Endangered	Migration route known to occur in area	Species or species habitat likely to occur in area	Species or species habitat likely to occur within area	Migration route known to occur in area	
Balaenoptera physalus	Fin whale	Vulnerable	Migratory	Cetacean	Threatened Species - Endangered	Vulnerable	Species or species habitat likely to occur in area	Species or species habitat likely to occur in area	Species or species habitat likely to occur within area	Foraging, feeding or related behaviour likely to occur in area	
Dugong dugon	Dugong	N/A	Migratory	Marine	Specially Protected – Migratory Species	Vulnerable	N/A	N/A	N/A	Breeding known to occur in area	
Eubalaena australis	Southern right whale	Endangered	Migratory	Cetacean	Threatened Species - Vulnerable	Least Concern	N/A	N/A	N/A	Species or species habitat likely to occur in area	
Megaptera novaeangliae	Humpback whale	N/A	Migratory	Cetacean	Specially Protected – Migratory Species	Least Concern	Breeding known to occur in area	Breeding known to occur in area	Breeding known to occur within area	Breeding known to occur in area	
Orcaella heinsohni	Australian snubfin dolphin	N/A	Migratory	Cetacean	Specially Protected – Migratory Species	Vulnerable	N/A	N/A	Species or species habitat known to occur within area	Species or species habitat known to occur in area	

[6] *Threatened and Priority Fauna List – https://www.dbca.wa.gov.au/management/threatened-species-and-communities.*

[7] *IUCN. 2024. The IUCN Red List of Threatened Species. Version 2024-1. https://www.iucnredlist.org.*

Species name	Common name	*Environment Protection and Biodiversity Conservation Act 1999* (as per PMST report Appendix D)			*WA Biodiversity Conservation Act 2016*[6]	IUCN Red List of Threatened Species (non-statutory)[7]	Potential for interaction				EPBC Act Part 13 Statutory Instrument
		Threatened status	*Migratory status*	*Listed*	*Conservation status*	*Global status*	*Operational Area A*	*Operational Area B*	*Operational Area C*	*EMBA*	
Orcinus orca	Killer whale, orca	N/A	Migratory	Cetacean	Specially Protected – Migratory Species	Data Deficient	Species or species habitat may occur in area	Species or species habitat may occur in area	Species or species habitat may occur within area	Species or species habitat may occur in area	
Physeter macrocephalus	Sperm whale	N/A	Migratory	Cetacean	Threatened Species - Vulnerable	Vulnerable	Species or species habitat may occur in area	Species or species habitat may occur in area	Species or species habitat may occur within area	Species or species habitat may occur in area	
Sousa sahulensis	Australian Humpback Dolphin	N/A	Migratory (as *Sousa chinensis*)	Cetacean	Specially Protected – Migratory Species	Vulnerable	N/A	N/A	N/A	Species or species habitat known to occur within area	
Tursiops aduncus	Spotted bottlenose dolphin (Arafura/ Timor Sea populations)	N/A	Migratory	Cetacean	N/A	Near Threatened as Indo-Pacific Bottlenose Dolphin	Species or species habitat may occur in area	Species or species habitat may occur in area	Species or species habitat may occur within area	Species or species habitat known to occur in area	

Table 4-10: Marine mammal BIAs within the Operational Areas and EMBA

Species	BIA type	Approx. distance and direction of BIA from Operational Area A (km)	Approx. distance and direction of BIA from Operational Area B (km)	Approx. distance and direction of BIA from Operational Area C (km)
Dugong	Foraging (high density seagrass beds) (Exmouth Gulf)	288 km south-west	316 km south-west	276 south-west
	Breeding (Exmouth Gulf)			
	Nursing (Exmouth Gulf)			
	Calving (Exmouth Gulf)			
Humpback whale	Resting (Exmouth Gulf)	296 km south-west	325 km south-west	263 km south-west
	Migration (north and south) (the migration corridor extends from the coast to out to approximately 100 km 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)	43 km south	34 km south	23 km south
Southern right whale	Migration south of Ningaloo along Australian coastline between April to October extending up to the Exmouth Gulf reproduction BIA	312 km south-west	348 km south-west	279 km south-west
	Reproduction BIA and Habitat critical to the survival (Ningaloo and Exmouth Gulf)	295 km south-west	323 km south-west	260 km south-west
Pygmy blue whale	Migration (Augusta to Derby. Tend to pass along the shelf edge at depths of 500 m to 1000 m; appear close to coast in the Exmouth-Montebello Islands area on southern migration)	34 km north	47 km north	39 km north
	Foraging (Possible foraging areas off Ningaloo and Scott Reef)	337 km south-west	375 km south-west	303 km south-west

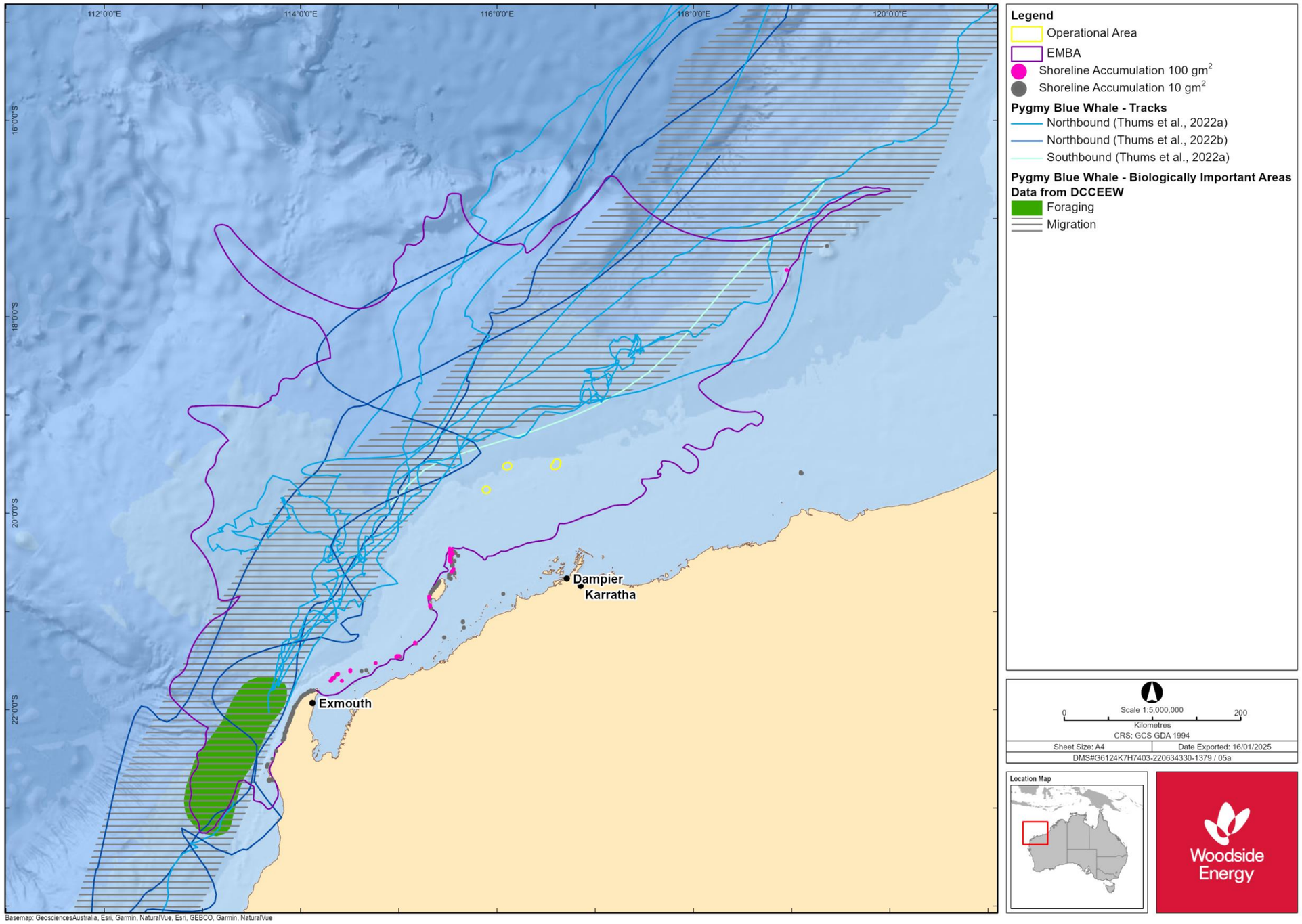

Figure 4-7: Pygmy blue whale BIAs in proximity to the Operational Areas and tagged whale tracks for northbound migration

Sources: Double et al., 2014; Möller et al., 2020; Thums et al., 2022a; Thums et al 2022b

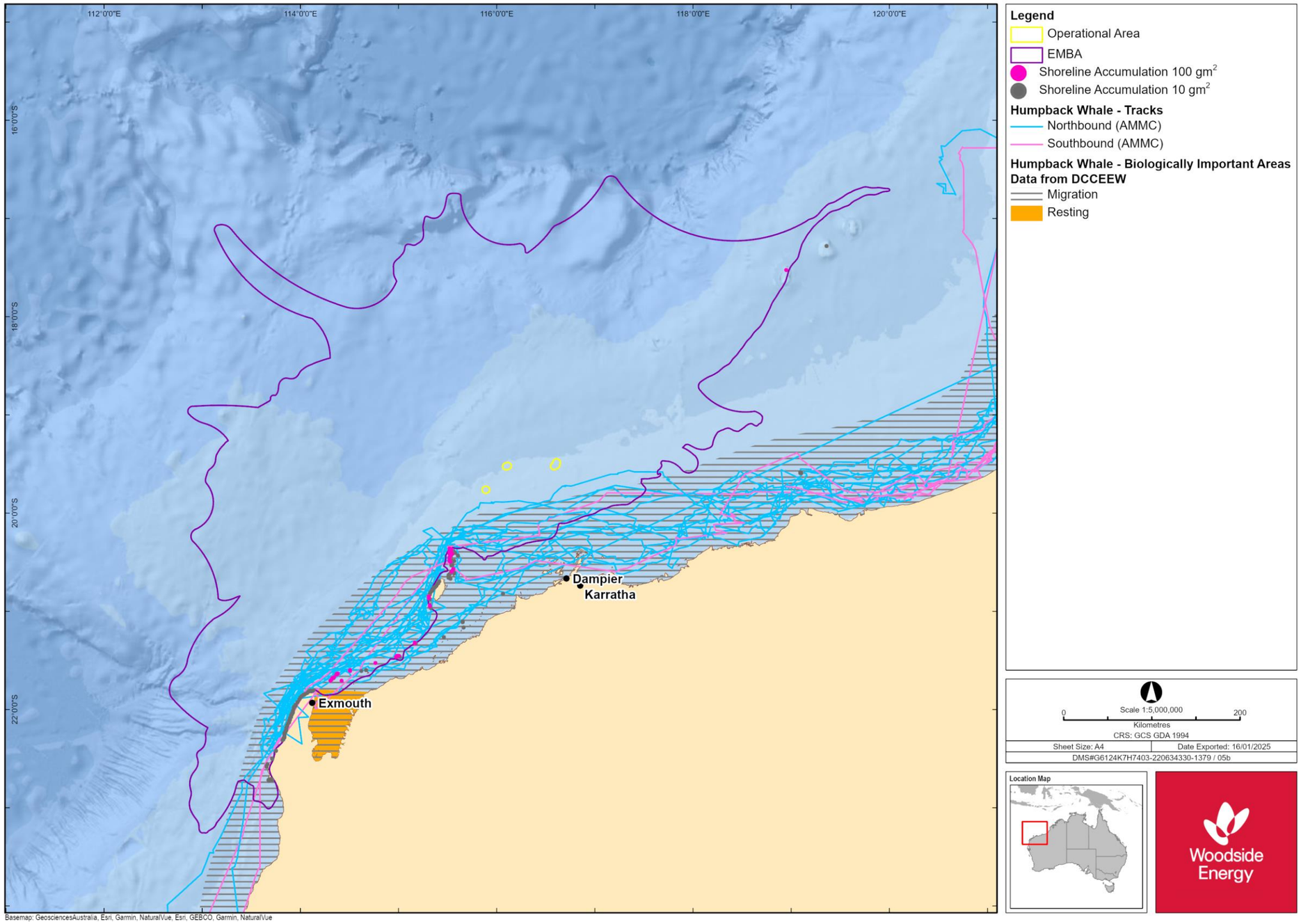

Figure 4-8: Humpback whale BIAs in proximity to the Operational Areas and tagged tracks

Source: Double et al., 2012, 2010

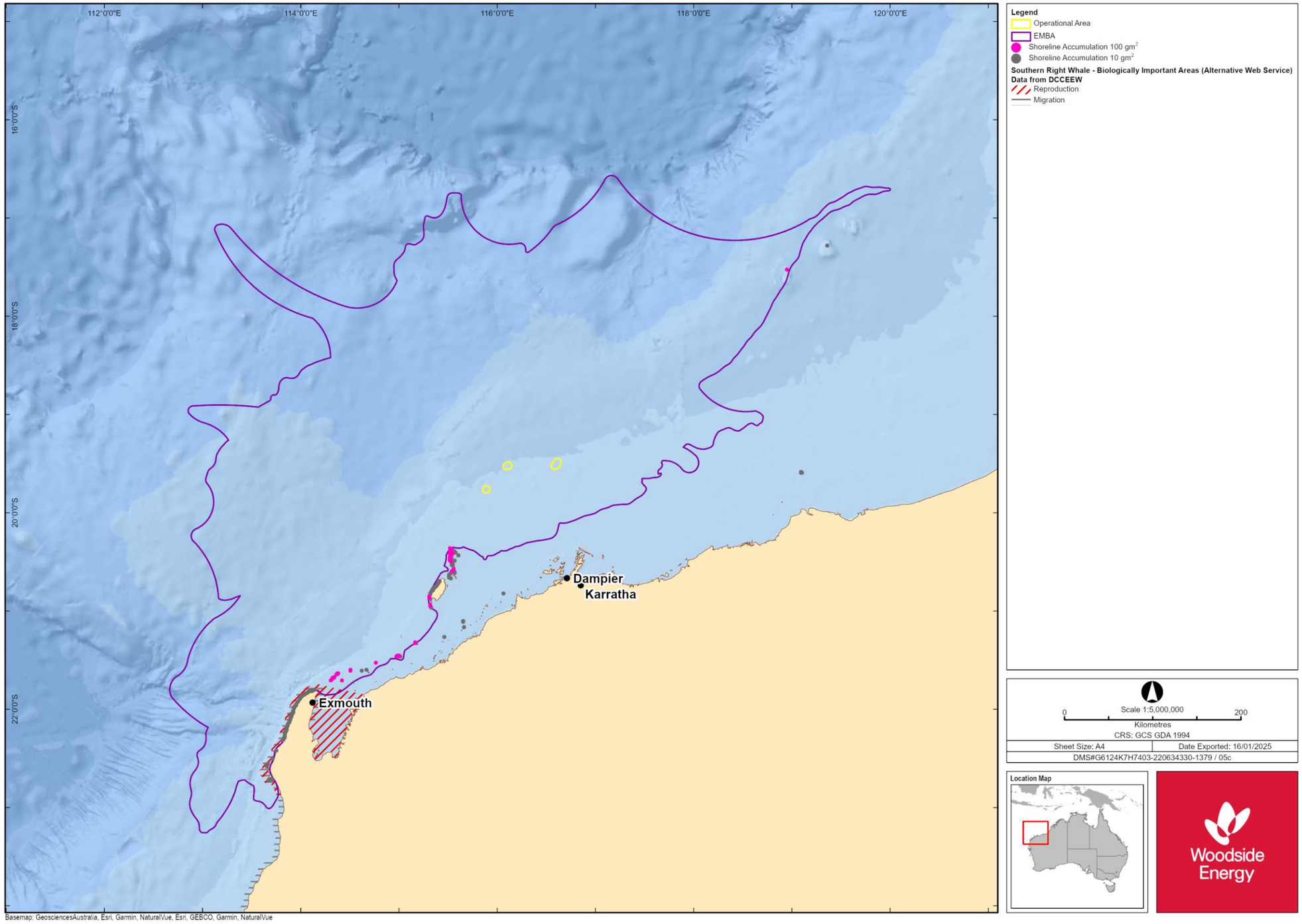

Figure 4-9: Southern right whale BIAs in proximity to the Operational Areas.

Source: DCCEEW, 2024b

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 13 occur in Operational Area A, 14 occur in Operational Area B, and 13 occur in Operational Area C (Table 4-11). A full list of EPBC Act listed species identified in the PMST search is provided in Appendix D.

BIAs that overlap the EMBA are presented in Table 4-12 and Figure 4-10. Operational Area A does not overlap any BIAs, however Operational Areas B and C overlap the breeding, foraging and breeding area BIA for Wedge-tailed Shearwaters, and Operational Area C also overlaps another breeding, foraging and breeding area BIA for Wedge-tailed Shearwaters (Table 4-12, Figure 4-10).

Detailed descriptions of seabirds and migratory shorebirds within the EMBA are provided in the Master Existing Environment (Appendix C). Descriptions of additional species identified in the PMST search that are not described in the Master Existing Environment are provided in Sections 4.6.4.1 to 4.6.4.3.

4.6.4.1 Southern Giant Petrel

The Southern Giant Petrel (*Macronectes giganteus*) is listed as endangered under the EBPC Act and listed as a migratory species under the BC Act. The total population of the Southern Giant-Petrel breeding in Australian territory is around 7090 breeding pairs (EABG 2001, Woehler et al. 2001; Woehler et al. in press). There were 2,293 breeding pairs of the Southern Giant-Petrel on Macquarie Island when it was censused in the period 1998 to 1999, and the population was considered to be decreasing. There were 3,154 breeding pairs on Heard Island when this was censused in the period 1987 to 1988. There were 1400 breeding pairs on McDonald Island in the Southern Ocean when it was censused in 1979. Giganteus Island, Hawker Island, and Frazier Island in the Australian Antarctic Territories respectively supported three, 25 and 215 breeding pairs of Southern Giant-Petrels when they were censused in 1998 to 1999. The population of Giganteus Island was considered to be stable, and the populations of Hawker Island and Frazier Island were considered to be increasing (EABG 2001, Woehler et al. 2001; Woehler et al. in press).

The Southern Giant-Petrel breeds annually. Pairs return to their breeding sites in August and September, forming dispersed colonies of ten to 300 pairs. On Macquarie Island, nests are normally about 3 m apart (Marchant & Higgins 1990). The egg is usually laid between September and October, and hatches 59 days later (Burger 1978; Johnstone 1978). At Macquarie Island, however, the egg is typically laid between the 20th of August and the 6th of September, and hatching occurs between the 25th of October and the 12th of November, and if successful, fledging occurs at 115 days of age between late January and late March (Gales et al. in press).

A joint State and Federal Government study commissioned by the Natural Heritage Trust is studying the movements of both Northern and Southern Giant-Petrels nesting on Macquarie Island using satellite tracking. This study represents the first satellite tracking of these species in Australian waters and complements existing satellite tracking data obtained for Giant Petrels at South Georgia (British Antarctic Survey) and Palmer Station, Antarctica (DEH 2006).

Although this species or species habitat may occur within the EMBA, no BIA's for the Southern giant petrel overlap with the Operational Areas or EMBA.

4.6.4.2 Abbott's Booby

The Abbott's Booby (*Papasula abbotti*) is listed as endangered under the EBPC Act and under the BC Act. Currently, Abbott's Booby is only known to breed on Christmas Island (Stokes 1988) and to forage in the waters surrounding the island (Becking 1976).

In 1967, the breeding population on Christmas Island was estimated at 2,300 pairs (Nelson 1971). In 1979 and 1980, the breeding population was resurveyed and although numbers were not estimated, they found that the distribution of nests had not changed significantly from that of 1967, despite large areas of habitat clearance (Powell & Tranter 1981). The most recent population survey carried out in 1991 estimated the population at 2,500 pairs (Yorkston & Green 1997). Although this is greater than that estimated by Nelson, this survey covered much more of the island and discovered nests in areas not previously known.

Abbott's Boobies are thought to be very long lived, and from breeding data it has been estimated that it would take between 24 and 31 years for parents to produce their replacements (Nelson & Powell 1986; Reville et al. 1990a). They probably first breed at eight years of age and the average life span could be around 40 years (Reville et al. 1990a). Abbott's Booby lays a single egg clutch (Marchant & Higgins 1990). The mean period from hatching to fledging is 151 days (range 140 to 175 days, sample size 11), 30 to 60 days longer than in other Sulidae (gannets and boobies). Breeding commences in March, when established pairs begin returning to nest sites and start collecting nest material (Nelson & Powell 1986). Laying may occur at any time between April and October, but most birds lay between mid May and mid July (Nelson & Powell 1986).

Although this species or species habitat may occur within the EMBA, no BIA's for the Abbott's Booby overlap with the Operational Areas or EMBA.

4.6.4.3 Indian Yellow-nosed Albatross

The Indian yellow-nosed albatross (*Thalassarche carteri*) is listed as vulnerable under the EBPC Act and endangered under the BC Act. The Indian Yellow-nosed Albatross forages mostly in the southern Indian Ocean where it is particularly abundant off Western Australia (Marchant & Higgins 1990). The current global population of the Indian Yellow-nosed Albatross is estimated at 160 000-180 000 individuals, with 36 500 pairs breeding annually (Gales 1998). The species breeds on Prince Edward Islands (South Africa), Kerguelen Islands, Crozet Island, Amsterdam and St Paul Islands (France) (Gales 1998).

The age at first breeding of the Indian Yellow-nosed Albatross is probably five years (Jouventin et al. 1983). The Indian Yellow-nosed Albatross nests biennially in colonies (Environment Australia 1999), but little is known about their nesting biology. Adult birds arrive at Amsterdam Island in late August and there is a pre-breeding period of 15 to 20 days during which courtship and pair formation takes place (Richardson 1984). A single egg is laid mid-September and is incubated by both sexes. There is no data on the length of shifts, but the total incubation period is 71 to 72 days (Jouventin et al. 1983). The eggs hatch in late November to early December (Serventy et al. 1971). Both parents guard the chick continually for the first three weeks and feed chicks until time of fledging in late March to mid-April (Environment Australia 1999; Garnett & Crowley 2000;).

Although this species or species habitat is likely to occur within the EMBA, no BIA's for the Indian yellow-nosed albatross overlap with the Operational Areas or EMBA.

Table 4-11: Threatened and migratory seabird and migratory shorebird species predicted to occur within the Operational Areas and EMBA

Species name	Common name	*Environment Protection and Biodiversity Conservation Act 1999* (as per PMST report Appendix D)			*WA Biodiversity Conservation Act 2016*[8]	IUCN Red List of Threatened Species (non-statutory)[9]	Potential for interaction				EPBC Act Part 13 Statutory Instrument
		Threatened status	*Migratory status*	*Listed*	*Conservation status*	*Global status*	*Operational Area A*	*Operational Area B*	*Operational Area C*	*EMBA*	
Actitis hypoleucos	Common sandpiper	N/A	Migratory	Marine	Specially Protected – Migratory Species	Least Concern	Species or species habitat may occur in area	Species or species habitat may occur in area	Species or species habitat may occur within area	Species or species habitat known to occur in area	Refer to Master Existing Environment (Appendix C, Table 8-1)
Anous stolidus	Common noddy	N/A	Migratory	Marine	Specially Protected – Migratory Species	Least Concern (as Brown Noddy)	Species or species habitat may occur in area	Species or species habitat may occur in area	Species or species habitat may occur within area	Species or species habitat likely to occur in area	
Apus pacificus	Fork-tailed swift	N/A	Migratory	Marine - overfly marine area	Specially Protected – Migratory Species	Least Concern (as Pacific Swift)	N/A	N/A	N/A	Species or species habitat likely to occur in area	
Ardenna carneipes	Flesh-footed shearwater	N/A	Migratory	Marine (as *Puffinus carneipes*)	Threatened Species - Vulnerable	Near Threatened	N/A	N/A	N/A	Species or species habitat likely to occur in area	
Ardenna pacifica	Wedge-tailed shearwater	N/A	Migratory	Marine (as *Puffinus pacificus*)	Specially Protected – Migratory Species	Least Concern	N/A	N/A	N/A	Breeding known to occur in area	
Calidris acuminata	Sharp-tailed sandpiper	Vulnerable	Migratory	Marine	Specially Protected – Migratory Species	Vulnerable	Species or species habitat may occur in area	Species or species habitat may occur in area	Species or species habitat may occur within area	Species or species habitat known to occur in area	
Calidris canutus	Red knot	Vulnerable	Migratory	Marine - overfly marine area	Threatened Species - Endangered	Near Threatened	Species or species habitat may occur in area	Species or species habitat may occur in area	Species or species habitat may occur within area	Species or species habitat known to occur in area	
Calidris ferruginea	Curlew sandpiper	Critically Endangered	Migratory	Marine - overfly marine area	Threatened Species – Critically Endangered	Near Threatened	N/A	Species or species habitat may occur in area	N/A	Species or species habitat known to occur in area	
Calidris melanotos	Pectoral sandpiper	N/A	Migratory	Marine - overfly marine area	Specially Protected – Migratory Species	Least Concern	Species or species habitat may occur in area	Species or species habitat may occur in area	Species or species habitat may occur within area	Species or species habitat may occur in area	
Calonectris leucomelas	Streaked shearwater	N/A	Migratory	Marine	Specially Protected – Migratory Species	Near Threatened	Species or species habitat likely to occur in area	Species or species habitat likely to occur in area	Species or species habitat likely to occur within area	Species or species habitat likely to occur in area	
Charadrius leschenaultii	Greater sand plover	Vulnerable	Migratory	Marine	Threatened Species - Vulnerable	Least Concern	N/A	N/A	N/A	Species or species habitat known to occur in area	

[8] *Threatened and Priority Fauna List – https://www.dbca.wa.gov.au/management/threatened-species-and-communities.*

[9] *IUCN. 2024. The IUCN Red List of Threatened Species. Version 2024-1. https://www.iucnredlist.org.*

Species name	Common name	*Environment Protection and Biodiversity Conservation Act 1999* (as per PMST report Appendix D)			*WA Biodiversity Conservation Act 2016*[8]	IUCN Red List of Threatened Species (non-statutory)[9]	Potential for interaction				EPBC Act Part 13 Statutory Instrument
		Threatened status	*Migratory status*	*Listed*	*Conservation status*	*Global status*	*Operational Area A*	*Operational Area B*	*Operational Area C*	*EMBA*	
Charadrius veredus	Oriental plover	N/A	Migratory	Marine - overfly marine area	Specially Protected – Migratory Species	Least Concern	N/A	N/A	N/A	Species or species habitat may occur in area	
Fregata ariel	Lesser frigatebird	N/A	Migratory	Marine	Specially Protected – Migratory Species	Least Concern	Species or species habitat likely to occur in area	Species or species habitat likely to occur in area	Species or species habitat likely to occur within area	Breeding known to occur in area	
Fregata minor	Great frigatebird	N/A	Migratory	Marine	Specially Protected – Migratory Species	Least Concern	Species or species habitat may occur in area	Species or species habitat may occur in area	Species or species habitat may occur within area	Species or species habitat may occur in area	
Glareola maldivarum	Oriental pratincole	N/A	Migratory	Marine - overfly marine area	Specially Protected – Migratory Species	Least Concern	N/A	N/A	N/A	Species or species habitat may occur in area	
Hirundo rustica	Barn Swallow	N/A	Migratory	Marine - overfly marine area	Specially Protected – Migratory Species	Least Concern	N/A	N/A	N/A	Species or species habitat may occur in area	
Hydroprogne caspia	Caspian tern	N/A	Migratory	Marine (as *Sterna caspia*)	Specially Protected – Migratory Species	Least Concern	N/A	N/A	N/A	Breeding known to occur in area	
Limnodromus semipalmatus	Asian dowitcher	Vulnerable	Migratory	Marine - overfly marine area	Specially Protected – Migratory Species	Near Threatened	N/A	N/A	N/A	Species or species habitat known to occur in area	
Limosa lapponica	Bar-tailed godwit	N/A	Migratory	Marine	Specially Protected – Migratory Species	Near Threatened	N/A	N/A	N/A	Species or species habitat known to occur in area	
Limosa lapponica menzbieri	Northern Siberian bar-tailed godwit	Endangered	N/A	N/A	Threatened Species – Critically Endangered	N/A	N/A	N/A	N/A	Species or species habitat known to occur in area	
Macronectes giganteus	Southern giant petrel	Endangered	Migratory	Marine	Specially Protected – Migratory Species	Least Concern	N/A	N/A	N/A	Species or species habitat may occur in area	
Motacilla cinerea	Grey wagtail	N/A	Migratory	Marine - overfly marine area	Specially Protected – Migratory Species	Least Concern	N/A	N/A	N/A	Species or species habitat may occur in area	
Motacilla flava	Yellow wagtail	N/A	Migratory	Marine - overfly marine area	Specially Protected – Migratory Species	Least Concern (as Western Yellow Wagtail)	N/A	N/A	N/A	Species or species habitat may occur in area	
Numenius madagascariensis	Eastern curlew	Critically endangered	Migratory	Marine	Threatened Species – Critically Endangered	Endangered (as Far Eastern Curlew)	Species or species habitat may occur in area	Species or species habitat may occur in area	Species or species habitat may occur in area	Species or species habitat known to occur in area	
Onychoprion anaethetus	Bridled tern	N/A	Migratory	Marine (as *Sterna anaethetus*)	Specially Protected – Migratory Species	Least Concern	N/A	N/A	N/A	Breeding known to occur in area	
Pandion haliaetus	Osprey	N/A	Migratory	Marine	Specially Protected – Migratory Species	Least Concern	N/A	N/A	N/A	Breeding known to occur in area	

Species name	Common name	*Environment Protection and Biodiversity Conservation Act 1999* (as per PMST report Appendix D)			*WA Biodiversity Conservation Act 2016*[8]	IUCN Red List of Threatened Species (non-statutory)[9]	Potential for interaction				EPBC Act Part 13 Statutory Instrument
		Threatened status	*Migratory status*	*Listed*	*Conservation status*	*Global status*	*Operational Area A*	*Operational Area B*	*Operational Area C*	*EMBA*	
Papasula abbotti	Abbott's booby	Endangered	N/A	Marine	N/A	Endangered	N/A	N/A	N/A	Species or species habitat may occur in area	
Phaethon lepturus	White-tailed tropicbird	N/A	Migratory	Marine	Specially Protected – Migratory Species	Least Concern (as *Phaethon lepturus*)	Species or species habitat likely to occur in area	Species or species habitat likely to occur in area	Species or species habitat may occur in area	Breeding known to occur in area	
Phaethon lepturus fulvus	Christmas Island white-tailed tropicbird	Endangered	N/A	Marine	N/A	Least Concern (as *Phaethon lepturus*)	Species or species habitat may occur in area	Species or species habitat may occur in area	Species or species habitat may occur in area	Species or species habitat may occur in area	
Phaethon rubricauda	Red-tailed tropicbird	N/A	Migratory	Marine	Specially Protected – Migratory Species	Least Concern (as *Phaethon rubricauda*)	N/A	N/A	N/A	Breeding known to occur in area	
Phaethon rubricauda westralis	Red-tailed tropicbird (Indian Ocean)	Endangered	N/A	N/A	N/A	Least Concern (as *Phaethon rubricauda*)	Species or species habitat likely to occur in area	Species or species habitat likely to occur in area	Species or species habitat likely to occur in area	Breeding known to occur in area	
Pterodroma mollis	Soft-plumaged petrel	Vulnerable	N/A	Marine	N/A	Least Concern	N/A	N/A	N/A	Foraging, feeding or related behaviour likely to occur in area	
Rostratula australis	Australian painted snipe	Endangered	N/A	Marine - overfly marine area	Threatened Species - Endangered	Endangered	N/A	N/A	N/A	Species or species habitat likely to occur in area	
Sterna dougallii	Roseate tern	N/A	Migratory	Marine	Specially Protected – Migratory Species	Least Concern	N/A	N/A	N/A	Breeding known to occur in area	
Sternula albifrons	Little tern	N/A	Migratory	Marine (as *Sterna albifrons*)	Specially Protected – Migratory Species	Least Concern	N/A	N/A	N/A	Breeding known to occur in area	
Sternula nereis nereis	Australian fairy tern	Vulnerable	N/A	N/A	Threatened Species - Vulnerable	Vulnerable	Species or species habitat may occur in area	Species or species habitat may occur in area	Species or species habitat may occur in area	Breeding known to occur in area	
Sula dactylatra	Masked booby	N/A	Migratory	Marine	Specially Protected – Migratory Species	Least Concern	N/A	N/A	N/A	Breeding known to occur in area	
Sula leucogaster	Brown booby	N/A	Migratory	Marine	Specially Protected – Migratory Species	Least Concern	N/A	N/A	N/A	Breeding known to occur in area	
Thalassarche carteri	Indian yellow-nosed albatross	Vulnerable	Migratory	Marine	Threatened Species - Endangered	Endangered	N/A	N/A	N/A	Species or species habitat may occur in area	
Thalassarche impavida	Campbell albatross	N/A	Migratory	Marine	Threatened Species - Vulnerable	Vulnerable	N/A	N/A	N/A	Species or species habitat may occur in area	
Thalasseus bergii	Greater crested tern	N/A	Migratory	Marine (as *Sterna bergii*)	Specially Protected – Migratory Species	Least Concern	N/A	N/A	N/A	Breeding known to occur in area	
Tringa nebularia	Common greenshank	N/A	Migratory	Marine - overfly marine area	Specially Protected – Migratory Species	Least Concern	N/A	N/A	N/A	Species or species habitat	

Species name	Common name	*Environment Protection and Biodiversity Conservation Act 1999* (as per PMST report Appendix D)			*WA Biodiversity Conservation Act 2016*[8]	IUCN Red List of Threatened Species (non-statutory)[9]	Potential for interaction				EPBC Act Part 13 Statutory Instrument
		Threatened status	*Migratory status*	*Listed*	*Conservation status*	*Global status*	*Operational Area A*	*Operational Area B*	*Operational Area C*	*EMBA*	
										likely to occur in area	

Table 4-12: Seabird and shorebird BIAs within the Operational Areas and EMBA

Species	BIA type	Approx. distance and direction of BIA from Operational Area A (km)	Approx. distance and direction of BIA from Operational Area B (km)	Approx. distance and direction of BIA from Operational Area C (km)
Wedge-tailed shearwater	Breeding (Kimberley, Pilbara and Gascoyne coasts and islands including Ashmore Reef)	7 km south-east	Overlaps	Overlaps
	Breeding (Kimberley, Pilbara and Gascoyne coasts and islands including Ashmore Reef)	112 km south-east	62 km south-east	130 km east
	Breeding (Kimberley, Pilbara and Gascoyne coasts and islands including Ashmore Reef)	127 km south-west	154 km south-west	94 km south-west
	Breeding (Kimberley, Pilbara and Gascoyne coasts and islands including Ashmore Reef)	220 km south-west	248 km south-west	188 km south-west
	Breeding (Kimberley, Pilbara and Gascoyne coasts and islands including Ashmore, breeding area, foraging Reef)	31 km south-west	33 km south-west	Overlaps
	Breeding (Kimberley, Pilbara and Gascoyne coasts and islands including Ashmore Reef)	125 km south-west	160 km south-west	92 km south-west
	Breeding (Kimberley, Pilbara and Gascoyne coasts and islands including Ashmore Reef)	76 km south-east	63 km south-east	74 km south-east
Brown booby	Breeding (Kimberley and northern Pilbara coasts and islands also Ashmore Reef)	259 km south-east	206 km south-east	283 km east
	Breeding (Kimberley, Pilbara and Gascoyne coasts and islands including Ashmore Reef)	296 km east	244 km east	320 km east
Fairy tern	Breeding (Pilbara and Gascoyne coasts and islands)	327 km south-west	362 km south-west	292 km south-west
	Breeding (Pilbara and Gascoyne coasts and islands)	218 km south-west	247 km south-west	184 km south-west
	Breeding (Pilbara and Gascoyne coasts and islands)	98 km south-west	134 km south-west	64 km south-west
	Breeding (Pilbara and Gascoyne coasts and islands)	121 km south	123 km south-west	99 km south-east
	Breeding (Pilbara and Gascoyne coasts and islands)	123 km south-west	153 km south-west	91 km south-west
	Breeding (Pilbara and Gascoyne coasts and islands)	323 km south	368 km south-west	289 km south-west
	Breeding (Pilbara and Gascoyne coasts and islands)	223 km south-west	251 km south-west	189 km south-west
	Breeding (Pilbara and Gascoyne coasts and islands)	103 km south-west	136 km south-west	69 km south-west
	Breeding (Pilbara and Gascoyne coasts and islands)	128km south-west	157 km south-west	96 km south-west
Lesser crested tern	Breeding (Kimberley, Pilbara and Gascoyne coasts and islands including Ashmore Reef)	208 km south-west	239 km south-west	174 km south-west
	Breeding (Kimberley, Pilbara and Gascoyne coasts and islands including Ashmore Reef)	277 km south-east	225 km south-east	300 km south-west

Species	BIA type	Approx. distance and direction of BIA from Operational Area A (km)	Approx. distance and direction of BIA from Operational Area B (km)	Approx. distance and direction of BIA from Operational Area C (km)
	Breeding (Kimberley, Pilbara and Gascoyne coasts and islands including Ashmore Reef)	102 km south-west	134 km south-west	68 km south-west
	Breeding (Kimberley, Pilbara and Gascoyne coasts and islands including Ashmore Reef)	289 km south-east	246 km south-east	322 km east
	Breeding (Kimberley, Pilbara and Gascoyne coasts and islands including Ashmore Reef)	123 km south-west	152 km south-west	90 km south-west
	Breeding (Kimberley, Pilbara and Gascoyne coasts and islands including Ashmore Reef)	229 km south-west	257 km south-west	195 km south-west
Lesser frigatebird	Breeding (Kimberley, Pilbara and Gascoyne coasts and islands including Ashmore Reef)	299 km south-east	248 km south-east	322 km east
	Breeding (Kimberley, Pilbara and Gascoyne coasts and islands including Ashmore Reef)	204 km south-east	151 km south-east	228 km south-west
Little tern	Resting (Kimberley, Pilbara and Gascoyne coasts and islands including Ashmore Reef)	346 km north-east	301 km north-east	381 north-east
Roseate tern	Breeding (Kimberley, Pilbara and Gascoyne coasts and islands including Ashmore Reef)	390 km south-west	426 km south-west	357 km south-west
	Breeding (Kimberley, Pilbara and Gascoyne coasts and islands including Ashmore Reef)	175 km south-west	205 km south-west	142 km south-west
	Breeding (Kimberley, Pilbara and Gascoyne coasts and islands including Ashmore Reef)	94 km south-east	126 km south-east	61 km south-east
	Breeding (Kimberley, Pilbara and Gascoyne coasts and islands including Ashmore Reef)	86 km south-east	77 km south	77 km south-east
	Breeding (Kimberley, Pilbara and Gascoyne coasts and islands including Ashmore Reef)	279 km south-east	227 km south-east	303 km south-east
	Breeding (Kimberley, Pilbara and Gascoyne coasts and islands including Ashmore Reef)	114 km south-east	142 km south-east	81 km south-west
	Breeding (Kimberley, Pilbara and Gascoyne coasts and islands including Ashmore Reef)	299 km south-east	246 km south-east	322 km east
	Breeding (Kimberley, Pilbara and Gascoyne coasts and islands including Ashmore Reef)	408 km south-west	442 km south-west	373 km south-west
	Breeding (Kimberley, Pilbara and Gascoyne coasts and islands including Ashmore Reef)	194 km south-west	222 km south-west	161 km south-west
White-tailed tropicbird	Breeding (Kimberley, Pilbara and Gascoyne coasts and islands including Ashmore Reef)	349 km north-east	305 km north-east	383 km north-east
	Breeding (Kimberley, Pilbara and Gascoyne coasts and islands including Ashmore Reef)	254 km north-east	209 km north-east	287 km north-east

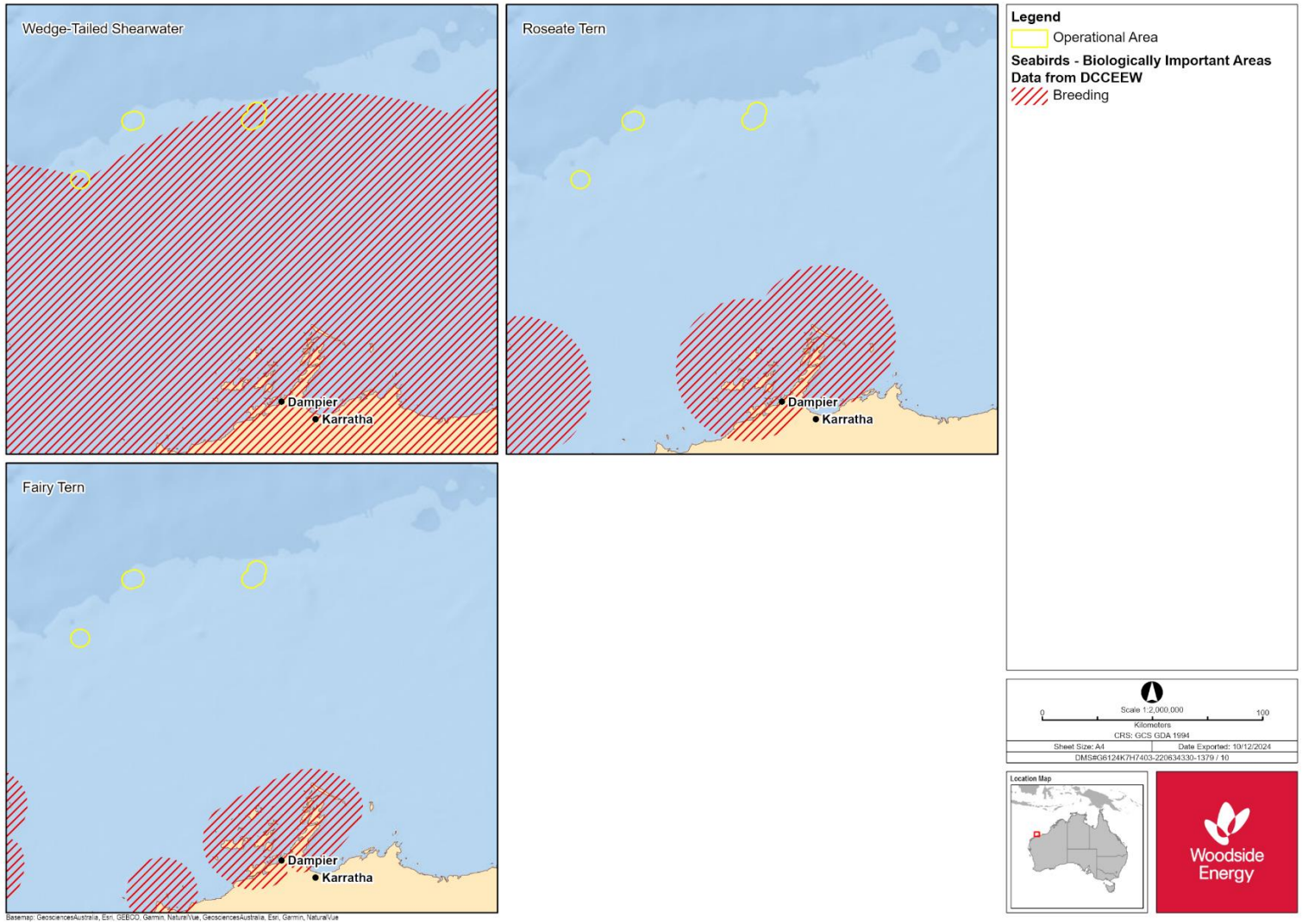

Figure 4-10: Seabird BIAs overlapping the Operational Areas or EMBA

4.6.5 Seasonal sensitivities for protected species

Seasonal sensitivities for protected migratory species identified as potentially occurring within the Operational Areas are identified in Table 4-13. Seasonal sensitivities for species in the wider NWMR are described in Appendix C.

Table 4-13: Key seasonal sensitivities for protected migratory species identified as occurring within the Operational Areas

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Fish, sharks and rays												
Whale shark (NWMR) – foraging[1]												
Marine reptiles												
Flatback turtle (Pilbara) - various nesting areas[2]												
Seabirds and shorebirds												
Wedge-tailed shearwater – various breeding sites *fledgling emergence (first two weeks of April)				*								

	Species may be present / undertaking biologically important behaviour in the Operational Areas
	Peak period. Presence of animals is reliable and predictable each year
	Species not likely to be present or undertaking biologically important behaviour in the Operational Areas

References for species seasonal sensitivities:

1. *Whale shark foraging (high density prey) Ningaloo April- June, Autumn (DCCEEW, 2024b15). March- July (TSSC, 2015d). Potential presence of whale sharks year-round at Ningaloo (Norman et al., 2017).*
2. *Flatback turtle nesting Pilbara stock October- March (CoA, 2017).*

4.7 Key ecological features (KEFs)

KEFs within the Operational Areas and EMBA are identified in Table 4-14 and described in Appendix C. Figure 4-11 shows the spatial overlap with KEFs and the Operational Areas and EMBA.

Table 4-14: KEFs within the Operational Areas and EMBA

Key ecological feature	Distance and direction from Operational Area A to KEF (km)	Distance and direction from Operational Area B to KEF (km)	Distance and direction from Operational Area C to KEF (km)	Description
Ancient Coastline at the 125 m depth contour	Overlaps	Overlaps	Overlaps	All Operational Areas overlap the Ancient Coastline at the 125 m depth contour KEF. Operational Area A overlaps approximately 0.38% of the KEF, Operational Area B overlaps approximately 0.001% of the KEF, and Operational Area C overlaps approximately 0.03% of the KEF (Figure 4-11). For further information on KEF features and values that are relevant to or may be impacted by the EP activities, refer to Table 4-3 and the Master Existing Document (Appendix C, Table 10-1).
Glomar Shoals	45 km south-east	Overlaps	70 km north-east	Operational Area A and C do not overlap the Glomar Shoal KEF, however the KEF overlaps the wider EMBA. Operational Area B overlaps approximately 2.53% of the Glomar Shoals KEF but is located 5.4 km from the Glomar Shoal feature itself (Figure 4-11). For further information on KEF features and values that are relevant to or may be impacted by the EP activities, refer to Table 4-3 and the Master Existing Document (Appendix C, Table 10-1).
Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula	260 km south-west	292 km south-west	234 km south-west	These KEFs occur within the wider EMBA, however, do not overlap with any Operational Areas. For further information on KEF features and values that are relevant to or may be impacted by the EP activities, refer to Table 4-3 and the Master Existing Document (Appendix C, Table 10-1).
Commonwealth waters adjacent to Ningaloo Reef	306 km south-west	339 km south-west	269 km south-west	
Continental Slope Demersal Fish Communities	62 km south-west	112 km south-west	40 km north-west	
Exmouth Plateau	173 km south-west	224 km south-west	153 km north-west	
Mermaid Reef and Commonwealth waters surrounding Rowley Shoals	343 km north-east	298 km north-east	276 km north-east	

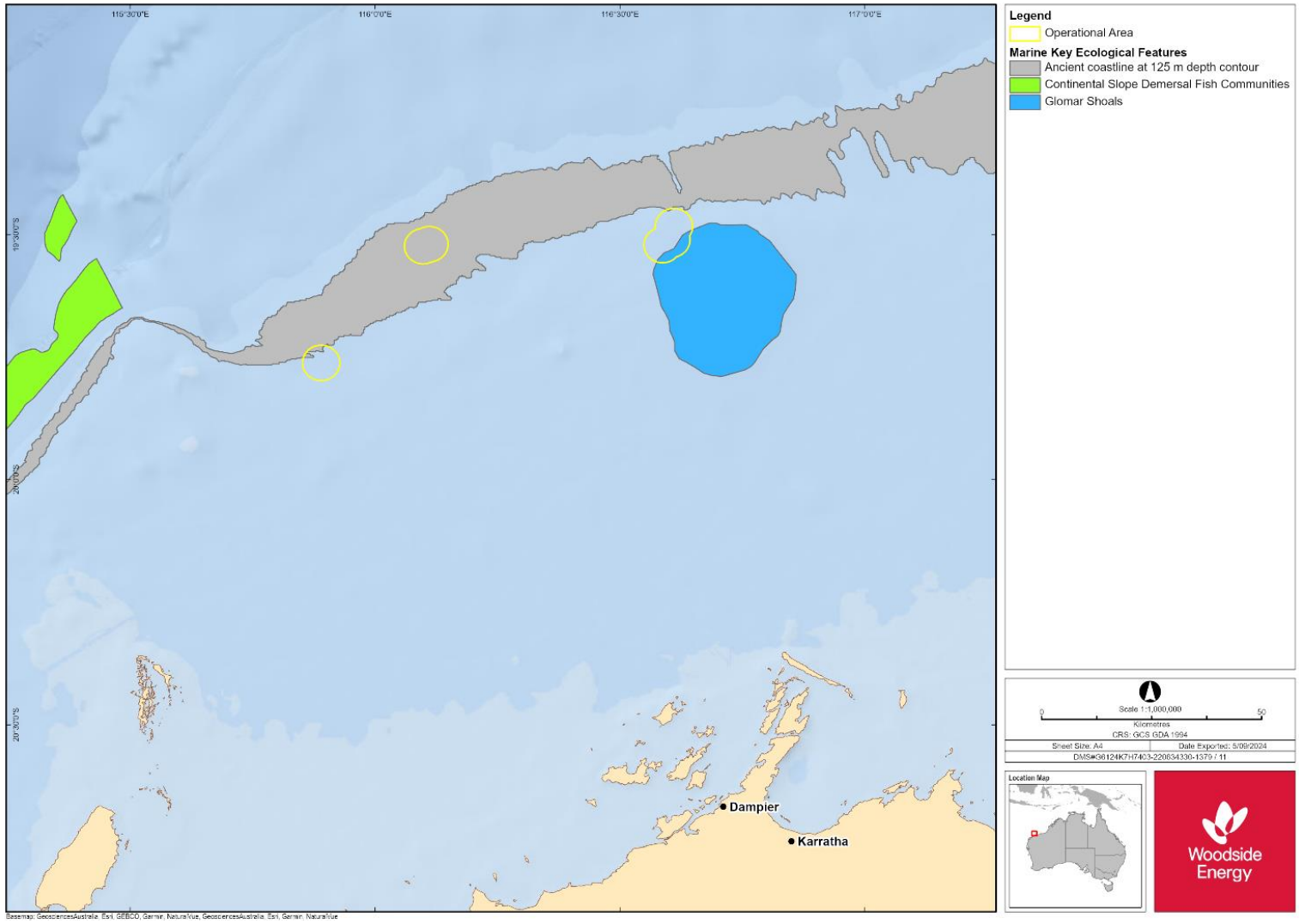

Figure 4-11: KEFs overlapping the Operational Areas and EMBA

4.8 Protected places

Protected places within the Operational Areas and EMBA are identified in Table 4-15 and presented in Figure 4-12. Appendix C outlines the values and sensitivities of protected places and other sensitive areas in the Operational Areas and EMBA.

Table 4-15: Established protected places and other sensitive areas overlapping the Operational Areas and EMBA

	Distance and direction from Operational Area A to protected place or sensitive area (km)	Distance and direction from Operational Area B to protected place or sensitive area (km)	Distance and direction from Operational Area C to protected place or sensitive area (km)	IUCN category* or relevant park zone overlapping the Operational Areas and/or EMBA
AMPs				
NWMR				
Argo-Rowley Terrace	340 km north-east	296 km north-east	376 km north-east	Multiple Use Zone (IUCN VI)
	352 km north-east	309 km north-east	525 km north-east	Multiple Use Zone (IUCN VI)
	194 km north-east	189 km north-east	386 km north-east	Special Purpose Zone (Trawl) (IUCN VI)
Eighty Mile Beach	289 km east	237 km east	312 km east	Multiple Use Zone (IUCN VI)
Gascoyne	422 km south-west	466 km south-west	390 km south-west	Habitat Protection Zone IUCN IV)
	274 km south-west	320 km south-west	242 km south-west	Multiple Use Zone (IUCN VI)
Montebello	59 km south-west	83 km south-west	29 km south-west	Multiple Use Zone (IUCN VI)
Ningaloo	432 km south-west	466 km south-west	398 km south-west	National Park Zone (IUCN II)
	441 km south-west	439 km south-west	270 km south-west	Recreational Use Zone (IUCN IV)
	304 km south-west	339 km south-west	270 km south-west	Recreational Use Zone (IUCN IV)
State Marine Parks and Nature Reserves				
Marine Parks				
Barrow Island Marine Park	152 km south-west	182 km south-west	117 km south-west	IUCN VI
Montebello Islands Marine Park	100 km south-west	132 km south-west	67 km south-west	IUCN VI
Ningaloo Marine Park	305 km south-west	339 km south-west	270 km south-west	IUCN VI
Rowley Shoals Marine Park	409 km north-east	362 km north-east	439 km north-east	IUCN VI

	Distance and direction from Operational Area A to protected place or sensitive area (km)	Distance and direction from Operational Area B to protected place or sensitive area (km)	Distance and direction from Operational Area C to protected place or sensitive area (km)	IUCN category* or relevant park zone overlapping the Operational Areas and/or EMBA
Rowley Shoals Marine Park	369 km north-east	326 km north-east	403 km north-east	IUCN II
Marine Management Areas				
Barrow Island Marine Management Area	121 km south-west	140 km south-west	87 km south-west	IUCN IV
Muiron Islands Marine Management Area	286 km south-west	320 km south-west	251 km south-west	IUCN IV
National Parks				
Cape Range National Park	344 km south-west	378 km south-west	309 km south-west	IUCN II
Cape Range National Park (South)	405 km south-west	437 km south-west	371 km south-west	IUCN II
Conservation Parks				
Montebello Islands Conservation Park	107 km south-west	140 km south-west	72 km south-west	IUCN II
Montebello Islands Conservation Park	109 km south-west	143 km south-west	75 km south-west	IUCN II
Nature Reserves				
Airlie Island Nature Reserve	218 km south-west	244 km south-west	184 km south-west	IUCN Ia
Barrow Island Nature Reserve	141 km south-west	171 km south-west	106 km south-west	IUCN Ia
Bedout Island Nature Reserve	309 km south-east	258 km south-east	333 km south-west	IUCN Ia
Bessieres Island Nature Reserve	258 km south-west	288 km south-west	223 km south-west	IUCN Ia
Boodie, Double Middle Islands Nature Reserve	145 km south-west	172 km south-west	111 km south-west	IUCN Ia
Great Sandy Island Nature Reserve	139 km south-west	148 km south-west	114 km south-west	IUCN Ia
Lowendal Islands Nature Reserve	130 km south-west	159 km south-west	98 km south-west	IUCN Ia
Muiron Islands Nature Reserve	289 km south-west	323 km south-west	255 km south-west	IUCN Ia
North Sandy Island Nature Reserve	177 km south-west	196 km south-west	146 km south-west	IUCN Ia
Round Island Nature Reserve	276 km south-west	305 km south-west	241 km south-west	IUCN Ia
Serrurier Island Nature Reserve	270 km south-west	300 km south-west	235 km south-west	IUCN Ia

	Distance and direction from Operational Area A to protected place or sensitive area (km)	Distance and direction from Operational Area B to protected place or sensitive area (km)	Distance and direction from Operational Area C to protected place or sensitive area (km)	IUCN category* or relevant park zone overlapping the Operational Areas and/or EMBA
Thevenard Island Nature Reserve	238 km south-west	265 km south-west	204 km south-west	IUCN Ia
Other sensitive areas				
Section 5(1)(h) Reserve				
Nyingguulu (Ningaloo) Coastal Reserves	426 km south-west	457 km south-west	392 km south-west	IUCN II
Point Cloates Lighthouse Reserve	430 km south-west	461 km south-west	395 km south-west	N/A
Ningaloo Marine Park	406 km south-west	439 km south-west	373 km south-west	IUCN II
Jurabi Coastal Park	321 km south-west	355 km south-west	287 km south-west	IUCN II

**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 – allows human use but prohibits large-scale development.

IUCN categories for the marine park 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 and South-west Marine Parks Network Management Plan 2018.

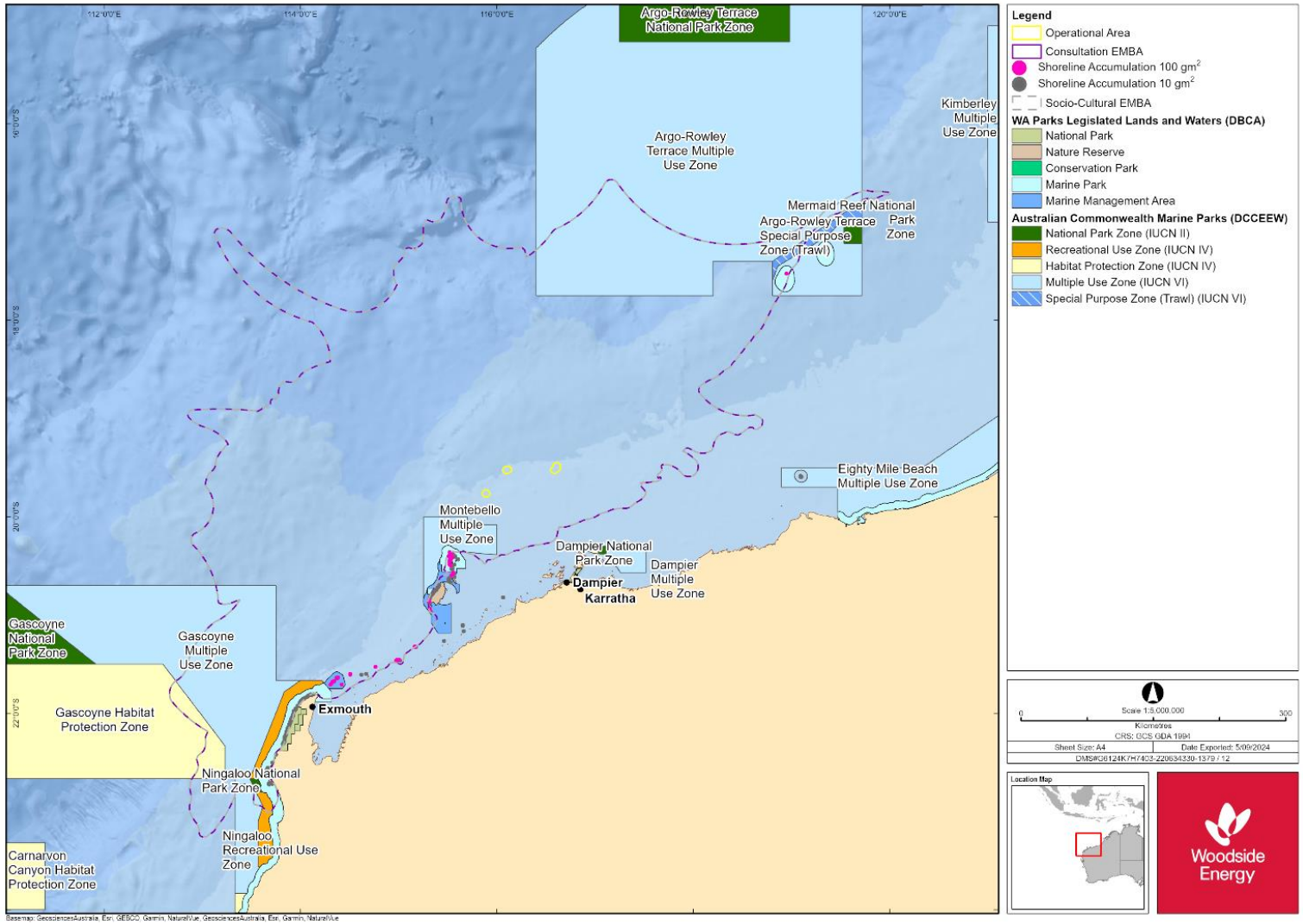

Figure 4-12: Protected areas overlapping the EMBA

4.9 Socio-economic environment

4.9.1 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 Areas and EMBA and the cultural features of these areas are described. A description of cultural values and heritage as they relate to the wider North-west Marine Region (NWMR) is provided in Appendix C.

4.9.1.1 Native Title

For the activity in this EP, no native title claims or ILUAs interact with the Operational Areas, however, there are three native title claims and three ILUAs that interact with the EMBA (Table 4-16). Claims and determinations have not been differentiated in this table, as it is acknowledged that rights and interest may exist within either of these. Figure 4-13 shows the spatial overlap with native title claims and ILUAs.

As a starting point for understanding social and cultural features of the environment for Indigenous (First Nations) 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), 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

Further description of how Woodside considers native title rights and interest is provided in Appendix C.

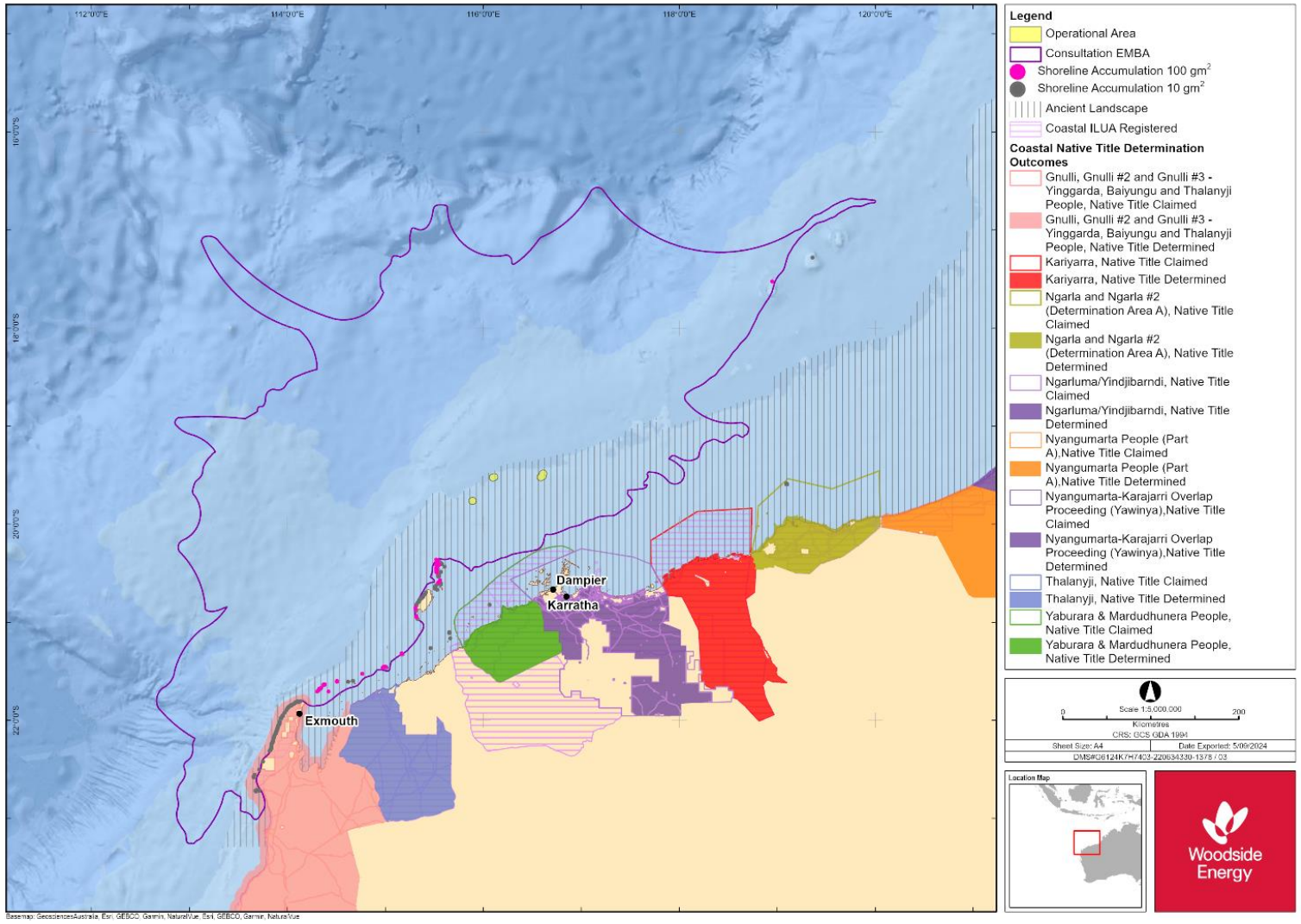

Figure 4-13: Operational Areas and socio-economic EMBA in relation to Native Title Claims, Determinations and Indigenous Land Use Agreements

4.9.1.2 Coastally adjacent First Nations 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 First Nations groups to be consulted (see Section 5).

Further description of how Woodside engages with coastally adjacent First Nations groups is provided in Appendix C.

A summary of native title claims, determinations and ILUAs overlapping or coastally adjacent to the EMBA is set out in (Table 4-16).Claims and determinations have not been differentiated in this table, as it is acknowledged that either of these may indicate the existence of rights and interests.

Table 4-16: 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			
Ngarla and Ngarla #2 (Determination Area A)	Wanparta Aboriginal Corporation	Yes	Yes
Yaburara & Mardudhunera People	Wirrawandi Aboriginal Corporation	Yes	Yes
Gnulli, Gnulli #2 and Gnulli #3 - Yinggarda, Baiyungu and Thalanyji People	Nganhurra Thanardi Garrbu Aboriginal Corporation Yinggarda Aboriginal Corporation	Yes	Yes
Thalanyji	Buurabalayji Thalanyji Aboriginal Corporation	No	Yes
Ngarluma/Yindjibarndi	Yindjibarndi Aboriginal Corporation Ngarluma Aboriginal Corporation	No	Yes
Kariyarra	Kariyarra Aboriginal Corporation	No	Yes
Nyangumarta People (Part A)	Nyangumarta Warrarn Aboriginal Corporation (Supported by YMAC)	No	Yes
Nyangumarta-Karajarri Overlap Proceeding (Yawinya)	Nyangumarta Karajarri Aboriginal Corporation	No	Yes
Karajarri People (Area A)	Karajarri Traditional Lands Association (Aboriginal Corporation)	No	Yes
Rubibi Community	Yawuru Native Title Holders Aboriginal Corporation	No	Yes
Jabirr Jabirr/Ngumbarl	Gogolanyngor Aboriginal Corporation	No	Yes

Claim/determination/ ILUA	Registered Native Title Body Corporate	Overlap with EMBA	Coastally adjacent to the EMBA
Bindunbur	Nimanburr Aboriginal Corporation Nyul Nyul Aboriginal Corporation Gogolanyngor Aboriginal Corporation	No	Yes
Karajarri People (Area B)	Karajarri Traditional Lands Association (Aboriginal Corporation)	No	Yes
Kuruma Marthudunera (Part A)	Robe River Kuruma Aboriginal Corporation	No	Yes
Kuruma Marthudunera (Part B)	Robe River Kuruma Aboriginal Corporation	No	Yes
ILUA			
Kuruma Marthudunera and Yaburara and Coastal Mardudhunera Indigenous Land Use Agreement	Wirrawandi Aboriginal Corporation Robe River Kuruma Aboriginal Corporation	Yes	Yes
KM & YM Indigenous Land Use Agreement 2018	Wirrawandi Aboriginal Corporation Robe River Kuruma Aboriginal Corporation	Yes	Yes
Ningaloo Conservation Estate ILUA	Nganhurra Thanardi Garrbu Aboriginal Corporation	Yes	Yes
RTIO Ngarluma Indigenous Land Use Agreement (Body Corporate Agreement)	Ngarluma Aboriginal Corporation	No	Yes
FMG - Kariyarra Land Access ILUA	Yamatji Marlpa Aboriginal Corporation (on behalf of Kariyarra People)	No	Yes
Macedon ILUA	Buurabalayji Thalanyji Aboriginal Corporation	No	Yes
Thalanyji and Minderoo Pastoral ILUA	Ashburton Salt Project Indigenous Land Use Agreement (Body Corporate Agreement)	No	Yes
Ngarla Pastoral ILUA	Wanparta Aboriginal Corporation	No	Yes
Nyangumarta Warrarn Aboriginal Corporation & Mandora Pastoral Lease ILUA	Nyangumarta Warrarn Aboriginal Corporation	No	Yes
Nyangumarta Karajarri and Anna Plains Station ILUA	Nyangumarta Karajarri Aboriginal Corporation	No	Yes
Nyangumarta Karajarri and Mandora Station ILUA	Nyangumarta Karajarri Aboriginal Corporation	No	Yes

Claim/determination/ ILUA	Registered Native Title Body Corporate	Overlap with EMBA	Coastally adjacent to the EMBA
Karajarri Traditional Lands Association KSCS Eighty Mile Beach ILUA	Karajarri Traditional Lands Association (Aboriginal Corporation	No	Yes
Great Sandy Desert Project ILUA - Infrastructure	Karajarri Traditional Lands Association (Aboriginal Corporation)	No	Yes
Yawuru Prescribed Body Corporate ILUA - Broome	Yawuru Native Title Holders Aboriginal Corporation	No	Yes
Yawuru Area Agreement ILUA	Yawuru Native Title Holders Aboriginal Corporation	No	Yes
Cape Preston Project Deed (YM Mardie ILUA)	Wirrawandi Aboriginal Corporation	No	Yes
NKAC KSCS Eighty Mile Beach ILUA	Nyangumarta Karajarri Aboriginal Corporation	No	Yes
Anketell Port, Infrastructure Corridor and Industrial Estates Agreement	Ngarluma Aboriginal Corporation	No	Yes
Yawuru Nagulagun / Roebuck Bay Marine Park ILUA	Yawuru Native Title Holders Aboriginal Corporation	No	Yes
Nyangumarta PBC KSCS ILUA	Nyangumarta Warrarn Aboriginal Corporation	No	Yes
Alinta-Kariyarra Electricity Infrastructure ILUA	Yamatji Marlpa Aboriginal Corporation (on behalf of Kariyarra People)	No	Yes
RTIO Kuruma Marthudunera People ILUA	Robe River Kuruma Aboriginal Corporation	No	Yes
Ngarla PBC KSCS ILUA	Wanparta Aboriginal Corporation	No	Yes
Kariyarra and State ILUA	Kariyarra Aboriginal Corporation	No	Yes
Cape Preston West Export Facility	Wirrawandi Aboriginal Corporation	No	Yes

4.9.1.3 Marine Parks

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

Woodside considers the management plans of marine parks that overlap the Operational Areas 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 4-17 .

The Operational Area does not overlap any Commonwealth Marine Parks. The EMBA overlaps with features of the Gascoyne, Montebello and Ningaloo AMPs managed under the North-west Marine Parks Network Management Plan 2018 (Director of National Parks, 2018). The EMBA overlaps a further six State Marine Parks. Where these plans specify identifiable 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). Consultation with these groups may identify heritage values and cultural features beyond those addressed in the marine park management plans. Identifiable representative bodies for the marine parks overlapped by the EMBA are specified in (Table 4-17).

Management plans for the AMPs note shipwrecks within the AMPs and overlap with World, National and Commonwealth heritage lists. These are addressed in Sections 4.9.1.7 and 4.9.1.8.

The Management Plan for the Ningaloo Marine Park and Muiron Islands Marine Management Area 2005–2015: Management Plan Number 52 (Marine Parks and Reserves Authority and Department of Conservation and Land Management, 2005) (relating to the Muiron Islands Marine Management Area and Ningaloo Marine Park) 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.

Table 4-17: Summary of the Operational Areas 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	No	Yes	No identifiable body specified
Gascoyne AMP	No	Yes	Yamatji Marlpa Aboriginal Corporation
Dampier AMP	No	Yes	The Ngarluma Aboriginal Corporation Yindjibarndi Aboriginal Corporation
Eighty Mile Beach AMP	No	No	The Karajarri Aboriginal Corporation, Nyangumarta Karajarri Aboriginal Corporation Nyangumarta Warrarn Aboriginal Corporation Wanparta Aboriginal Corporation Yamatji Marlpa Aboriginal Corporation
Montebello AMP	No	Yes	Yamatji Marlpa Aboriginal Corporation
Ningaloo AMP	No	Yes	Nganhurra Thanardi Garrbu Aboriginal Corporation Yamatji Marlpa Aboriginal Corporation
State Marine Park Management Plan			
Barrow Island Marine Management Area	No	Yes	No identifiable body specified
Muiron Islands Marine Management Area	No	Yes	No identifiable body specified.
Montebello Islands MP	No	Yes	No identifiable body specified.
Rowley Shoals MP	No	Yes	No identifiable body specified.
Barrow Island MP	No	Yes	No identifiable body specified.
Ningaloo MP	No	Yes	Nganhurra Thanardi Garrbu Aboriginal Corporation
National Park Management Plan			

Marine Park Management Plan	Operational Area Overlap	EMBA Overlap	Specified Bodies
Murujuga National Park	No	Yes	Murujuga Aboriginal Corporation
Cape Range National Park	No	Yes	Yamatji Marlpa Aboriginal Corporation

4.9.1.4 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 5.

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 Areas or EMBA raised by Traditional Custodians in the course of preparing the EP have been outlined in Table 4-19.

4.9.1.4.1 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 Areas. Where cultural features or Sea Country values were identified these are summarised in Table 4-18 according to the First Nations groups (where identified or inferable) who hold these values.

Table 4-18: Cultural features and heritage values identified in publicly available literature

First Nations Group	Features and Values	Source	Potential for overlap	
			Operational Areas	***EMBA***
Gnulli **(Baiyungu, Thalanyji, Yinggarda)**	Feature: resources including marine animals. Value: 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).	Peck on behalf of the Gnulli Native Title Claim Group v State of Western Australia (2019)	Possible (unspecified) Possible (unspecified)	Possible (unspecified) Possible (unspecified)

First Nations Group	Features and Values	Source	Potential for overlap	
			Operational Areas	***EMBA***
	Feature: heritage sites in the Ningaloo region include shell middens, artefact scatters, skeletal material/burial sites, camps, meeting places, hunting places and water sources. Feature: resources including gajalbu (emu), bundgurdi (kangaroo), bardurra (bush turkey), majun (marine turtles), turtle eggs, bilygurumarda (osprey), fish, shellfish and plants. Feature: mudflats, mangroves and sand dunes provide a critical breeding ground for marine and terrestrial wildlife. Value: the Ningaloo region contains cultural heritage dating back at least 32,000 years, including ceremonial thalu sites. Value: connection to Country is important to the Traditional Owners' spirituality and religion. Value: caring for Country - "The southern coastal reserves along the Ningaloo Coast are jointly managed by Traditional Owners and the DBCA. The Joint Management Body ensures that the Traditional Owners have an opportunity to make decisions about environmental management and land use". This document also includes information that is marked that cannot be copied, reproduced or used without consent.	DBCA (2020)	No Possible (turtles, fish) No (other resources) No No Possible (unspecified) No	Possible (Shoreline accumulation areas) Possible (turtles, turtle eggs, fish, shellfish) No (other resources) Possible (mangroves) Possible (unspecified, but likely refers to onshore areas outside the EMBA) Possible (unspecified, but likely due to location of EMBA) Yes
	Feature: resources including mangrove crabs, gastropods, shellfish, dugong, turtle.	Morse (1993).	Possible (all but mangrove crabs)	Possible (all)
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)
Thalanyji	Feature: (1) resources including fish, shellfish, crabs, crustaceans, sea urchins, turtle, dugong and flora and fauna associated with mangrove communities. Feature: (2) archaeological sites on Barrow Island. Value: (3) connection to Country.	Commonwealth of Australia (2002)	(1) Possible (fish, turtle, dugong, invertebrates) (2) No (3) Possible (unspecified)	(1) Possible (fish, turtle, dugong, invertebrates) (2) Possible (based on shoreline accumulation) (3) Possible (unspecified)
	Feature: resources include turtles, eggs, fish, shellfish and plants.	DBCA *et al*. (2002)	Possible (fish, turtle)	Possible (fish, turtle, eggs, shellfish)

First Nations Group	Features and Values	Source	Potential for overlap	
			Operational Areas	***EMBA***
	Value: connection to Country. Value: transfer of knowledge. Value: access to Country.	DBCA (2022)	Possible all (unspecified)	Possible all (unspecified)
	Value: access to Barrow and possibly Montebello Islands	Hook *et al*. (2004)	No	Possible
	Feature: artefact scatters are located in coastal sand dunes. Feature: burials are located in coastal sand dunes.	Hook (2020)	No No	Possible (shoreline accumulation areas) Possible (shoreline accumulation areas)
	Feature: archaeological sites are located on Barrow Island.	Ditchfield *et al*. (2018) Paterson (2017)	No	Possible (Shoreline accumulation areas)
	Feature: archaeological sites are located at Barrow and Montebello Islands. Feature: archaeological evidence of the use of resources including fish, turtles, marine mammals, crocodiles, crabs and sea urchins.	Dortch *et al*. (2019).	No No	Possible (Shoreline accumulation areas—Barrow Island) Possible (submerged, highly unlikely for most evidence of faunal use to survive inundation)
	Feature: thalu ceremonial sites for the increase of turtle, shark, ray, fish, squid, octopus, hill kangaroo and emu. Feature: ceremonies. Value: connection to Country. Value: transfer of knowledge. Value: access to Country.	DBCA 2022	No No Possible Possible Possible	No (ceremonial use) Possible (submerged thalu sites e.g., petroglyphs) No Possible Possible Possible
Jabirr Jabirr and Ngumbarl	Value: coastal areas used for hunting, fishing and camping	Rita Augustine & Ors v State of Western Australia (Jabirr Jabirr). (2013)	No	Possible (Shoreline accumulation only)
	Features: Lurujarri Dreaming Trail • Ngu nungurrukun (Coconut Well) • Judinnang (the ocean reef) and the Lurujarri (coastal dunes)	WA - Future act determination summary - WO07/803.	No (all)	No (all values in specific locations only)

First Nations Group	Features and Values	Source	Potential for overlap	
			Operational Areas	***EMBA***
	• Gudurlwarany (Brolga) • Lindalinda (Jabiru) • Galbany (mullet) and Walgawalga (salmon) • Wader birds • Wirrkinymirri (Willie Creek) • Saltwater crocodiles. Linygoorr will usually feed on Wangkaja (mangrove crab) and fish • Biyalbiyal (mangrove) trunks			
	Value(s): Resources including: • Turtle (1) • Dugong (2) • Stone at Yalun or Cone Bay (3) • Gulngarriny or yams and madilang tubers at Long, Mermaid, Pascoe and other islands (4) • Trochus, clams, oysters (5) • Fish (6) • Sugarbag (native honey) (7)	Goolaraboolo n.d	(1, 2, 5, 6) Possible (3, 4, 7) No	(1, 2, 5, 6) Possible (3, 4, 7) No
Yawuru	Feature: Camp sites including middens and shells	Yawuru RNTBC (2014)	No	No
	Feature: Snubfin Dolphin (1), fish including sharks and rays (2), and migratory birds (3)		Possible (all)	Possible (all)
	Value: Cultural obligation to care for country		Possible (unspecified)	Possible (unspecified)
	Value: Yawuru traditional ecological knowledge associated with Sea Country resources		Possible (unspecified)	Possible (unspecified)
	Value: Reefs and sea-grass beds		No	Possible (all)
	Value: Mangrove communities		No	Possible
	Value: Rights, access to and management of Country including the waters	Rubibi Community v State of Western Australia (2006)	Possible (unspecified)	Possible (unspecified)
	Value: Cultural obligations to respect the Dreaming and spirits and to continue cultural traditions	DBCA (2023)	Possible (unspecified)	Possible (unspecified)
	Feature: Nagulagun (Sea Country) includes all that lives in the sea: • Fish (1) • Turtles (2) • Dugongs (3)		(1 - 5) Possible (6 - 17) No	(1-6, 9, 14) Possible (7, 8, 10 – 13, 15- 17) No

First Nations Group	Features and Values	Source	Potential for overlap	
			Operational Areas	***EMBA***
	• Nagula (seawater) (4) • Seabed (5) • Barnany (the reefs) (6) • Muri (tidal creeks) (7) • Jani (white sandy beaches) (8) • Seagrass meadows (9) • Jabarlbarl (mudflats and claypans) (10) • Gamirda-gamirda (shorebird) habitat (11) • Jani and intertidal flats (12) • The wirrjinmirr/willie creek wetlands system (13) • Gundurung (mangroves) (14) • Salt flats (15) • Nimalaica/nimmalarragun wetland (16) • Ngunungurrukum/coconut wells lagoon (17)			
	Value: Knowledge associated with cultural activities		Possible (unspecified)	Possible (unspecified)
	Value/s: • Jurru (snake like beings associated with both salt and fresh water that protect Yawuru country) (1) • Cultural dreaming areas (Bugarrigarra sites and tracks) (2) • Rayi sites (spirit birth and origin sites) (3) • Mangrove communities (gundurung) (4) • Saltmarsh and saline grassland communities (bundu) (5) • Water and shore birds (gamirda) (6) • Marine turtles (gurlibil) (7) • Green turtles (8) • Dugong (nganarr) (9) • Sandbars (gidi gidi) (10) • Mudflats (11) • South sea pearl oyster (guwarn) (12) • Cockles (13) • Conch (mala) (14) • Crab (wanggaja) (15) • Threadfin salmon (16) • Mullet (gurlban) (17) • Catfish (langa) (18) • Queenfish (murruwaran) (19) • Bluebone or blackspot tuskfish (20) • Snapper (yilany) (21)	Department of Parks and Wildlife (2016)	(1, 3) Possible (unspecified) (2, 4, 5,10,11-13) No (6 - 9, 14 - 25) Possible	(1, 3) Possible (unspecified) (2, 5, 11, 12) No (4, 6 - 10, 15 - 25) Possible

First Nations Group	Features and Values	Source	Potential for overlap	
			Operational Areas	***EMBA***
	• Rays (22) • Snubfin dolphins (23) • Bottle nose dolphins (24) • Humpback whales (25)			
Karajarri, Nyangumarta and Ngarla	Value/s: reefs, coastal creeks, mangroves, intertidal flats, fish traps, shell middens, Pulany (Spirit Snakes)	Department of Parks and Wildlife (2014)	No (all) Possible (Pulany - unspecified)	Possible (all) (shoreline accumulation only)
Nimanburr	Value: Valentine Island	Marshall (2020)	No	No
Nyangumarta and Karajarri	Feature: Resources including • Pirrala (Threadfin Salmon), Ulu (Bluebone Groper), Yilany (Mangrove Jack), Wangkaja (Mudcrab), • Janga (Oyster) and Riji/Jakuli (Pearl Shell)	Karajarri Traditional Lands Association (2014)	No (all)	Possible (all)
	Feature: Saltwater habitats, including • Wintirri (sandy beaches, dunes and cliffs), • Wangku (rocky headlands), • Puntu (intertidal mudflats/freshwater seepages), • Parnany (reefs) and • Wankurru (deep sea)		No Possible (deep sea only)	No Possible (reefs and deep sea)
	Value: management of access to coastal areas prevents degradation to landscapes, cultural sites and biodiversity values		Possible (unspecified)	Possible (unspecified)
	Value: Caring for Country including maintaining cultural sites in coastal and inland areas		No	No (Inland coastal locations)
	Value: Areas of Parnany (reef), Wirntirri (sea grass) and Wurrja (seaweed) along the Karajarri coastline		No (Location specific)	Possible (shoreline accumulation only)
	Value: Fishtraps and middens along the Karajarri coast		No	Possible (shoreline accumulation only)
	Value: Connection to Country and Sea Country (responsibility to look after, the sea and coastline within the claim area)	WC2000/002-1 (2000)	No	Possible
	Feature/Value: 'The Pukarrikarrajanka Dreaming', and spiritual beings continue to inhabit specific places including area Eighty Mile Beach Marine Park.	Department of Parks and Wildlife (2014)	No (Location specific)	No (Location specific)
	Features: • Reefs, coastal creeks, mangroves and intertidal flats • Fish traps and shell middens		No (all)	Possible (all)

First Nations Group	Features and Values	Source	Potential for overlap	
			Operational Areas	***EMBA***
	Value: Stories, Songlines and sites are embedded within the Eighty Mile Beach and Cape Keraudren areas		No (Location specific)	No (Location specific)
	Value: Cultural obligation to protect and educate visitors on Eighty Mile Beach		No (Location specific)	No (Location specific)
	Feature/Value: Resource collection at thalu sites. Eighty Mile Beach contains important cultural sites including special sites known as 'increase sites'		No (Location specific)	Possible (shoreline accumulation only)
	Value: Customary use of the area includes camping, nature appreciation, fishing, hunting and other harvesting activities. • Fish [hunting] • Turtle [hunting]		No	Possible (unspecified)
	Interest: Water		Yes	Yes
	Feature: Archaeological sites at Eighty Mile Beach	Yu (1999)	No (Location specific)	No (Location specific)
	Value: Strong spiritual relationship to water; connection to Sea Country		Possible (unspecified)	Possible (unspecified)
	Value: Dreamtime stories associated with water sources and their significance		Possible (unspecified)	Possible (unspecified)
	Feature: Coast old shell middens, fish traps and fishing.	Weir (2011)	No	Possible (shoreline accumulation only)
	Value: two rocks (unspecified) on the coast associated with cultural stories and lessons about tide and reef safety.	Yamatji Marlpa Aboriginal Corporation (2016)	No	Possible (unspecified)
	Feature: Eighty Mile Beach important place for the movement of the Karajarri people in the claim area including coastal areas for ritual and economic purposes.	WC08/4 (2009)	No (Location specific)	No (Location specific)
	Value: Eighty Mile Beach (strong connection to the place and surrounding waters)	Nyangumarta Warrarn Aboriginal Corporation and Yamatji Marlpa Aboriginal Corporation (2022)	No (Location specific)	Possible (shoreline accumulation only)
	Feature: The coastline dotted with sites of special significance; several of these sites are associated with The Dreaming (Pukarrikarra).		No	Possible (unspecified)
	Value: Nyangumarta population live by the sea and use it for cultural and recreational purposes - fresh fish such as whiskered salmon, black tipped reef shark, saw fish, stingrays and oysters.		No (Location Specific)	Possible (all)
Nyangumarta, Karajarri and Ngarla	Value/s: saltwater fish, turtles, dugong, crabs and oysters.	Director of National Parks (2018)	Possible (all)	Possible (all)

First Nations Group	Features and Values	Source	Potential for overlap	
			Operational Areas	***EMBA***
	Value/s: Sea Country is culturally significant and important to their identity.			
Nyul Nyul	Value: Tjukurrpa (Dreaming Story)	Indigenous Desert Alliance. n.d.	Possible (location not specified)	Possible (location not specified)
	Feature: Middens near the coast	Dobbs, et al. (2015)	No	No
	Feature: Burial grounds near the coast		No	No
	Feature: Weedong, a large coastal lake located immediately behind sand dunes		No	No
	Feature: Boolamon is a coastal lake-like waterhole located south-west of Bobbis Creek		No	No
	Value: Access to Weedong for hunting animals including cattle, ducks, goanna, nimunburr (Black flying fox) and Jibalgurr (Little friarbird) and gathering Wirdamunga (Waterlily) for food.		No	No
	Value: Trees (including Garnboorr/Paperbark and Lardik) surrounding Weedong attract animal species hunted as food		No	No
	Value: Trees (including Garnboorr/Paperbark and Lardik) surrounding Weedong and provide indicators of important seasonal events		No	No
	Value: Women's' sites at Weedong		No	Possible
	Value: Water flow on Dampier Peninsula for fish movements		Possible	Possible
	Value: Caring for Country including preserving routes for fish movement for breeding, and erecting signs		Possible	Possible
Unspecified	Feature: the ocean can include sacred sites and Songlines. Value: people have kin relationships to important animals, plants tides and currents.	Smyth (2008)	Possible (all features and values) (unspecified)	Possible (all features and values) (unspecified)
	Feature: archaeological sites in submerged landscapes.	Crabtree et al. (2021)	Possible	Possible
	Value: Sea Country has customary law defining ownership and management rights and responsibilities.	Muller (2008)	Possible (unspecified)	Possible (unspecified)
	Value: knowledge of Sea Country Value: connection to Sea Country Value: care for Sea Country Value: the extent of Sea Country is determined by the travels of dreaming ancestors. This is recorded and conveyed through songlines.	Kearney *et al* (2023)	Possible (all values) (unspecified)	Possible (all values) (unspecified)

First Nations Group	Features and Values	Source	Potential for overlap	
			Operational Areas	***EMBA***
	Feature: archaeological sites indicate that islands were occupied prior to sea level rise.	DBCA (2020)	No	Possible (submerged)
	Value: Sea Country includes values, places, resources, stories and cultural obligations. Value: activities relating to resources included: • dugong hunting • turtle hunting • turtle egg collecting • seabird egg collecting • spearing fish • reef trapping fish • herding fish • line fishing • collecting fish in stone fish traps • poisoning fish • gathering shellfish and other marine resources.	Smyth (2007)	Possible No (activities)	Possible Possible (activities and fauna present)
	Value: people have kinship relationships with every plant and animal. 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.	Juluwarlu Aboriginal Corporation (2004)	Likely to occur No	Likely to occur No
	Feature: tangible and intangible heritage. Feature: archaeological evidence of varied occupation and adaptation. Value: a distinct way of life centred around the use of limited water and coastal resources.	Macfarlane and McConnell (2017)	Possible (unspecified) Possible (submerged) No	Possible (unspecified) Possible (submerged) Possible (unspecified)

4.9.1.4.1 First Nations archaeological heritage assessment

First Nations 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 59 Registered Aboriginal Sites for the EMBA (Appendix J). 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 First Nations communities.

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

4.9.1.4.2 Submerged cultural heritage

Planned activities overlapping the Ancient Landscape have potential to disturb submerged archaeological material. Woodside engages a consultant to undertake a desktop review based on geophysical and bathymetric data, for the potential of submerged archaeological material, in any areas subject to seabed disturbance and at a depth of less than 130 m. This approach is consistent with Assessing and Managing Impacts to Underwater Cultural Heritage in Australian Waters (DCCEEW, 2024c). (see Section 5). Assessments undertaken for Wellhead TPA-03 (Nutley, 2023) did not identify any archaeological sites or values in Commonwealth waters that may be impacted by the Operational Area. Further assessment of the potential impacts on archaeological material by the proposed activity is discussed in Sections 6.6 and 6.7(First Nations Cultural Features and Heritage Values Assessment).

Further information regarding First Nations archaeological heritage in relation to the Ancient Landscape in the North-west Marine Region (NWMR) is described in Appendix C

4.9.1.4.3 Feedback received via consultation to inform Master Existing Environment

First Nations 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 2021). 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 (Table 1 in Appendix C).

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 7.7).

As a result of feedback received during consultation on this and other EPs in the region, it is feasible that additional cultural and broader interests in the environment exist. For completeness in describing the Existing Environment, feedback received by relevant persons and organisations on cultural features and heritage values are summarised Table 4-19.

Table 4-19: Summary of feedback received via consultation to inform Master Existing Environment description

Relevant First Nations Group / Individuals	Context	Description of Value / Feature / Interest	Potential for Overlap	
			Operational Areas	EMBA
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
Gogolayngor Aboriginal Corporation	Consultation for this EP	*No values raised*	-	-
Karajarri Traditional Lands Association	Consultation for this EP	*No values raised*	-	-
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

Relevant First Nations Group / Individuals	Context	Description of Value / Feature / Interest	Potential for Overlap	
			Operational Areas	EMBA
		Value: The existence of intangible cultural heritage including the Yinta (associated with Sea Country). From Kariyarra Native Title documents it is clear that 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	Possible
		Interest: Coastal Landforms (Cultural interest)	No	Possible
		Interest: Coastal Native Vegetation (Cultural interest)	No	Possible
		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	Possible	Possible
		Value: Cultural interest in intangible cultural heritage associated with the coast and the ocean. (1) Presence of mythic snakes	Possible	Possible
		Value: Intergenerational Knowledge *In addition to their immediate value as sustenance, the gathering and preparation of 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. Direct impact to communities using these resources will inherently occur when the resource disappears, is displaced or suffers a reduction in population. Therefore, these communities may be impacted where there is an impact at the species/population level. Impacts to resource collection would be limited to temporary exclusion in areas where there are hydrocarbons present, including shoreline accumulation. Relevant cultural authorities will be engaged in the event of a spill that may affect them...*	Possible	Possible

Relevant First Nations Group / Individuals	Context	Description of Value / Feature / Interest	Potential for Overlap	
			Operational Areas	EMBA
		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 Interpreted as general connection to country, assertion of rights to access country and cultural obligation to care for environmental values of sea country (1) Having duties to look after and protect all KACs Sea Country.	No (based on NT determined area)	Possible
		Value: Whales (Connection to Songlines) Impacts to whale migration	Possible (whales and songlines)	Possible (whales and songlines)
		Value: Sea Turtle Nesting	No	Possible
		Value: Food Resources	Possible (unspecified)	Possible (unspecified)
Murujuga Aboriginal Corporation	Raised during the course of consultation for another EP	Value: Mermaid Sound (1) The ecosystem health of Mermaid Sound	No	Possible
		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)
		Value: Dolphins There are cultural ceremonies associated with communicating with dolphins	Possible	Possible

Relevant First Nations Group / Individuals	Context	Description of Value / Feature / Interest	Potential for Overlap	
			Operational Areas	EMBA
		Value: Dugongs Dugongs are a food source associated with seagrasses near Gidley Island	Possible	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 (1,2) No (3)	Possible (all)
		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 be symbiotic with corals).	No	Possible

Relevant First Nations Group / Individuals	Context	Description of Value / Feature / Interest	Potential for Overlap	
			Operational Areas	EMBA
		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 Support invertebrate diversity (not explicitly identified by elders).	No	Possible
		Feature: Intertidal sand and mudflat communities Important primary production sites, support invertebrate diversity and provide food for shorebirds (not explicitly identified by elders).	No	Possible
		Feature: Rocky shores Habitats for intertidal organisms and provide food for shorebirds (not explicitly identified by elders).	No	Possible
		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	No	Possible

Relevant First Nations Group / Individuals	Context	Description of Value / Feature / Interest	Potential for Overlap	
			Operational Areas	EMBA
		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.		
		Value: Squid (1) Squidding (harvesting of squid from the ocean) around Conzinc Bay	No (based on specific location)	Possible
		Value: Appropriate cultural authority for Murujuga.	No	Possible
		Interest: Management of onshore heritage sites	No	
		Interest: Submerged Heritage Engage with researchers on options to identify potential 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	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 Engage with researchers on options to identify potential submerged heritage.	Possible	Possible
Nimanburr Aboriginal Corporation	Consultation for this EP	*No values raised*	-	-

Relevant First Nations Group / Individuals	Context	Description of Value / Feature / Interest	Potential for Overlap	
			Operational Areas	EMBA
Nyangumarta Warrarn Aboriginal Corporation	Consultation for this EP	Value: 80 Mile Beach *priority is to protect 80 Mile Beach due to its cultural and ecological value to the Nyangumarta Custodians*	No	No
		Impacts of migrating birds (1), whales (2), turtles (3) and vegetation (4)	Possible 1,2 and 3	Possible (all)
Nyangumarta Karajarri Aboriginal Corporation	Consultation for this EP	*No values raised*	-	-
Nyul Nyul Aboriginal Corporation	Consultation for this EP	*No values raised*	-	-
Robe River Kuruma Aboriginal Corporation	Raised during the course of consultation for another EP	Feature: Coastline	No	Possible
		Feature: Underwater heritage	Possible	Possible
Wanparta Aboriginal Corporation	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	Possible
		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 (all)	Possible (all)

Relevant First Nations Group / Individuals	Context	Description of Value / Feature / Interest	Potential for Overlap	
			Operational Areas	EMBA
		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	Possible
		Feature: Sea (Fresh and Salt Water) Value: Intangible Cultural Heritage (Dreaming Stories) *Comments that we are a sea people connected through both fresh and salt water with Dreamtime stories that do connect through the sea.*	Possible	Possible
		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) Wanparta legal representative 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 managment of marine life and healthy ocean plays a significant role in lore, culture and customs	Possible (all)	Possible (all)

Relevant First Nations Group / Individuals	Context	Description of Value / Feature / Interest	Potential for Overlap	
			Operational Areas	EMBA
		Value: Marine Species Wanparta legal representative explained 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)
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 management) Wirrawandi asked whether turtle monitoring programs are still in place	Possible	Possible
		Feature: Rock art Wirrawandi asked whether air emissions from activities impacts rock art & what Woodside does to minimise impacts to rock art. Wirrawandi also asked for more community information on rock art.	No	Possible
		Interest: Submerged heritage *(1) Wirrawandi asked where sites of underwater heritage have been recently found* *(2) Wirrawandi asked about impacts to the seabed from planned activities, and what is considered in relation to submerged cultural heritage, particularly given the recent finding of artefacts.*	Possible	Possible
Yawuru Native Title Holders Aboriginal Corporation	Consultation for this EP	*No values raised*	-	-
Yindjibarndi Aboriginal Corporation	Consultation for this EP	*No values raised*	-	-
Yinggarda Aboriginal Corporation	Raised during the course of consultation for another EP	Value: Coastal Fishing Local communities enjoy fishing along the coast, including for (1) Shark Bay Mullet that is an important resource.	No	Possible

Relevant First Nations Group / Individuals	Context	Description of Value / Feature / Interest	Potential for Overlap	
			Operational Areas	EMBA
		Value: Ecosystem Health *Plants, animals and the environment are inexorably linked to their culture*	Possible	Possible
		Value: Dugongs	Possible	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
SELF-IDENTIFIED FIRST NATION REPRESENTATIVE GROUPS				
Kimberly Land Council	Consultation for this EP	*No values raised*	-	-
Ngarluma Yindjibarndi Foundation Ltd	Consultation for this EP	*No values raised*	-	-
Save Our Songlines, [Individual 26] and [Individual 2]	Consultation for this EP	*No values raised*	-	-
	Raised specific to Petroleum Activities Program Raised in context of general Scarborough Project activities	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	Possible	Possible
		Interest: Plankton - unspecified	Possible	Possible
		Interest: Seagrass - unspecified	No	Possible
		Interest: where saltwater and freshwater meet	No	Possible

Relevant First Nations Group / Individuals	Context	Description of Value / Feature / Interest	Potential for Overlap	
			Operational Areas	EMBA
	Raised in Concise Statement and Affidavit[3] in context of Scarborough seismic activities	Value: Caring for Country [Individual 2] asserts she and [Individual 26] are holders of women's lore with cultural obligations to protect, preserve and promote the environment, animals and plants threatened by the Activity (specific to Seismic) [Individual 2] asserts the spiritual health and wellbeing of Murujuga and all the plants and animals present on Murujuga and connected to the songlines in and around Murujuga	Possible (unspecified)	Possible (unspecified)
		Feature: Whales [Individual 2] asserts the following values: "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." "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." "The women's lore that [Individual 26] and [Individual 2] carry is the songline of the whale, which is important for sustaining the creation of all animals and humans." "[Individual 26] and [Individual 2] connect to the whales like this through their songlines, they sing to the whales, the whales feel that song and the connection through their hearts, regardless of the distance." "the whales tell [Individual 26] and [Individual 2] a story, and [Individual 26] and [Individual 2] are the people who feel and who are connected to that story. [Individual 26] and [Individual 2] have that feeling of connection inside them all the time, they live and breathe it, they are in and everything about it." "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 (whales) Possible (songlines, unspecified)	Possible (whales) Possible (songlines, unspecified)

Relevant First Nations Group / Individuals	Context	Description of Value / Feature / Interest	Potential for Overlap	
			Operational Areas	EMBA
		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 vi. vehicle collision and/or entanglement with marine fauna"	Possible (turtles)	Possible (turtles)
		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)”	Possible (dugong)	Possible (dugong)

Relevant First Nations Group / Individuals	Context	Description of Value / Feature / Interest	Potential for Overlap	
			Operational Areas	EMBA
		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 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)	Yes	Yes
		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:	Possible	Possible

Relevant First Nations Group / Individuals	Context	Description of Value / Feature / Interest	Potential for Overlap	
			Operational Areas	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: 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[10] 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
		Interest: Murujuga "When [Individual 26] and [Individual 2] and their people stand on Country they are connected to their songlines through the rocks. As holders of women's lore, [Individual 26] and [Individual 2] put healing energy into the rocks and use that to heal the songlines." "[Individual 26] and [Individual 2] connect to their bloodline, old people and songlines through Country, including the rocks at Murujuga, which are encrypted with ancient stories that keep connection to the bloodline and songlines alive and well."	No	Possible

[10] Although [Individual 2], [Individual 26] and Save our Songlines referred to and described Energy Lines, these are undersopertood to be the same as songlines and this document therefore refers to songlines

4.9.1.5 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 4.9.1.1 to 4.9.1.6 confirms whether there is any potential for these to exist within the Operational Areas 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 Section 6.

A summary of cultural features and heritage values identified through both consultation and desktop assessment is provided in Table 4-20.

Table 4-20: 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 Areas*	*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 (shoreline accumulation only)
Petroglyphs	Petroglyphs are a form of rock art. Petroglyphs are a prominent feature particularly at Murujuga where it is found on hard, volcanic rock.	✓	x	Possible (submerged)	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.	✓	✓	No	Possible
Rivers, waterholes, tidal channels and seeps	Water sources on the Ancient Landscape which may be culturally significant or archeologically prospective.	✓	✓	No	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	✓	No	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)

Identified cultural features and heritage values	Context	EP Source		Potential for overlap	
		Consultation Feedback	*Desktop Literature Assessment*	*Operational Areas*	*EMBA*
Ceremonial sites	Places where ceremony (e.g. thalu ceremonies) are performed. All identified ceremonial sites are located onshore.	✓	✓	No	Possible (unspecified)
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	✓	✓	No	No (No limitations on access beyond the Operational Areas)
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	Possible
Resource collection	Fishing, hunting, gathering of marine species including marine mammals, marine reptiles, fish and invertebrates.	✓	✓	No	Possible
Marine ecosystems and species					
Water quality	Interest only, raised as a natural environment interest	✓	✓	Possible	Possible

Identified cultural features and heritage values	Context	EP Source		Potential for overlap	
		Consultation Feedback	*Desktop Literature Assessment*	*Operational Areas*	*EMBA*
Marine species	Generally raised in consultation and literature as an interest	✓	✓	Possible	Possible
Marine mammals: Whales	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
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

Identified cultural features and heritage values	Context	EP Source		Potential for overlap	
		Consultation Feedback	*Desktop Literature Assessment*	*Operational Areas*	*EMBA*
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
Benthic habitats: Macroalgal communities	Interest only, raised as a natural environment interest.	✓	✓	No	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
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

4.9.1.6 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 Areas and no known sites of historic cultural heritage significance within the EMBA.

4.9.1.7 Historic underwater heritage

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

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 Areas; however, a number of sites (shipwrecks) exist within the EMBA. Table 4-21 lists sites identified within 150 km of the Operational Areas.

Table 4-21: Underwater heritage sites within 150 km of the Operational Areas

Vessel name	Year wrecked	Wreck location	Latitude (D.MM °S)	Longitude (D.MM °E)	Distance and direction from Operational Area A (km)	Distance and direction from Operational Area B (km)	Distance and direction from Operational Area C (km)
McDermott Derrick Barge No 20	1989	N.E. tip of Eaglehawk Island, West of Dampier	20°8’12”	15°57’12”	66 km south-west	91 km south-west	38 km south-east
McCormack	1989	N.E. tip of Eaglehawk Island, West of Dampier	20°8’12”	15°57’12”	66 km south-west	91 km south-west	38 km south-east
Dampier	Unknown	Enderby Island, Dampier Archipelago	20°31’4”	116°14’2”	108 km south	112 km south-west	87 km south-east
Zelma	1990	Legendre Island, Dampier Archipelago	20°22’63”	116°52’48”	120 km south-east	95 km south-east	118 km south-east
Vianen	1628	Barrow Island Area	20°0’0”	115°10’0”	106 km south-west	153 km south-west	75 km south-west
Tanami	N/A	Trial Rocks	20°16”60”	115°21’60”	110 km south-west	149 km south-west	75 km south-west
Trial	1622	Trial Rocks	20°17”10”	115°22’31”	110 km south-west	148 south-west	75 km south-west
Plym HMS	1952	WA - North West (Monte Bellos Area)	20°24”12”	115°33’57”	109 km south-west	141 km south-west	75 km south-west
Tropic Queen	1975	Hermite Island. Montebello Islands	20°25’60”	115°30’3”	113 km south-west	147 km south-west	80 km south-west
Parks Lugger	N/A	Hermite Island. Montebello Islands	20°28’37”	115°31’43”	116 km south-west	149 km south-west	83 km south-west
Marutta	1905	Barrow Island Area	20°43’40”	115°25’34”	146 km south-west	176 km south-west	113 km south-west
Alice	1891	Intercourse Island, Dampier Archipelago	20°39’12”	116°38’46”	133 km south-east	121 km south-east	112 km south-east
K. Lambert Report	N/A	SW end of Burrup Peninsula near Dampier salt water intake	20°42’10”	116°38’43”	139 km south-east	127 km south-east	123 km south-east

4.9.1.8 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 4-22. Appendix C outlines the values and sensitivities of these places.

Table 4-22: World, National and Commonwealth heritage listed places within the EMBA

Listed Place	Distance and direction from Operational Area A to Listed Place (km)	Distance and direction from Operational Area B to Listed Place (km)	Distance and direction from Operational Area C to Listed Place (km)
World Heritage Properties			
The Ningaloo Coast	286 km south-west	320 km south-west	251 km south-west
National Heritage Places			
The Ningaloo Coast	286 km south-west	320 km south-west	252 km south-west
Barrow Island and the Montebello-Barrow Islands Marine Conservation Reserves	101 km south-west	133 km south-west	67 km south-west
Commonwealth Heritage Places			
Learmonth Air Weapons Range Facility	389 km south-west	420 km south-west	354 km south-west
Ningaloo Marine Area - Commonwealth Waters	304 km south-west	338 km south-west	269 km south-west

4.9.2 Commercial fisheries

A number of Commonwealth and State fishery management areas are located within the Operational Areas and EMBA. FishCube data was 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 (2017-2022). This data was used to analyse the potential for interaction of fisheries within the Operational Areas 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 impacted by the proposed petroleum activities. Table 4-23 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 a potential interaction with the Petroleum Activity within the Operational Areas, and two within the EMBA. Two State managed fisheries were identified as having a potential interaction with the Petroleum Activity within at least one Operational Area (Figure 4-14), and fourteen within the EMBA.

Table 4-23: Commonwealth and State commercial fishery management areas overlapping the Operational Areas and EMBA

Fishery	Operational Area A	Operational Area B	Operational Area C	EMBA	Description		
					X ***No spatial overlap***	***✓*** ***Spatial overlap***	***Blue shading*** ***Possibility for interaction with the Petroleum Activity***
Commonwealth managed fisheries							
Southern Bluefin Tuna Fishery	✓	✓	✓	✓	This fishery management area overlaps with the Operational Areas and EMBA. The Southern Bluefin Tuna Fishery spans the Australian Fishing Zone, however since 1992, the majority of Australian catch has concentrated in south-eastern Australia. (Patterson et al., 2022). Fishing mainly occurs in the Great Australian Bight during summer months, and off the New South Wales coastline during winter months (AFMA, 2020). The fishery has not been active in the Operational Areas or EMBA within the last five years (ABARES, 2022). Woodside considers there to be no potential for interaction with this fishery and the Petroleum Activity given the current distribution of fishing effort.		
Western Skipjack Fishery	✓	✓	✓	✓	The Western Skipjack Tuna 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 (ABARES, 2021). Accordingly, Woodside considers there to be no potential for interaction with this fishery and the Petroleum Activity.		
Western Tuna and Billfish Fishery	✓	✓	✓	✓	The Western Tuna and Billfish Fishery spans the Australian Fishing Zone west of Victoria and the Torres Strait. However, in the last five years (2016 to 2021), fishing effort has concentrated south of Carnarvon (ABARES, 2021). Accordingly, Woodside considers there to be no potential for interaction with this fishery and the Petroleum Activity.		
North West Slope Trawl Fishery	x	x	x	✓	This fishery management area does not overlap with the Operational Areas, however, overlaps with the EMBA. The North West Slope Trawl Fishery (NWSTF) 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. A large area of the Australia–Indonesia memorandum of understanding box (an area off north-western Western Australia where Indonesian fishers may operate using only traditional methods) falls within the NWSTF). The NWSTF has predominantly been a scampi fishery using demersal trawl gear. Three vessels operated in the 2021–22 season (4 in 2020–21). Therefore, Woodside considers it a possibility that interactions with this fishery may occur within the EMBA.		

Fishery	Operational Area A	Operational Area B	Operational Area C	EMBA	Description		
					X ***No spatial overlap***	***✓*** ***Spatial overlap***	***Blue shading*** ***Possibility for interaction with the Petroleum Activity***
Western Deepwater Trawl Fishery	x	x	x	✓	This fishery management area does not overlap with the Operational Areas, however, overlaps with the EMBA. The Western Deepwater Trawl Fishery (WDTF) operates in Commonwealth waters off the coast of Western Australia between the western boundary of the Southern and Eastern Scalefish and Shark Fishery in the south and the western boundary of the NWSTF in the north. Since 2004–05, 1 to 3 vessels have been active in the fishery, with 2 vessels active in 2021–22. Therefore, Woodside considers it a possibility that interactions with this fishery may occur within the EMBA.		
State managed fisheries							
West Australian Abalone Fishery	✓	✓	✓	✓	Whilst this fishery management area overlaps the Operational Areas and EMBA, fishing effort in the last five years has been concentrated in south-west WA (typically as far north as Carnarvon) and occasionally off South Australia. Woodside considers there to be no potential for interaction with this fishery and the Petroleum Activity given the current distribution of fishing effort.		
Mackerel Managed Fishery	✓	✓	✓	✓	The Mackerel Managed Fishery management area overlaps the EMBA and Operational Areas. FishCube data reported no fishing effort 10 nm CAES blocks overlapping the Operational Areas over the last five years (DPIRD, 2023). The fishery is active in the EMBA, with eleven 60 nm CAES blocks reporting up to six vessels across the 2018–2023 seasons (DPIRD, 2023). Accordingly, Woodside considers it a possibility that interactions with this fishery may occur within the EMBA.		
Marine Aquarium Managed Fishery	✓	✓	✓	✓	The Marine Aquarium Fish Managed Fishery management area overlaps the Operational Areas and EMBA, however generally collects fish for display in water depths of less than 30 m. The fishery is active in the EMBA, with six 60 nm CAES block reporting up to six licences across the 2018 – 2023 seasons (DPIRD, 2023). No fishing effort has been recorded within the CAES blocks overlapping the Operational Areas in the last five years. Accordingly, Woodside considers it a possibility that interactions with this fishery may occur within the EMBA.		

Fishery	Operational Area A	Operational Area B	Operational Area C	EMBA	Description		
					X ***No spatial overlap***	***✓*** ***Spatial overlap***	***Blue shading*** ***Possibility for interaction with the Petroleum Activity***
Onslow Prawn Managed Fishery	✓	✓	✓	✓	The Onslow Prawn Managed Fishery overlaps the Operational Areas and EMBA. However, no fishing effort has been recorded within the CAES blocks overlapping the Operational Areas in the last five years and fishing primarily occurs in water depths of 15 m or less for this fishery. The fishery is active in the EMBA, with five 60 nm CAES blocks reporting less than three vessels across the 2018 – 2023 seasons (DPIRD, 2023). Accordingly, Woodside considers it a possibility that interactions with this fishery may occur within the EMBA.		
Pilbara Crab Managed Fishery	✓	✓	✓	✓	The Pilbara Crab Managed Fishery overlaps the Operational Areas and EMBA. No fishing effort was reported in the CAES data within the Operational Areas for the last five years. Fishing effort also typically occurs in water depths less than 50 m, whereas the Operational Areas are located in water depths greater than 71 m. The fishery is also active in the EMBA, with two 60 nm CAES blocks reporting less than three vessels in the last five years (DPIRD, 2023). FishCube data for the Pilbara Crab Managed Fishery is not provided at the 10 nm scale, therefore it is uncertain if the effort reported in 60 nm CAES blocks overlap with the Operational Areas. Accordingly, Woodside considers it a possibility that interactions with this 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 overlaps the Operational Areas and EMBA. FishCube data reported activity in two 10 nm CAES blocks overlapping Operational Area B, reporting up to four vessels in the last five years (DPIRD, 2022). The fishery is active in the EMBA, with seven 60 nm CAES blocks reporting up to four vessels across the 2018 – 2023 seasons (DPIRD, 2023). Accordingly, Woodside considers it a possibility that interactions with this fishery may occur in Operational Area B and the EMBA.		

Fishery	Operational Area A	Operational Area B	Operational Area C	EMBA	Description		
					X ***No spatial overlap***	***✓*** ***Spatial overlap***	***Blue shading*** ***Possibility for interaction with the Petroleum Activity***
Pilbara Trap Managed Fishery Part of the Pilbara Demersal Scalefish Fishery (includes trawl, trap and line fisheries)	✓	✓	✓	✓	The Operational Areas and EMBA overlap active areas of this fishery management area. Fishing effort is typically focused in waters less than 50 m, however, through consultation fishers have reported setting traps in waters greater than 50 m deep. Additionally, fishing effort has been reported in one 60 nm CAES block overlapping Operational Areas A and B, with less than three vessels operating in the last five years (DPIRD, 2022). Fishing effort has also been reported in one 60 nm CAES block overlapping Operational Area C, with up to three vessels operating in the last five years (DPIRD, 2022). FishCube data for the Pilbara Trap Managed Fishery is not provided at the 10 nm scale, therefore it is uncertain if the effort reported in 60 nm CAES blocks overlap with the Operational Areas (DPIRD, 2023). The fishery is active in the EMBA, with thirteen 60 nm CAES blocks reporting up to three vessels across the 2018 – 2023 seasons (DPIRD, 2023). Accordingly, Woodside considers it a possibility that interactions with this fishery may occur in the Operational Areas and EMBA.		
Pilbara Line Fishery Part of the Pilbara Demersal Scalefish Fishery (includes trawl, trap and line fisheries)	✓	✓	✓	✓	The Pilbara Line Fishery licensees are permitted to operate anywhere within Pilbara waters (Newman et al., 2021), overlapping the Operational Areas and EMBA. The fishery is active in the EMBA, with eleven 60 nm CAES blocks reporting up to five vessels across the 2018 – 2023 seasons (DPIRD, 2023). FishCube data reported up to three vessels operating in one 60 nm CAES block overlapping Operational Areas A and B, and up to four vessels operating in one 60 nm CAES block overlapping Operational Area C (DPIRD, 2023). FishCube data for the Pilbara Line Fishery is not provided at the 10 nm scale, therefore it is uncertain if the effort reported in the 60 nm CAES blocks overlap with the Operational Areas (DPIRD, 2023). Accordingly, Woodside considers it a possibility that interactions with this fishery may occur in the Operational Areas and EMBA.		
Specimen Shell Managed Fishery	✓	✓	✓	✓	The Specimen Shell Managed Fishery management area overlaps the Operational Areas and EMBA. However, shells are typically collected in waters less than 30 m deep and no fishing effort was recorded in the CAES blocks overlapping the Operational Areas in the last five years. The fishery is active in the EMBA, with seven 60 nm blocks reporting up to six licences across the 2018 to 2023 seasons (DPIRD, 2023). Accordingly, Woodside considers it's a possibility that interactions with this fishery may occur within the EMBA.		

Fishery	Operational Area A	Operational Area B	Operational Area C	EMBA	Description		
					X ***No spatial overlap***	***✓*** ***Spatial overlap***	***Blue shading*** ***Possibility for interaction with the Petroleum Activity***
South-west Coast Salmon Managed Fishery	✓	✓	✓	✓	The South West Coast Salmon Fishery management area overlaps the Operational Areas and EMBA. However, FishCube data reported no fishing effort within the Operational Areas or EMBA in the last five years (2018 – 2023) (DPIRD, 2023). Accordingly, Woodside considers there to be no potential for interaction with this fishery and the Petroleum Activity.		
West Coast Deep Sea Crustacean Managed Fishery	✓	✓	✓	✓	The West Coast Deep Sea Crustacean Managed Fishery management area overlaps the Operational Areas and EMBA. However, FishCube data reported no fishing effort within the Operational Areas in the last five years (2018 – 2023) as fishing effort is concentrated in water depths of 500 – 800 m (DPIRD, 2023). FishCube data reports fishing effort occurs within the EMBA across five 60 nm CAES blocks reporting less than three licenses across 2017 – 2019 seasons (DPIRD, 2022). Accordingly, Woodside considers it a possibility that interactions with this fishery may occur within the EMBA.		
Pearl Oyster Managed Fishery	✓	✓	✓	✓	The Pearl Oyster Managed Fishery overlaps the Operational Areas and EMBA, however, fishing effort is limited to 35 m depth. FishCube data reported no fishing effort within the Operational Areas or EMBA in the last five years (2018 – 2023) (DPIRD, 2023). Accordingly, Woodside considers there to be no potential for interaction with this fishery and the Petroleum Activity.		
Exmouth Gulf Prawn Managed Fishery	x	x	x	✓	This fishery management area does not overlap with the Operational Areas, however, overlaps with the EMBA. The Exmouth Gulf Prawn Managed Fishery management area has remained consistently active over the last 5 years, with two 60 nm CAES blocks reporting up to six vessels across each season between 2017 – 2022 (DPIRD, 2022). Accordingly, Woodside considers it a possibility that interactions with this fishery may occur within the EMBA.		
Gascoyne Demersal Scalefish Managed Fishery	x	x	x	✓	This fishery management area does not overlap with the Operational Areas, however, overlaps with the EMBA. FishCube data reports fishing effort occurs within the EMBA across two CAES blocks reporting up to ten vessels across 2017 – 2022 seasons (DPIRD, 2022). Accordingly, Woodside considers it a possibility that interactions with this fishery may occur within the EMBA.		

Fishery	Operational Area A	Operational Area B	Operational Area C	EMBA	Description		
					X ***No spatial overlap***	***✓*** ***Spatial overlap***	***Blue shading*** ***Possibility for interaction with the Petroleum Activity***
Nickol Bay Prawn Managed Fishery	x	x	x	✓	This fishery management area does not overlap with the Operational Areas, however, overlaps with the EMBA. The Nickol Bay Prawn Managed Fishery management area has remained consistently active over the last 5 years, with six 60 nm CAES blocks reporting up to eight vessels across each season between 2017 – 2022 (DPIRD, 2022). Accordingly, Woodside considers it a possibility that interactions with this fishery may occur within the EMBA.		
Northern Demersal Scalefish Managed Fishery	x	x	x	✓	This fishery management area does not overlap with the Operational Areas, however, overlaps with the EMBA. The Northern demersal Scalefish Fishery management area has remained consistently active over the last 5 years, with one 60 nm CAES block reporting up to four vessels across each season between 2017 – 2022 (DPIRD, 2022). No fishing effort has been reported in the 10 nm CAES blocks overlapping the Operational Areas within the last 5 years (DPIRD, 2022). Accordingly, Woodside considers it a possibility that interactions with this fishery may occur within the EMBA.		
West Australian Sea Cucumber Fishery	x	x	x	✓	This fishery management area does not overlap with the Operational Areas, however, overlaps with the EMBA. The Western Australian Sea Cucumber Fishery is permitted to operate throughout all WA waters. The target species typically inhabit nearshore waters. FishCube data reports fishing effort occurs within the EMBA across two 60 nm CAES blocks reporting less than three licenses across 2017 – 2019 seasons (DPIRD, 2022). Accordingly, Woodside considers it a possibility that interactions with this fishery may occur within the EMBA.		
Land Hermit Crab Fishery	x	x	x	✓	The Land Hermit Crab Fishery management area does not overlap with the Operational Areas, however, overlaps with the EMBA where shoreline contact is predicted. FishCube data reports fishing effort occurs within the EMBA in one CAES block reporting up to three licenses across the 2017 – 2018 season (DPIRD, 2022). FishCube data reported no fishing effort within the EMBA. Accordingly, Woodside considers there to be no potential for interaction with this fishery and the Petroleum Activity.		

Fishery	Operational Area A	Operational Area B	Operational Area C	EMBA	Description		
					X ***No spatial overlap***	✓ ***Spatial overlap***	***Blue shading*** ***Possibility for interaction with the Petroleum Activity***
Kimberley Crab Managed Fishery	x	x	x	✓	The Kimberley Crab Managed Fishery primarily targets the blue swimmer crab (Portunus pelagicus) and mud crab (Scylla serrata) using trap methods. The fishery does not overlap the Operational Areas, however, overlaps with the EMBA. FishCube data reported no fishing effort within the EMBA. Accordingly, Woodside considers there to be no potential for interaction with this fishery and the Petroleum Activity.		
West Coast Rock Lobster Managed Fishery	x	x	x	✓	The West Coast Rock Lobster Managed Fishery management area does not overlap with the Operational Areas, however, overlaps with the EMBA. The West Coast Rock Lobster Managed Fishery targets the western rock lobster (Panulirus cygnus), on the west coast of Western Australia between Shark Bay and Cape Leeuwin. The majority of the West Coast Rock Lobster populations use algal covered limestone reefs as their habitat to a depth of 150 m. FishCube data reported no fishing effort within the EMBA. Accordingly, Woodside considers there to be no potential for interaction with this fishery and the Petroleum Activity.		
Charter based commercial operators							
Tour Operators	✓	✓	✓	✓	Fishing tour operators are permitted to operate across WA state waters and are required to report monthly logbook records of client fish catches. FishCube data indicate tour operator fishing effort highest around Ningaloo and Muiron Islands and at Barrow Island and the Montebello Islands. FishCube data reports consistent fishing effort across seventeen 60 nm CAES blocks that overlap the EMBA (DPIRD, 2022). Fishing effort was reported by up to 20 licences across the 2017 – 2022 seasons (DPIRD, 2022).FishCube data reported no active tour operators in CAES blocks overlapping the Operational Areas in the last 5 years (DPIRD, 2022). Accordingly, Woodside considers it a possibility that interactions with tour operators may occur within the EMBA.		

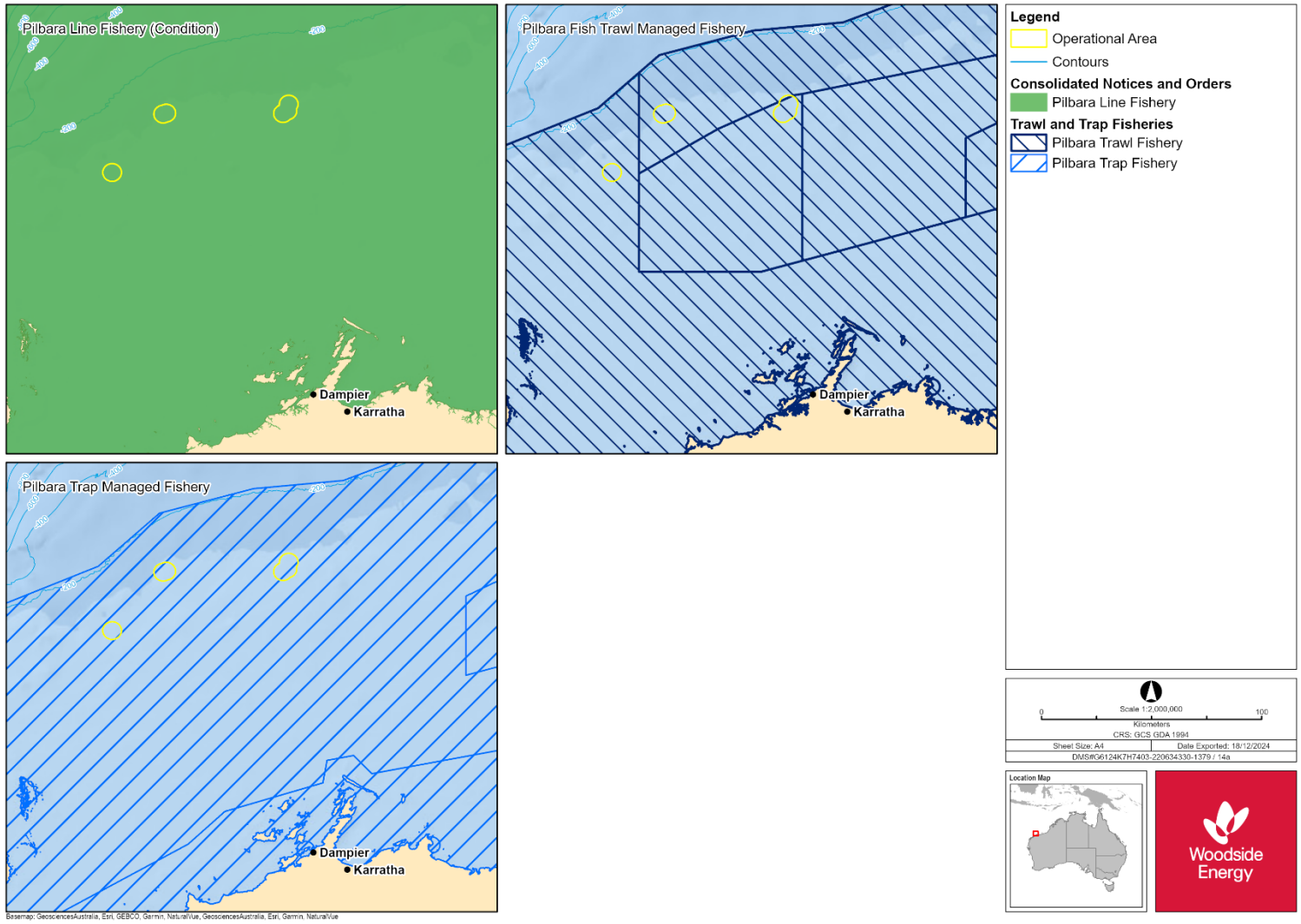

Figure 4-14: State-managed fisheries with a potential for interaction with the Petroleum Activity within the Operational Areas

4.9.3 Traditional and customary fishing

Traditional or customary fishing is typically carried out in shallow coastal waters and/or areas with structures such as reef. The Western Australia Recreational Fishing Guide (2024) states that First Nations 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 Areas. 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) (Department of Conservation and Land Management, 2005; Department of Environment and Conservation, 2007). Areas that are covered by registered Native Title claims are likely to practice Aboriginal fishing techniques at various sections of the Western Australia coastline.

Refer to Section 4.9.1.2 for coastally adjacent First Nations groups that may undertake traditional fishing within the EMBA.

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

4.9.4 Tourism and recreation

No tourist activities take place specifically within the Operational Areas; however, it is acknowledged that there are growing tourism and recreational sectors in WA and these sectors have expanded over the last couple of decades. 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 World Heritage Area (286 km south-west of Operational Area A, 320 km south-west of Operational Area B, and 251 km south-west of Operational Area C). 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 (107 km south-west of Operational Area A, 139 km south-west of Operational Area B, and 72 km south-west of Operational Area C) are the closest location for tourism with some charter boat operators taking visitors to these islands (Department of Environment and Conservation 2007).

Recreational fishing in the Pilbara and Gascoyne regions is mainly concentrated around the 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 (approximately 56 km south-west from Operational Area A, 104 km south-west from Operational Area B, and 28 km north-west from Operational Area C) and the Glomar Shoal (45 km south-east of Operational Area A, overlaps Operational Area B, and 72 km north-east of Operational Area C). However, due to the distance from access nodes, such as Dampier (approximately 123 km south of Operational Area B) and Onslow (approximately 253 km south-west from Operational Area A and 276 km south-west from Operational Area B, and 220 km south-west from Operational Area C) 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.

4.9.5 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. The fairway intended to direct north/south-bound vessel traffic from Barrow Island overlaps Operational Area C, which is located 19 km south-west of Operational Area A and 74 km south-west of Operational Area B. It is noted that none of these fairways intersect with the Operational Areas A and B; the nearest fairway is ~19 km south-west of Operational Area A which overlaps Operational Area C, and is located 21 km east of Operational Area B (Figure 4-15). Vessel tracking data suggest shipping is concentrated to the east of the Operational Areas, which is likely associated with ports.

Ports in the region are nodes of increased vessel activities; active ports in the vicinity of the EMBA include:

- Barrow Island (~106 km south-west of Operational Area C);
- Dampier (~123 km south of Operational Area B); and
- Port Hedland (~222 km south-east of Operational Area B).

Shipping activities in the region may include:

- International bulk freighters/tankers including mineral ore, hydrocarbons (LNG, liquefied petroleum gas, condensate) and salt carriers;
- Domestic support/supply vessels servicing offshore facilities;
- Construction vessels/barges/dredges;
- Offshore project vessels; and
- Commercial and recreational fishing vessels.

4.9.6 Oil and gas facilities, infrastructure and other industries

Table 4-24 details other facilities, assets and infrastructure located within 50 km of the Operational Areas.

Appendix C describes current oil and gas development within the EMBA, also shown in Figure 4-16.

Table 4-24: Other oil and gas facilities within 50 km of the Operational Areas

Facility or asset	Operator	Distance and direction from Operational Area A (km)	Distance and direction from Operational Area B (km)	Distance and direction from Operational Area C (km)
Angel	Woodside	47 km east	Overlaps	76 km north-east
Okha	Woodside	57 km south-west	32 km west-north-west	13 km east-north-east
Goodwyn Alpha	Woodside	Overlaps	66 km south-west	Overlaps
Modec Venture 11	MODEC	55 km north-east	19 km north	89 km north-east
North Rankin Complex	Woodside	3 km south-east	43 km south-west	28 km north-east
Reindeer	Apache Energy	55 km south-east	58 km south-west	48 km south-east

4.9.7 Submarine communications infrastructure

Table 4-25 details communication infrastructure, or submarine cables located within 50 km of the Operational Areas.

Table 4-25: Communications Infrastructure located within 50 km of the Operational Areas.

Communications Infrastructure (submarine cables)	Distance and direction from Operational Area A (km)	Distance and direction from Operational Area B (km)	Distance and direction from Operational Area C (km)
Woodside Fibre Optic Cable Route	Overlaps	38.8 km	6.8 km
Proposed Woodside Fibre Optic Cable Route	18.7 km	65.4 km	4.4 km
Scarborough Fibre Optic Cable	12.2 km	25 km	32.6 km

Communications Infrastructure (submarine cables)	Distance and direction from Operational Area A (km)	Distance and direction from Operational Area B (km)	Distance and direction from Operational Area C (km)
Chevron Fibre Optic Cable Route	45.2 km	82.6 km	13 km

Source: Submarine cable locations sourced from Vocus and Telstra.

The Woodside Fibre Optic Cable Route is owned and operated by Telstra and overlaps Operational Area A, specifically in production licence WA-1-L. The proposed extension of the Woodside Fibre Optic Cable will not overlap with the Operational Areas, therefore, potential interaction and impacts to cable installation are not considered or assessed further in the EP.

4.9.8 Defence

Department of Defence (DoD) areas, facilities, and unexploded ordnance (UXO) near the Operational Areas and within the EMBA are outlined in Table 4-26 and presented in Figure 4-17. There are no defence areas overlapping the Operational Areas. Designated defence practice areas occur within the offshore marine waters off Ningaloo and the North West Cape in the broader EMBA and are presented in Figure 4-17.

Table 4-26: Defence areas, facilities, and UXO overlapping the Operational Areas or EMBA

Defence area / Facility	Presence	
	Operational Areas	EMBA
Potential Depth Charge UXO DEP027: East of Montebello Islands. This site was an area where Depth Charges were used in WW2 and where some depth charges failed to function.	×	✓
Potential Depth Charge UXO DEP022: Northwest of Bessieres Island. This site was an area where Depth Charges were used in WWII and where some depth charges failed to function.	×	✓
UXO SDG096 Sea Dumping: Anchor Island. This site is an area used for the dumping at sea of ordnance and other items.	×	✓

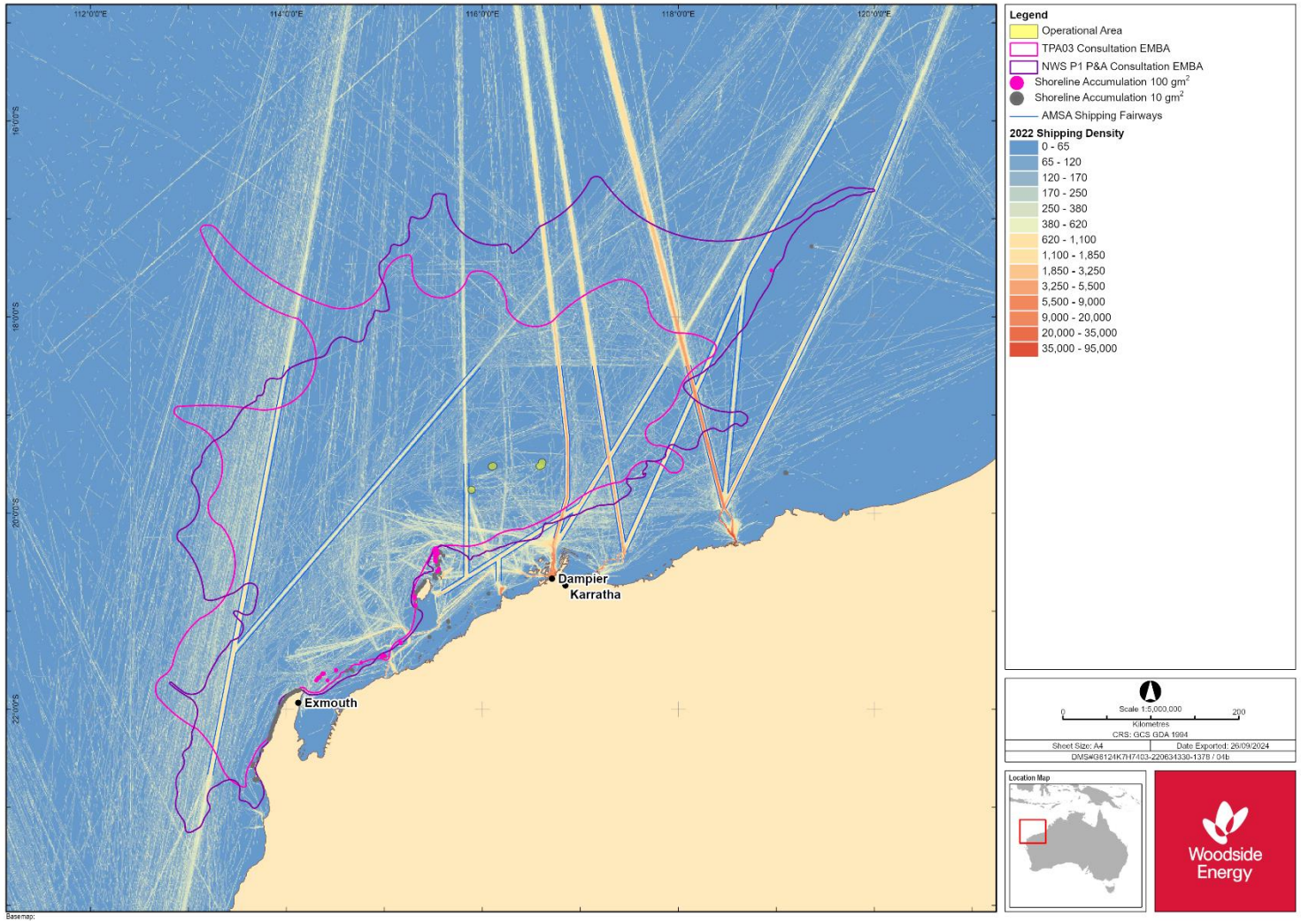

Figure 4-15: Vessel density map for the Operational Areas and EMBA

Data derived from AMSA satellite tracking system data (vessels include cargo, LNG tanker, passenger vessels, support vessels, and others/unnamed vessels)

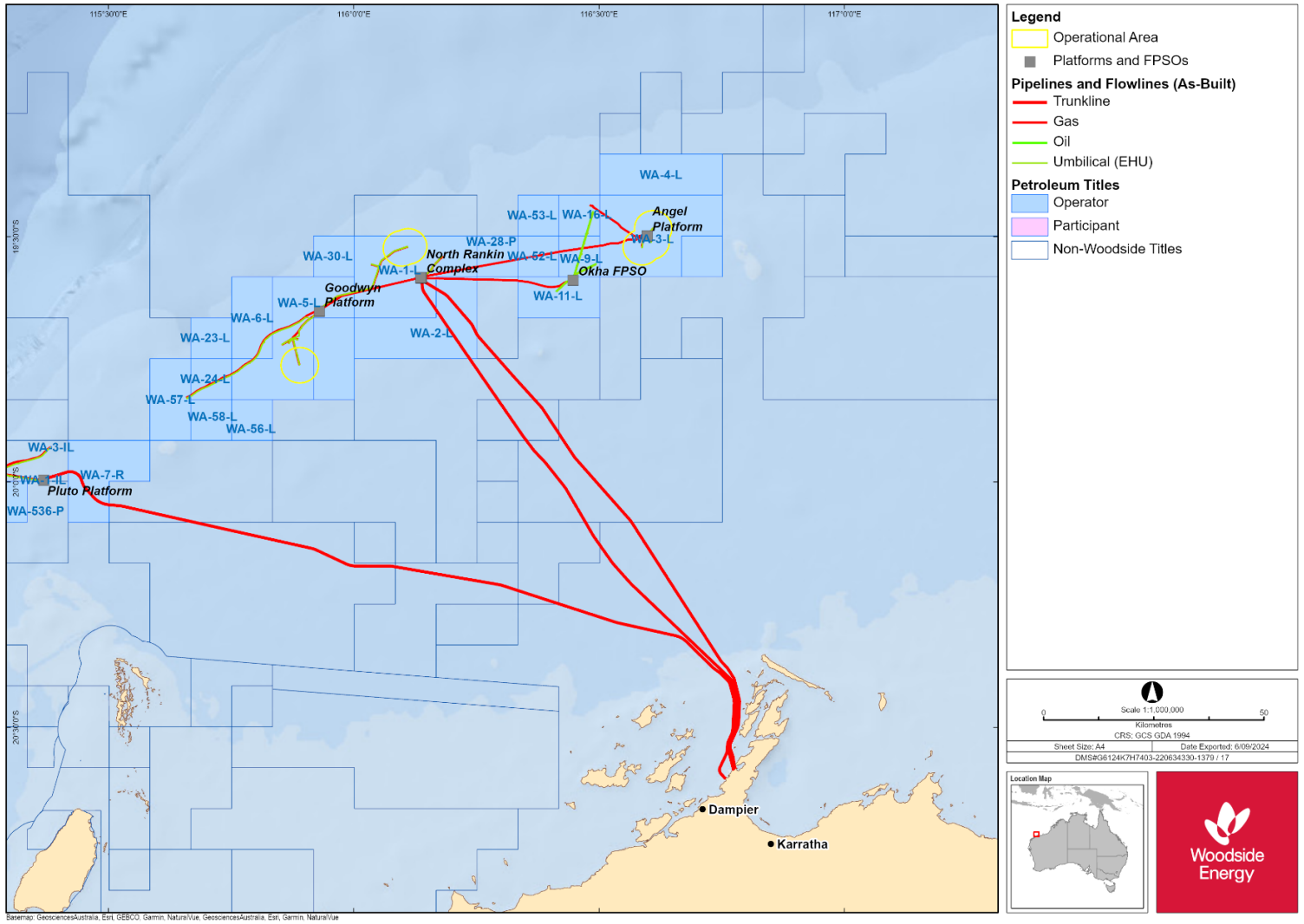

Figure 4-16: Oil and gas Infrastructure within the Operational Areas and EMBA

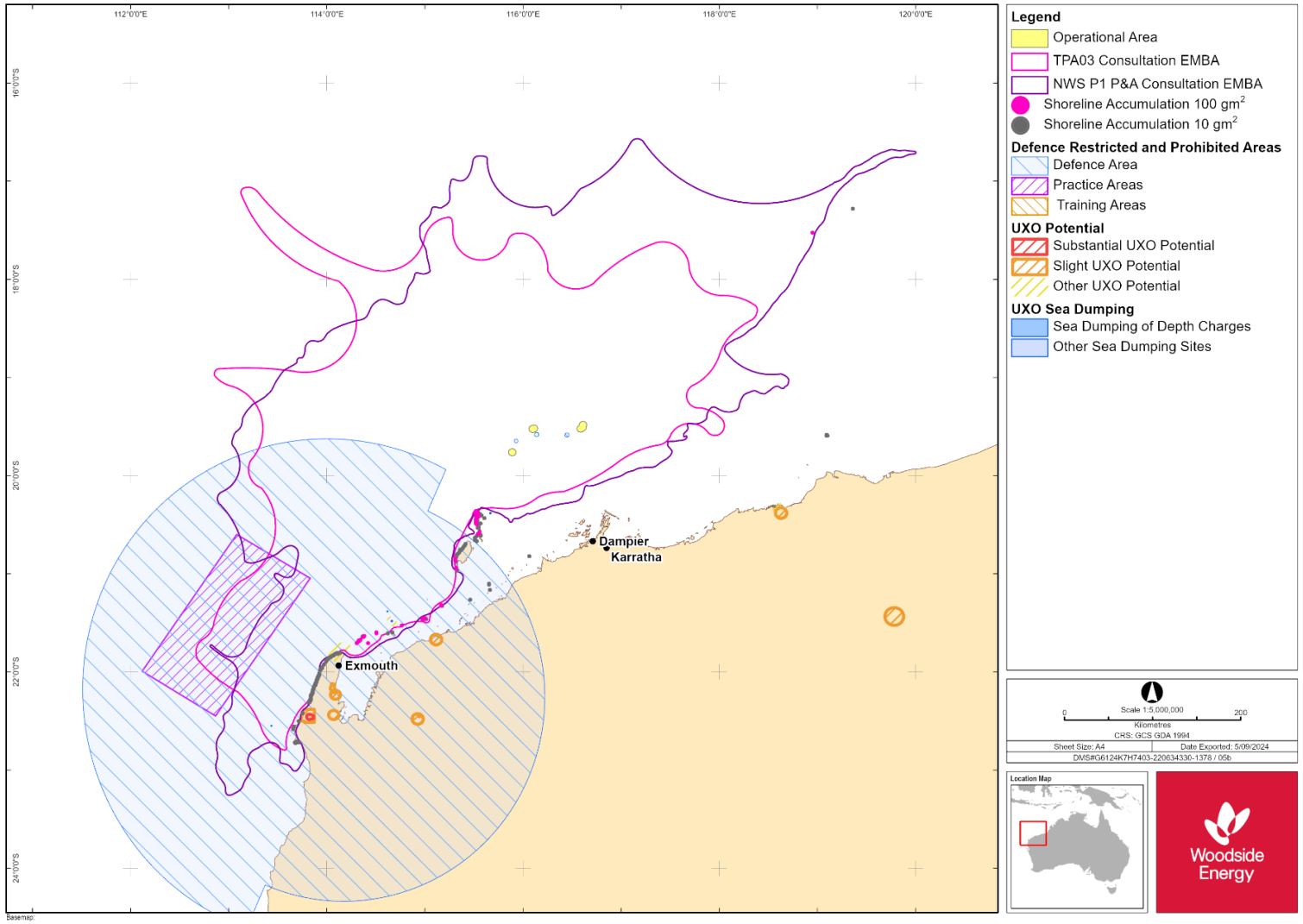

Figure 4-17: Defence areas within the EMBA

5. STAKEHOLDER CONSULTATION

5.1 Summary

Woodside consults relevant persons in the course of preparing an Environment Plan (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 to be 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 Areas 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 Areas (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 5.3.4)
- opportunities provided to persons or organisations to participate in consultation.

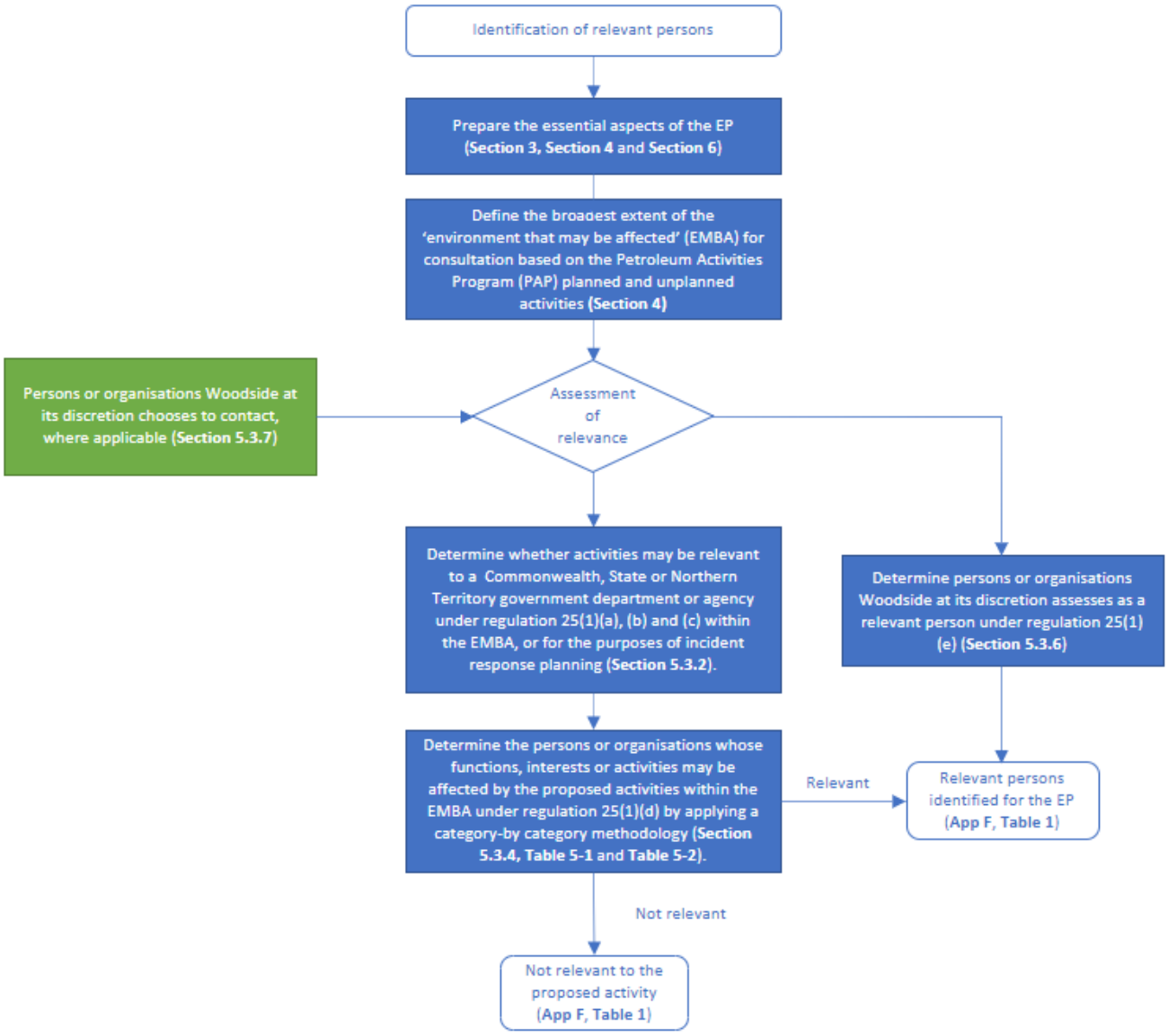

Figure 5-1: Overview of Woodside's methodology to identify relevant persons

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 risks and impacts 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 Activities Program (PAP). 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:

- 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 First Nations' 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 Areas, being the area in which our planned activities are proposed to occur (see Section 3.4)
- 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)
- 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

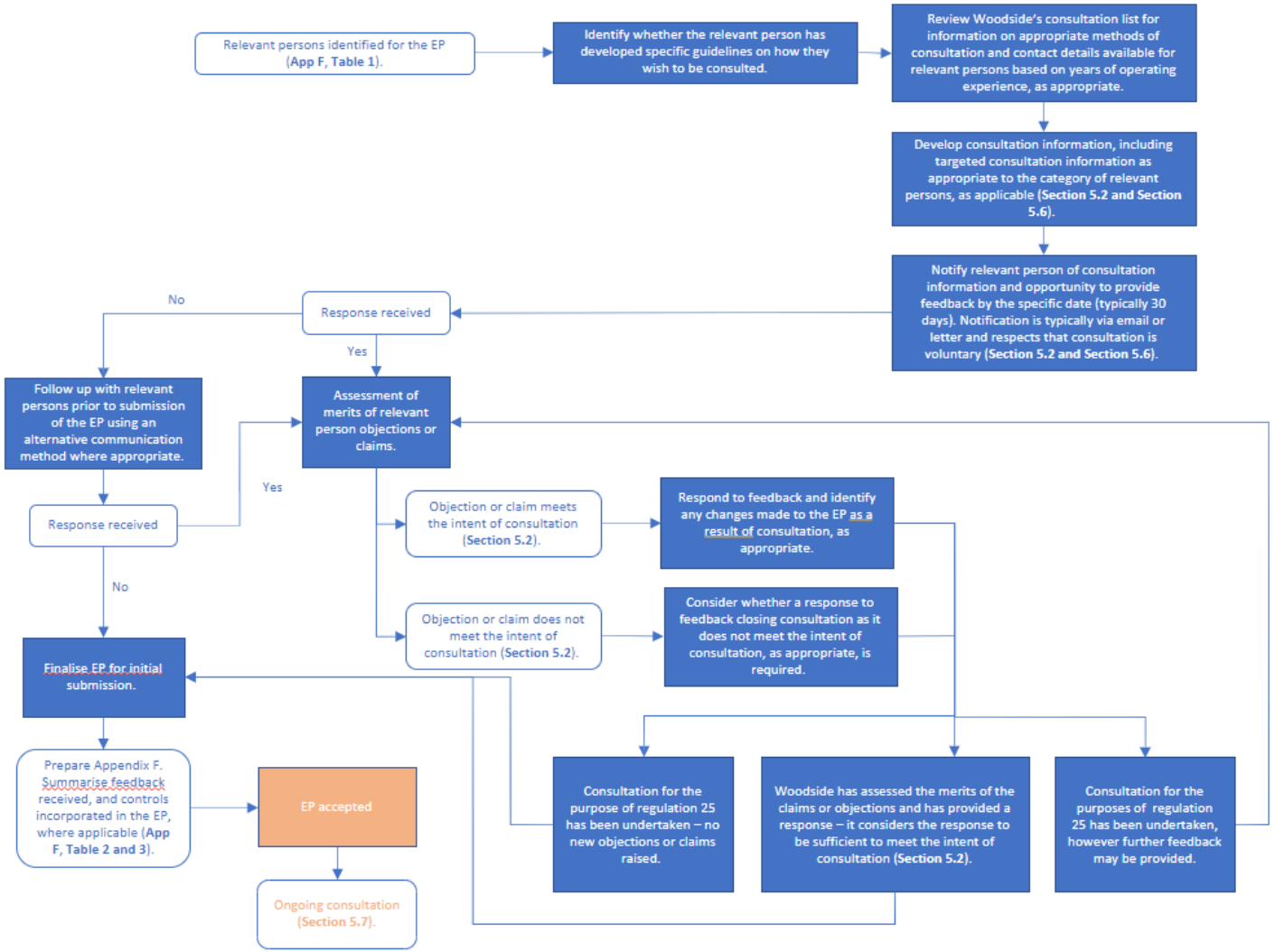

Figure 5-2: Overview of Woodside's consultation approach.

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 2023
- GN1847 – Responding to public comment on environment plans – January 2024
- GN1344 - Environment plan content requirements - September 2020
- 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 Energy, Mines, Industry Regulation and Safety (DEMIRS):

- 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 (DoT):

- 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.

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 follows:

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 risks and impacts specific to the PPA 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 Areas. 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 risks and impacts specific to the PPA in 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 below from NOPSEMA's *GL2086 – Consultation in the course of preparing an environment plan guideline* (May 2023):

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 Areas 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 activities (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 Areas 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 5-1 below and identification methodology applied as set out in Table 5-2.

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 5-2, 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 5-1: 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. 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 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 First Nations Australians with cultural rights and interests or cultural functions or who perform cultural activities over particular lands and waters. Where a First Nations 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* 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.
Historical heritage groups or organisations	Legislated or government enlisted groups or organisations responsible for the management of marine heritage.
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.

Category	Explanation
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 5-2: 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: • 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 4.9). • Woodside acknowledges WAFIC's consultation guidance[11], 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 4.9.2). Assessment of relevance: • State commercial fisheries that have been assessed as having a potential for interaction within the Operational Area or EMBA (see Section 4.9.2) 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 4.9.2) are assessed as relevant to the proposed activity. • If Woodside has identified that a Commonwealth or State fishery is a relevant person, then Woodside also consults the fisheries relevant representative body. For example, WAFIC represents the interests of State fisheries in Western Australia.

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

Category	Relevant person identification methodology
	If a State fishery is identified as relevant, Woodside would also identify WAFIC as relevant. Recognised Commonwealth fishery representative bodies are identified by AFMA via its website. 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. • 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:

Category	Relevant person identification methodology
	• 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 First Nations 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 First Nations groups or entities) • Notifies and invites consultation with First Nations people through their nominated representative corporation (for example 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 First Nations groups or individuals that should be consulted • Advertises widely so as to invite self-identification and consultation by First Nations 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 First Nations 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. First Nations 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 risks and impacts, and self-identify. Individuals that consider their functions, interests or activities may be affected by a proposed activity are provided an opportunity to self-

Category	Relevant person identification methodology
	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 risks and impacts 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.
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 4.9.1.7). 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

Category	Relevant person identification methodology
	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. • 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 risks and impacts 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 Environment Plan. Considering interests outside the EMBA would be considered too remote and contrary to the purpose of Environment Plan 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 risks and impacts 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.

Category	Relevant person identification methodology
	• 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).

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 5.3.4, 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 Areas. 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 Areas, dependant on the EP
- where the activity will take place
- the timing and duration of the activity
- a location map of the Operational Areas and EMBA
- a description of the EMBA
- relevant exclusion zones
- a summary of relevant 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 Areas, 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.

Woodside communicates with relevant persons in different ways. 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.

Typical forms of communications for categories of relevant persons are set out below.

Category of relevant person	Typically accepted form of communication
Government departments / agencies – marine	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 2023 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.
Government departments / agencies – environment	
Government departments / agencies – industry	
Commercial fisheries 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.
Recreational marine users and peak representative bodies	

Category of relevant person	Typically accepted form of communication
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 2023) 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.
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 2023) 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, Energy and Petroleum (DEMIRS) *Guidelines for Consultation with Indigenous People by Mineral Explorers* directs a period of 21-30 days of consultation with traditional owners.
- While repealed, guidance taken from the *Aboriginal Cultural Heritage Act 2021—Consultation Guidelines* (Government of Western Australia, 2023) suggests that up to 12 weeks may be a reasonable period to allow identification, contact and response from First Nations peoples (subject to any alternative timeframe being agreed through co-design of consultation).

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*..."[12]

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.

[12] *Santos NA Barossa Pty Ltd v Tipakalippa [2022] FCAFC 193 at paragraph [136].*

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).[13] Consultation is a "*real world activity*" and must be capable of reasonable discharge.[14] 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.[15]

When the Titleholder demonstrates that it has provided sufficient information and a reasonable period for consultation, then regulation 25 consultation requirements are met.[16] 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 this 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.[17]

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.[18] 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 is complete.

Appendix F, Table 2 and Table 3 of this EP sets 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 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.

[13] *Santos NA Barossa Pty Ltd v Tipakalippa [2022] FCAFC 193 [89], [98], [103]-[104] and [109].*

[14] *Santos NA Barossa Pty Ltd v Tipakalippa [2022] FCAFC 193 at [89].*

[15] *Santos NA Barossa Pty Ltd v Tipakalippa [2022] FCAFC 193 at [96] and [103].*

[16] *Explanatory Statement, Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, page 29.*

[17] *Explanatory Statement, Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, page 30 and Santos NA Barossa Pty Ltd v Tipakalippa [2022] FCAFC 193 at [153].*

[18] *Cooper v National Offshore Petroleum Safety and Environmental Management Authority (No 2) [2023] FCA 1158 at paragraph [11]; Santos NA Barossa Pty Ltd v Tipakalippa [2022] FCAFC 193 at [153].*

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 5.25.2). 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 5.5.75.5.3).

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,[19] 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." [20]

"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"[21] (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" [22] (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.[23] 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 5.25.5.2).

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.

[19] *Santos NA Barossa Pty Ltd v Tipakalippa [2022] FCAFC 193 at paragraph [95], [98], [103]-[104] and [109].*

[20] *Santos NA Barossa Pty Ltd v Tipakalippa [2022] FCAFC 193 at paragraph [98].*

[21] *Santos NA Barossa Pty Ltd v Tipakalippa [2022] FCAFC 193 at paragraph [96].*

[22] *Santos NA Barossa Pty Ltd v Tipakalippa [2022] FCAFC 193 at paragraph [104].*

[23] *Santos NA Barossa Pty Ltd v Tipakalippa [2022] FCAFC 193 at paragraph [47] and [48].*

5.5.2 Consultation method

Woodside's First Nations team has experience in engaging and working with First Nations organisations and individuals, including within the Commonwealth Native Title and cultural heritage systems, 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 First Nations groups' established channels of communication and methods of consultation. Woodside's First Nations team exercises its professional judgement and is respectful of long-standing relationships (where in place) when considering consultation with First Nations groups. The First Nations team's approach is also informed by the established systems of recognition for First Nations groups and their nominated representative corporations within particular jurisdictions.

For example, the methodology for engaging with First Nations groups in the Northern Territory 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 First Nations 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.[24] 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 First Nations communities. Woodside follows these processes for the appropriate broad capture of individuals' awareness of our activities, to self-identify (Section 5.3.4), 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 First Nations 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 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. First Nations 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 First Nations people] than the national average across all geographical locations*" (Social media mob: being Indigenous online, Professor Bronwyn Carlson (2018)).
- carrying out ongoing consultation post regulation 25 consultation, where Woodside has a Program of Ongoing Engagement with Traditional Custodians. This program sets out Woodside's commitment to

[24] *Santos NA Barossa Pty Ltd v Tipakalippa [2022] FCAFC 193 at paragraph [95].[104].[153].*

ongoing engagement and support to care for and manage country, including Sea Country. The program was developed in response to Traditional Custodian feedback.

- Basing members of its First Nations team in Karratha and Roebourne and who serve as on-Country points of contact for First Nations 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 encouraging distributing 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 First Nations 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*"[25]. 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[26]. When the First Nations 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 5.35.2).

Specific to Woodside's approach for identifying relevant Traditional Custodians, Woodside's First Nations 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

[25] *Munkara v Santos NA Barossa Pty Ltd (No 3) [2024] FCA 9 at [205]*

[26] *Munkara v Santos NA Barossa Pty Ltd (No 3) [2024] FCA 9 at [205]*

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 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 First Nations 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*)[27].

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

[27] *Santos NA Barossa Pty Ltd v Tipakalippa [2022] FCAFC 193, at [104]*

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.

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 First Nations 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 First Nations engagement team, key project personnel and environmental experts are typically present to enable effective communication and prompt response to questions. Materials for these sessions 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 First Nations 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.

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.

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). 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 7.9), 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 Review process as appropriate (see Section 7.7).

6. ENVIRONMENTAL IMPACT AND RISK ASSESSMENT, PERFORMANCE OUTCOMES, STANDARDS AND MEASUREMENTS CRITERIA

6.1 Overview

This section presents the impact and risk analysis and evaluation, EPOs, EPSs and MC for the Petroleum Activity, using the methodology described in Section 2 of this EP. Impacts and risks associated with the Petroleum Activity are summarised in Table 6-1 and evaluated throughout this chapter.

Table 6-1: Environmental impact analysis summary of planned and unplanned activities

Aspect	EP section	Risk rating				Acceptability of impact/risk
		Impact/ consequence	Potential impact/consequence level	Likelihood	Current risk rating	
Planned activities (routine and non-routine)						
Physical presence: interaction with third party vessels	6.6.1	F	No lasting effect (<1 month). Localised impact not significant to area/item of cultural significance.	-	-	Broadly acceptable
Physical presence: seabed disturbance	6.6.2	E	Slight, short-term impact (<1 year) on species, habitat (but not affecting ecosystem function), physical or biological attribute.	-	-	Broadly acceptable
Routine acoustic emissions: generation of noise from project vessels, MODU, and helicopter operations	6.6.3	F	No lasting effect (<1 month). Localised impact not significant to environmental receptor.	-	-	Broadly acceptable
Routine light emissions: external lighting on the MODU project vessels	6.6.4	F	No lasting effect (<1 month). Localised impact not significant to environmental receptor.	-	-	Broadly acceptable
Routine atmospheric and greenhouse gas emissions from fuel use and flaring	6.6.5	F	No lasting effect (<1 month). Localised impact not significant to environmental receptor.	-	-	Broadly acceptable
Routine and non-routine discharges: MODU and project vessels	6.6.6	F	No lasting effect (<1 month). Localised impact not significant to environmental receptor.	-	-	Broadly acceptable
Routine and non-routine discharges: well clean-out fluids, well kill fluid, cement cuttings, swarf, formation rock, drilling fluids (WBM), NWBM and wellhead removal fluids (grit and flocculant)	6.6.7	F	No lasting effect (<1 month). Localised impact not significant to environmental receptor.	-	-	Broadly acceptable
Routine and non-routine discharges: wet cement, cementing fluids, subsea fluids, unused bulk products and marine riser clean-out	6.6.8	F	No lasting effect (<1 month). Localised impact not significant to environmental receptor.	-	-	Broadly acceptable
Routine and non-routine discharges: subsea fluids and WCP fluids	6.6.9	F	No lasting effect (<1 month). Localised impact not significant to environmental receptor.	-	-	Broadly acceptable

Aspect	EP section	Risk rating				Acceptability of impact/risk
		Impact/ consequence	Potential impact/consequence level	Likelihood	Current risk rating	
Unplanned activities (accidents, incidents, emergency situations)						
Unplanned hydrocarbon release: loss of well containment (loss of well control)	6.7.2	B	Major, long term impact (10–50 years) on highly valued ecosystem, species, habitat or physical or biological attribute.	1	M	Broadly acceptable
Unplanned hydrocarbon release: vessel collision	6.7.3	D	Minor, short-term impact (1–2 years) on species, habitat (but not affecting ecosystem function), physical or biological attribute.	1	M	Broadly acceptable
Unplanned hydrocarbon or chemical release: hydrocarbon release during bunkering/ refuelling and chemical transfer, storage and use	6.7.4	E	Slight, short-term impact (<1 year) on species, habitat (but not affecting ecosystem function), physical or biological attribute.	2	M	Broadly acceptable
Unplanned discharges: drilling and well fluids	6.7.5	E	Slight, short-term impact (<1 year) on species, habitat (but not affecting ecosystem function), physical or biological attribute.	2	M	Broadly acceptable
Unplanned discharges: deck and subsea spills	6.7.6	F	No lasting effect (<1 month). Localised impact not significant to environmental receptor.	2	L	Broadly acceptable
Physical presence: vessel collision with marine fauna	6.7.7	F	No lasting effect (<1 month). Localised impact not significant to environmental receptor.	1	L	Broadly acceptable
Physical presence: disturbance to seabed from loss of station keeping	6.7.8	D	Minor, short-term impact (1–2 years) on species, habitat (but not affecting ecosystem function), physical or biological attribute.	1	L	Broadly acceptable
Unplanned discharges: loss of solid hazardous and non-hazardous wastes (including dropped objects)	6.7.9	F	No lasting effect (<1 month). Localised impact not significant to environmental receptor.	2	L	Broadly acceptable
Physical presence: introduction of invasive marine species	6.7.10	D	Minor, short-term impact (1–2 years) on species, habitat (but not affecting ecosystem function), physical or biological attribute.	0	L	Broadly acceptable

6.2 Impacts and risks not deemed credible or outside the scope of this Environment Plan

During the ENVID, several risks and/or impacts were identified as either being outside the scope of this EP, or not relevant to the Petroleum Activity. These are described below:

6.2.1 Impacts and risks covered under existing EPs

6.2.1.1 Unplanned Hydrocarbon Release

During the Petroleum Activity there is potential for activities to occur adjacent to or near other live subsea infrastructure. Risks associated with this include damage to live infrastructure from dropped objects, anchor drag or vessel collision with other project vessels or facilities. These scenarios could result in a loss of hydrocarbons to the environment.

6.2.1.2 Anchor Drag

A moored/ hybrid MODU may be used for the Petroleum Activity, secured on station by an 8 to 12-point mooring system deployed to the seabed, as dictated by the mooring analysis. High energy weather events such as cyclones, occurring while the 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 and over live infrastructure.

For a moored MODU, personnel on-board are typically evacuated during cyclones. Woodside implements a risk-based assessment process to aid in decision making for cyclone evacuations, with the well suspended prior to MODU evacuation. Support vessels also demobilise from the Operational Area during the passage of a cyclone. While the MODU is temporarily abandoned, the position of the MODU is monitored remotely for any deviation. Support vessels and MODU personnel return to the Operational Area as soon as safe to do so after a cyclone evacuation. Operational experience indicates cyclone evacuations typically last for seven days.

Industry statistics from the North Sea show that a single mooring line failure for MODUs is the most common failure mechanism (33×10^{-4} per line per year), followed by a double mooring line failure (11×10^{-4} per line per year) (Petroleumstilsynet, 2014). Note that single and double mooring line failures do not typically result in the loss of station keeping. If partial or complete mooring failures 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).

The worst-case credible hydrocarbon release scenarios from these risks have been defined and assessed in the Angel and GWA Facility Operations EPs.

The EPs provide a description and assessment of impacts and risks, as well as management controls and response capabilities.

The spill scenarios are, therefore, not addressed further in this EP. Additional controls for prevention of dropped objects on live infrastructure or vessel collisions are outlined in Section 6.7.9 and Section 6.7.3, respectively.

6.2.1.3 TPA03 Ongoing Operations

Following the successful well intervention of TPA03 described under this EP, the well will resume production under the Goodwyn Alpha (GWA) Facility Operations EP. All impacts and risks associated with ongoing production of well fluids from TPA03, including associated greenhouse gas emissions, and maintenance of subsea well infrastructure is described and assessed under the accepted GWA Operations EP.

6.2.2 Shallow/Nearshore Activities

The Petroleum Activities Program is located in water depths greater than 85 m and at a distance about 72 km to 139 km from the nearest landfall (Montebello Islands). Consequently, risks associated with shallow/near shore activities such as risks of grounding were assessed as not credible.

6.3 Cumulative impacts

Woodside has assessed the cumulative impacts of the Petroleum Activity in relation to other relevant petroleum and greenhouse gas (GHG) activities that could realistically result in overlapping temporal and spatial extents. In particular, planned activities at the Woodside Angel, GWA, North Rankin and Okha facilities and the MODEC FPSO, which either overlap or are near the Operational Areas. Potential simultaneous operations (SIMOPS) between the Petroleum Activity and other activities occurring in WA-1-L, WA-3-L and WA-5-L are described in Section 3.7.1.

Where relevant, the cumulative impacts of activities associated with undertaking multiple concurrent or parallel activities associated with this Petroleum Activity have also been assessed in Sections 6.6 and 6.7. No simultaneous P&A operations (i.e., more than one MODU in the Operational Areas simultaneously) are planned. There is potential some preparatory activities conducted on a project vessel may still be ongoing once the MODU mobilises and commences plugging activities within the Operational Areas (as described in Section 3.7.1).

If SIMOPs were to occur, up to four vessels and the MODU may be in the field at the same time based on:

- MODU (moored, DP or hybrid)
- up to three MODU support vessels, including AHVs and general supply/support vessels
- IMR vessel, typically a multi-use support vessel (MPSV) or light construction vessel (LCV).

Submarine cables located in proximity to the Operational Areas were identified within Section 4.9.7. While there is spatial overlap with the Woodside Fibre Optic Cable Route and Operational Area A, it is highly unlikely that concurrent activities with other operations would occur, due to required communications between operators and the inherent risk reduction in avoiding such situations. Therefore, no cumulative risks or impacts will credibly occur.

6.4 Environmental performance outcomes, standards and measurement criteria

Regulation 21(7) of the Environment Regulations requires that an EP includes EPOs, EPSs and MC that address legislative and other controls to manage the environmental risks and impacts of the activity to ALARP and acceptable levels.

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 2.3 as part of the acceptability and ALARP justification process.

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'.

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 2.3.2), which is applied to the aspects in Section 6, taking into consideration the principles of ESD. The EPOs have been set at a level of environmental performance that is proportionate to the identified environmental impact or risk.

Impact based EPOs, where qualitative terms (e.g. 'prevent', 'limit') are used in EPOs, are supported by detailed impact assessment in Section 6 such that they can be interpreted as meaning 'impact and risk greater than that predicted in this EP'.

A risk-based EPO ties in with Woodside's risk management processes so that risk is maintained within a level that has been evaluated as being appropriate to the nature and scale of the risk. WMS and relevant

controls are used to identify and treat potential step-outs (resulting in an increased likelihood) from expected controls performance or integrity envelopes.

EPSs and MC are defined to measure environmental performance against the EPOs. EPSs are statements of performance required of a control so as to manage risk and/or impacts to ALARP and to an acceptable level. EPSs are used as the basis for environmental performance reporting and demonstrate compliance against the EPO.

MC are outlined defining how environmental performance is measured and they set the criteria to determine whether the EPOs and EPSs have been met during the activity.

For planned activities, where the activity is undertaken as described and the relevant EPS are implemented, it confirms that the EPOs are being met. A breach of the EPOs or EPSs constitutes a 'recordable incident' under the Environment Regulations.

6.5 Presentation

The environmental impact and risk analysis and evaluation, demonstration of ALARP and acceptability, EPOs, EPSs and MC are presented in tabular form throughout this section, 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="5">Description of the Activity – Regulation 21(1)</td><td colspan="5">Description of the Environment – Regulations 21(2)(3)</td><td colspan="4">Consultation – Regulations 25 and 24(b)</td></tr>
<tr><th colspan="14">Impact and risk evaluation summary
Summary of ENVID outcomes</th></tr>
<tr><td rowspan="2">Source of impact/risk
Regulation 21(1)</td><td colspan="6">Environmental value 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 risk/ impact</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 identified risk/impact including sources or threats that may lead to the impact/risk or identified event. Regulation 21(1).</td></tr>
<tr><th colspan="14">Impact or consequence assessment</th></tr>
<tr><td colspan="14">Environmental value(s) potentially impacted</td></tr>
<tr><td colspan="14">Discussion and assessment of the potential impacts to the identified environment value/s in accordance with Regulation 21(5) and 21(6).
Description of potential impacts to environmental values aligned to Woodside impacts and risk classifications (Section 2.2.6).</td></tr>
</table>

Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[28]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
ALARP/hierarchy of control tools used – Section 2.2.5				
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 disproportionate (costs outweigh benefits), the control will not be adopted.	If control is adopted, reference to Control No. provided.
ALARP statement: Made on the basis of the environmental impact/risk assessment outcomes, use of the relevant tools appropriate to the decision type (Section 2.2.4.2) 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 2.3 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	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).

[28] *Qualitative measure.*

EPOs, EPS and MC			
Environmental performance outcomes	***Controls***	***Performance standards***	***Measurement criteria***
are directly linked to the outcome. R: The outcome will be relevant to the source of risk/impact and the potentially impacted environmental value[29] T: The outcome will state the timeframe during which the outcome will apply or by which it will be achieved.			

[29] *Where impact/consequence descriptors are presented within EPOs, the descriptors are aligned with the definitions provided in the Woodside Risk Matrix (refer Section 2).*

6.6 Planned activities (routine and non-routine)

6.6.1 Physical presence: interaction with third-party vessels

Context		
Project vessels – Section 3.5 Wellhead infrastructure – Section 3.12.4	Socio-economic environment – Section 4.9	Stakeholder consultation – Section 5

Impact evaluation summary

Source of impact	***Environmental value 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
Interference with other users – proximity of MODU and project vessels causing interference with or displacement to third party vessels (commercial fishing and commercial shipping)						X	A	F	-	-	LCS GP PJ	Broadly Acceptable	EPO 1, 2
Continued presence of the well infrastructure on the seabed prior to removal						X	A	F					
Ongoing presence of well infrastructure in operating field under completion decommissioning						X	A	F					

Description of source of impact

Presence of MODU and vessels

A number of vessels and a MODU (outlined in Section 3.5) will be temporarily present in the Operational Areas during the Petroleum Activity to permanently plug the wells and remove all associated well infrastructure above the mudline, as well as conduct well intervention activities. The presence of these vessels and the MODU in the Operational Areas presents an opportunity for interaction with third-party marine users. A temporary 500 m radius exclusion zone will be maintained around the MODU during operations. Marine users are requested to avoid this area during the activity for safety purposes.

A subsea support vessel (IMR vessel or AHTSV) will be used to conduct preparatory activities such as removal of marine growth prior to the permanent plugging activity, this will take an estimated one to seven days per well (5 to 35 days in total). An AHTSV may be used to pre-lay the MODU moorings and will take up to six weeks. An IMR vessel may also be required in the Operational Areas during the ongoing preservation of the subsea wells prior to removal of the wellheads.

Permanent plugging activities are expected to take about 15 to 60 days per well as outlined in Section 3.7 and will be undertaken by a MODU (moored, DP or hybrid). An IMR vessel or AHTSV may be used to cut and recover infrastructure following plugging activities (refer to Section 3.12.43.10). Recovery of infrastructure will likely take two to five days per well and up to about four weeks for all infrastructure, including an as-left survey.

Well intervention activities are expected to take between 5 and 14 days as outlined in Section 3.7 and will also be undertaken by a MODU (moored, DP or hybrid). When underway, activities will be 24 hours, 7 days a week. Two support vessels may be present for well intervention activities; one for transport of equipment and materials, and the other to remain at the MODU to perform standby duties.

Activity support vessels, such as cargo vessel(s) and barges, will also be present within the Operational Areas and will be used for transporting equipment and materials from a port/staging area to the Operational Areas.

Subsea infrastructure associated with the Petroleum Activities Program such as wells, risers, flowlines, support structures and mooring piles and chains may also impact other marine users.

A number of oil and gas facilities are located in the vicinity of the Operational Areas, including existing pipelines and fibre optic cables (Section 4.9.6 and Section 4.9.7).

Continued presence of well infrastructure

The continued presence of Angel well infrastructure in these operating fields until end of field life has been assessed in the Angel Operations EPs. Following permanent plugging, the Angel wellheads may be removed using a MODU under this EP or removed using a construction support vessel under the proposed Angel Subsea Infrastructure EP (as described in Section 3.10). Angel wellhead removal is planned to be achieved by using an AWJ to cut the infrastructure below the mudline, allowing infrastructure above the mudline to be removed. However, in the unlikely event the AWJ tool cannot enter the wellhead a diamond wire saw will be used creating an external cut at as close to practicable at or below the mudline. Given the Angel wellheads will be located within the existing operational/exclusion area of the Angel field, there is unlikely to be ongoing potential for interactions with commercial fisheries that operate trawl equipment.

The continued presence of PoG well infrastructure until end of field life has been assessed in the Goodwyn Alpha Facility Operations EPs. PoG wellheads will remain in place to facilitate flushing of the PoG flowline at a later date (following end of field production) to be managed under a future approval. The wellheads extend up to 4.5 m above the seabed.

Upon completion of the well intervention on TPA-03, ongoing operations will be managed under the Goodwyn Alpha Facility Operations EP.

Impact assessment

Environmental value(s) potentially impacted

Interactions with commercial fishing activities

The Operational Areas overlap three Commonwealth and 12 State managed fisheries (Section 4.9.2). However, only the State-managed Pilbara Demersal Scalefish Fishery (which includes the Pilbara Line Fishery, Pilbara Trap Managed Fishery and Pilbara Fish Trawl (Interim) Managed Fishery) and the Mackerel Managed Fishery are considered to have limited potential for interaction with project activities (Section 4.9.2).

The Operational Areas are located within a 60 nm CAES block which has reported up to four Pilbara Demersal Scalefish Fishery vessels and up to three Mackerel Managed Fishery vessels active in the block each year between 2018 and 2023, according to FishCube data available from DPIRD. Each year consistent annual fishing effort was reported from these fisheries (Section 4.9.2). Given the overlap of the Operational Areas with the fishing block and the annual fishing effort, interactions with the fishery may occur.

During project activities, the presence of temporary exclusion zones and vessels in the Operational Areas and may restrict the use of the area by the fishery, and any other commercial fisheries that have been identified as having potential (but unlikely) to use the Operational Areas. Given the exclusion zones are relatively small (500 m) and temporary, the area from which fishing vessels may be displaced at any one time is negligible when compared to the area available to fish, and in which fishing effort was recorded over the past 5 years. Additionally, the MODU and vessels will be in the area for short periods over a defined amount of time, impacts during project activities will be localised.

Given the short duration of the activity, the temporary presence of the MODU and vessels in the Operational Areas would potentially result in a localised interference (navigational hazard) and displacement/avoidance by commercial fishing vessels within the immediate vicinity of the MODU or project vessels.

For the two PoG wellheads that will remain in place (as they are part of a larger active production system), the ongoing presence of infrastructure is unlikely to displace or cause a risk to trawl fisheries given the low fishing effort recorded over the last five years. Impacts to commercial fishing activities if any well infrastructure remains in-situ temporarily before removal are therefore expected to be negligible. No direct responses were received from commercial fisheries during the consultation period. However, WAFIC, as representative body for WA fisheries, requested further information on the duration that infrastructure will be temporarily on the seabed and advised as per WAFIC guidelines no infrastructure is to be left in-situ that presents snagging risk. Woodside has responded to WAFIC as evidenced in Appendix F.

Where the three Angel wellheads are removed under this EP, they will be removed below the mudline in the first instance. If internal cutting of the wellheads is not feasible, the wellheads will be cut below or as close as practicable to the seabed. As stated above, historic data shows that actual fishing effort in this area is low. Woodside understands that fishing effort is subject to change and remaining well infrastructure will be marked on navigational charts to provide sufficient information for trawl fishers to avoid the area. The area that will be occupied by remaining well

infrastructure is small (<6 m²). Any remaining infrastructure will eventually degrade into seabed sediments over approximately 150 years, in which time the snag hazard would no longer be present (Melchers, 2005).

Displacement of recreational fishing

Recreational fishing is unlikely to occur in the Operational Areas due to its depth and distance from shore. Stakeholder consultation did not identify any recreational activities that could be impacted by the activity. Recreational fishing in the region is concentrated around the coastal waters and islands of the NWMR, such as the Montebello Islands (about 72 km from Operational Area C).

If recreational fishing effort occurred within the Operational Areas while activities are being performed, displacement would be minimal and relate only to the exclusion zones (temporary) (500 m radius) that would be in place around the MODU and the subsea support vessel when undertaking project activities. Therefore, the potential impact is considered to be localised and would result in no lasting effect.

Due to the equipment that is expected to be used by recreational fishers, remaining well infrastructure is not expected to cause any adverse interactions. Recreational fishers were consulted that where possible well infrastructure will be removed above the mudline once wells are permanently abandoned in accordance with applicable regulatory requirements and no feedback was received.

Displacement to commercial shipping

The presence of the MODU and/or project vessels could potentially cause temporary disruption to commercial shipping. To reduce the likelihood of interactions between commercial shipping vessels and other vessels, AMSA have introduced a series of shipping fairways within which commercial shipping vessels are advised to navigate. The fairways are not mandatory, however, AMSA strongly recommends commercial shipping vessels remain within the fairway when transiting the region. The use of shipping fairways is considered to be good seafaring practice, with AUSREP data from AMSA indicating cargo ships and tankers routinely navigate within the established fairways.

None of these fairways intersect with Operational Area A or B, however the fairway intended to direct north/south-bound vessel traffic from Barrow Island overlaps Operational Area C (Section 4.9.5). Therefore, there is a slightly higher chance of interference between project activities and commercial shipping in this area. However, any impact would be limited to the duration of the activities and temporary in nature.

Shipping in the area is mainly related to the resources industry. The potential impacts associated with this Petroleum Activity may include displacement of vessels as they make slight course alterations to avoid the MODU and/or subsea support vessel(s). Considering the highly localised and temporary nature of the impact, no lasting effect on commercial shipping activities is anticipated. AMSA was consulted during the development of this EP and no feedback was received.

Interference with existing oil and gas infrastructure

A number of oil and gas facilities are located in the vicinity of the Operational Areas, including existing pipelines and fibre optic cables (Section 4.9.6 and Section 4.9.7). Interactions with operators of other nearby facilities have the potential to occur, including the Woodside-operated North Rankin Complex, located 3 km south-east of Operational Area A. Although unlikely, interactions may occur with vessels undertaking IMR activities on the North Rankin Complex. The Goodwyn Alpha Platform (operated by Woodside) is 8 km north-east of Operational Area C and the Modec Venture 11 (operated by MODEC) is 19 km north of Operational Area B. This would mainly be as a result of project-based vessel movements to and from the Operational Areas, which are not covered within this EP. Any impacts are considered negligible with no lasting effects.

Cumulative impacts

There may be cumulative impacts to commercial fisheries from SIMOPS as described in Section 3.7.1. If SIMOPS were to occur, up to four vessels and the MODU may be in the field at the same time. For the fisheries considered active in the vicinity of the Operational Areas, potential cumulative impacts to vessels that overlap the Operational Areas would be localised with no lasting effect.

Demonstration of ALARP

Control considered	***Control feasibility (F) and cost/sacrifice (CS)[30]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
Legislation, codes and standards				
Contract vessels compliant with Marine Orders for safe vessel operations:	F: Yes. CS: Minimal cost. Standard practice.	Marine Orders 21, 27 and 30 are required under Australian regulations;	Control based on legislative requirement – must be adopted.	Yes **C 1.7**

[30] *Qualitative measure.*

• 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.		implementation is standard practice for commercial vessels as applicable to vessel size, type and class.		
Good practice				
AHO notified of activities and movements no less than four weeks prior to scheduled activity commencement.	F: Yes. CS: Minimal cost. Standard practice.	Notification to AHO will enable them to generate navigation warnings (Maritime Safety Information Notifications (MSIN) and Notices to Mariners (NTM) (including AUSCOAST warnings where relevant)), thereby reducing the likelihood of unplanned interactions with other vessels.	Benefits outweigh cost/sacrifice. Control is standard practice.	Yes **C 1.1**
Wellheads to remain on AHO navigation charts until removal.	F: Yes. CS: Minimal cost. Standard practice.	The presence of the wellheads is currently marked on AHO navigation charts. Their presence will remain on the charts until removal activities are completed, giving fishers and other marine users sufficient information to plan activities around the infrastructure until removal.	Benefits outweigh cost/sacrifice. Control is standard practice.	Yes **C 1.2**
Notify relevant government departments, fishing industry representative bodies & licence holders, and adjacent titleholder (Santos) of activities prior to commencement and upon completion of activities.	F: Yes CS: Minimal cost. Standard practice.	Communicating the Petroleum Activity to other marine users ensures they are informed and aware, thereby reducing the likelihood of interfering with other marine users.	Benefits outweigh cost/sacrifice. Control is standard practice.	Yes **C 1.3**
Notify AMSA Joint Rescue Coordination Centre (JRCC) of activities where vessels will be in the field >3 weeks, 24 to 48 hrs before activities.	F: Yes. CS: Minimal cost. Standard practice.	Communicating the Petroleum Activity to other marine users ensures they are informed and aware should emergency response be required.	Benefits outweigh cost/sacrifice. Control is standard practice.	Yes **C 1.4**

Notify AHO and AMSA JRCC of any extended delay in the timing of the Petroleum Activity.	F: Yes. CS: Minimal cost. Standard practice.	Communicating the Petroleum Activity to other marine users ensures they are informed and aware, thereby reducing the likelihood of interfering with other marine users.	Benefits outweigh cost/sacrifice. Control is standard practice.	Yes **C 1.5**
Establish and maintain a publicly available interactive map which provides stakeholders with updated information on activities being conducted as part of the Petroleum Activity including location of MODU.	F: Yes CS: Minimal cost. Standard practice.	Interactive map provides additional/alternate method for marine users to obtain information on the timing of activities, thereby reducing the likelihood of interference with other marine users.	Benefits outweigh cost/sacrifice.	Yes **C 1.6**
Professional judgement – Eliminate				
Remove well infrastructure above the mudline (if removed under this EP).	F: Yes. CS: Moderate cost.	Removal of infrastructure eliminates any potential interactions with commercial fishers.	Benefits outweigh cost/sacrifice.	Yes **C 1.8**
Remove all well infrastructure immediately following permanent plugging activities.	F: Yes. CS: Moderate cost.	Impact assessment has determined that continued presence of well infrastructure on the seabed temporarily following permanent plugging activities is not expected to result in impacts to other marine users given the fields are still operating and producing.	Disproportionate. Cost/sacrifice outweighs benefits.	No
Limit activities to avoid peak shipping and commercial fishing activities.	F: No. Shipping occurs year-round. The potential for displacement of shipping from the Operational Areas may occur, given the moderate shipping density adjacent to the Operational Areas. Simultaneous operations with fishing seasons cannot be eliminated as fishing activities may occur throughout the year, and exact details on future fishing activities are not known. CS: Not considered – control not feasible.	Not considered – control not feasible.	Not considered – control not feasible.	No

Eliminate use of vessels.	F: No. The use of vessels is required to conduct the Petroleum Activity. CS: Not considered – control not feasible.	Not considered – control not feasible.	Not considered – control not feasible.	No
Professional judgement – Substitute				
No additional controls identified.				
Professional judgement – Engineered solution				
No additional controls 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 2.2.4.2) and Woodside's criteria for demonstrating ALARP (Section 2.3.1), Woodside considers the adopted controls appropriate to manage potential impacts associated with the physical presence of the MODU and vessels during permanent plugging, well infrastructure removal activities and well intervention activities on other marine users, such as shipping and commercial fisheries. As no reasonably practicable additional/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, physical presence of the MODU, vessels and continued presence of wellhead infrastructure prior to removal may result in negligible, localised impacts (<1 month) to other marine users, with no lasting effect. Further opportunities to reduce the impacts and risks have been investigated above. The impact assessment has also determined that, given the adopted controls, if the well infrastructure cannot be fully removed above the mudline, the ongoing physical presence of well infrastructure will be managed through the overarching permissioning documents for these fields (Angel Operations and Goodwyn Alpha Facility Operations EPs) and is unlikely to result in more than a localised impact. On the basis of the assessment outcomes, use of the relevant tools appropriate to the decision type (i.e. Decision Type A; Section 2.2.4.2) and Woodside's criteria for demonstrating acceptability (Section 2.3.2), Woodside considers the adopted controls appropriate to manage the impacts 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			
EPO	***Controls***	***PS***	***MC***
EPO 1 Impacts to relevant stakeholders from the Petroleum Activities Program planned activities will be limited through the provision of appropriate information / notification.	**C 1.1** AHO notified of activities and movements no less than four weeks prior to scheduled activity commencement.	**PS 1.1** Notification to AHO of activities and movements to allow generation of navigation warnings (MSIN and NTM [including AUSCOAST warnings where relevant]).	**MC 1.1.1** Records demonstrate that AHO notifications complete.
	C 1.2 Wellheads to remain on AHO navigation charts until removal.	**PS 1.2** Notification to AHO after wellhead removal.	**MC 1.2.1** Consultation records demonstrate that AHO have been notified of wellhead removal.
	C 1.3 Notify relevant government departments, fishing industry	**PS 1.3** DoD, DPIRD, DEMIRS, Recfishwest, WAFIC & licence holders, and	**MC 1.3.1** Consultation records demonstrate that notifications are complete.

Demonstration of acceptability			
	representative bodies & licence holders, and adjacent titleholder (Santos) of activities prior to commencement and upon completion of activities.	adjacent titleholder (Santos) notified prior to commencement and upon completion of activities.	
	C 1.4 Notify AMSA Joint Rescue Coordination Centre (JRCC) of activities where vessels will be in the field >3 weeks, 24 to 48 hrs before activities.	**PS 1.4** AMSA's JRCC is notified 24 to 48 hrs before mobilisation, for activities in the field >3 weeks, for awareness should emergency response be required.	**MC 1.4.1** Records demonstrate a once-off notification provided to AMSA's JRCC within required timeframes, before mobilisation.
	C 1.5 Notify AHO and AMSA JRCC of any extended delay in the timing of the Petroleum Activity.	**PS 1.5** AHO and AMSA JRCC notified of any extended delay in the timing of the Petroleum Activity.	**MC 1.5.1** Consultation records demonstrate that AHO and AMSA JRCC were notified of extended delays in the timing of the Petroleum Activity.
	C 1.6 Establish and maintain a publicly available interactive map which provides stakeholders with updated information on activities being conducted as part of the Petroleum Activity including location of MODU.	**PS 1.6** Activity interactive map established and maintained throughout activities.	**MC 1.6.1** Records demonstrate interactive map was provided and available to stakeholders throughout activities.
	C 1.7 Contract vessels complying 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.	**PS 1.7** Vessels contracted whose practices comply with Marine Orders as applicable to vessel size, type and class (Marine Orders 21, 27 and 30).	**MC 1.7.1** Marine verification records demonstrate compliance with standard maritime safety procedures (Marine Orders 21, 27 and 30).
EPO 2 Limit adverse interactions with other marine users during the Petroleum Activity or from continued presence of well infrastructure.	**C 1.8** Remove well infrastructure above the mudline (if removed under this EP).	**PS 1.8** Well infrastructure is removed above the mudline (if removed under this EP).	**MC 1.8.1** As left survey demonstrates well infrastructure has been removed (if removed under this EP).

6.6.2 Physical presence: seabed disturbance

Context		
Mooring installation and anchor hold testing – Section 3.9.2 Well intervention activities – Section 3.10 Permanent plugging activities – Section 3.11 and 3.12 Remotely operated vehicles – Section 3.5.3 Marine growth removal – Section 3.9.7.1 Sediment relocation – Section 3.9.7.2	Physical environment – Section 4.4 Habitats and biological communities – Section 4.5 Cultural values and heritage – Section 4.9.1	Stakeholder consultation – Section 5

Impact evaluation summary

Source of impact	***Environmental value 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
Disturbance to seabed from MODU station keeping (MODU mooring, including anchor hold testing)	X	X		X			A	E	-	-	LCS GP PJ	Broadly Acceptable	EPO 3, 4
Disturbance to seabed from subsea cleaning and preparation for permanent plugging activities (water jetting and sediment relocation), including use of the ROV (movement and work basket)	X	X		X			A	F					
Disturbance to seabed from placement and recovery of transponders and clump weights on seabed	X			X			A	F					
Disturbance to seabed from cutting and removal of Xmas trees and wellheads including mud mats for equipment laydown	X	X		X			A	E					

Description of source of impact
MODU anchoring and anchor hold testing Seabed disturbance will result from anchor hold testing and MODU mooring system, including placement of anchors and chain/wire on the seabed, potential dragging during tensioning and recovery of anchors. Overall, mooring of the MODU and anchor hold testing activities will result in localised, small-scale seabed disturbance. Mooring may require an 8 to 12 point pre-laid mooring system. Moorings will be placed in a radius around each well of up to 4 km and a mooring analysis will be undertaken to determine the appropriate mooring pattern. The area of seabed affected by anchoring operations depends upon water depth, currents, size of the vessels and anchors, and length of anchor chain (NERA, 2018a). As part of mooring preparations, anchor holding testing may be conducted and may result in short-term, localised anchor drag on the seabed. The planned anchoring activities will be within the parameters defined in the Anchoring of Vessels and Floating Facilities EP Reference Case (Department of Industry, Innovation and Science, undated) during the Petroleum Activity, including: • installation of moorings, buoys, equipment or other infrastructure for a period of up to two years • wet storage on seabed of anchor chains etc., during activities up to two years • activities with total areas of seabed disturbance less than 13,000 m² • locations of water depth greater than 70 m. This boundary is set to exclude areas of sensitive primary producer habitats (e.g. corals, seagrass) that occur in shallower waters. ***ROVs*** The use of ROVs during the Petroleum Activity may result in temporary seabed disturbance and suspension of sediment causing increased turbidity as a result of working close to, or occasionally on, the seabed. ROV use close to or on the seabed is limited to that required for effective and safe subsea activities. The footprint of a typical work class ROV is approximately 2.5 m by 1.7 m (4.25m^2). ***Subsea cleaning, sediment and marine growth removal and other preparation activities*** Subsea cleaning and preparation activities include removing marine growth from infrastructure such as the Xmas trees and relocating sediment that has built up around subsea infrastructure. Removing marine growth may be done in various ways. Those that have the potential to impact the seabed include use of high-pressure water and/or brushes on ROVs. An ROV may be used to relocate sediment material around the well location to allow inspection/intervention works to be performed. Relocating sediment involves using an ROV-mounted suction pump to remove sediment that has built up around the well infrastructure. This will cause localised and temporary impacts to water quality from increased turbidity and may cause localised and temporary impacts to benthic habitats. If a diamond wire saw is required to be used due to the AWJ tool not being able to enter the well, sediment may need to be relocated so that the diamond wire saw can cut as close to the mudline as practicable. Although this would require more sediment relocation than the use of an AWJ the sediment relocation will be localised and within the immediate vicinity of the wellhead. ***Underwater transponders*** An array of long base line (LBL) transponders may be installed on the seabed as required to support plug and abandonment activities and well intervention activities. Transponders may be moored to the seabed either by a clump weight or mounted on a seabed frame. The standard clump weights used, made of cement or steel, will likely weigh about 80 kilogram (kg). A typical seabed frame is 1.5 m × 1.5 m × 1.5 m in dimension and weighs about 40 kg. On completion of the positioning operation, the array transponders moored by clump weight will be recovered by means of an acoustic release and the clump weights removed from the seabed. The transponders mounted on seabed frames will be removed by ROV. ***Equipment lay-down*** Equipment such as ROV frames and baskets may be placed on the seafloor during well intervention activities. Equipment lay-down is temporary and all equipment will be removed on the completion the activities. ***Cutting and removal of well infrastructure*** Localised seabed disturbance will occur when cutting and removing the five subsea trees and through removal of three Angel wellheads (if completed by the MODU under this EP), including the placement of mud mats for equipment laydown. Given the cut is planned to be made from within the well below the mudline, disturbance is expected to be minimal. Well infrastructure may be set down on the seabed in the immediate vicinity of removal for a period to enable safe rigging prior to recovery. Placement of well infrastructure on the seabed will result in temporary seabed disturbance and suspension of sediment causing increased turbidity.
Impact assessment
Environmental value(s) potentially impacted
Seabed disturbance from the Petroleum Activity can be categorised into two potential impacts, being:

- direct physical disturbance of benthic habitat
- indirect disturbance to benthic habitats from sedimentation.

Water and sediment quality

Seabed disturbance may result in a decline in water quality as a result of increased suspended sediment concentrations from ROV operations close to the seabed. The use of water jetting to remove marine growth on the wellhead structures will result in temporary suspension of organic matter and localised increase in turbidity. Water jetting will be limited to what is necessary to perform an effective inspection during well intervention activities. However, resuspended sediment loads are not likely to be significant due to the relatively small footprint for each activity described above. Given the short nature of each activity, and the small footprint, any impacts to water and sediment quality are likely to be localised and transient in nature.

Benthic habitats

MODU station keeping (including activities associated with mooring design and anchor hold testing), subsea cleaning and preparation, installation of mud mats, temporary placement of wellheads on the seabed prior to recovery, equipment laydown, subsea transponders and ROV operations are likely to result in localised to short-term, physical modification to the seabed and localised disturbance to soft sediments. Potentially leaving 1 m of well infrastructure in situ may alter hydrodynamic conditions and result in scouring and accretion, or potentially result in the creation of a new benthic habitat.

The Operational Areas are expected to consist primarily of sandy substrate and soft sediments (see Section 4.5). Broad-scale bathymetric surveys around the Operational Areas show the seabed is relatively flat and featureless. Communities in the area are expected to largely consist of low-density sessile benthic biota and mobile epifauna. Discrete areas of hard substrate hosting sessile filter feeding communities may also be associated within the Ancient Coastline at the 125 m Depth Contour KEF, which overlaps the Operational Areas. While the Glomar Shoals KEF overlaps Operational Area B, the shoal feature itself is 5.4 km from the Operational Area.

Physical impacts from the Petroleum Activity are expected to be for the most part confined to sediment- burrowing infauna associated with the soft sediment seabed. Impacts to epifauna associated with hard substrate could occur but would represent a small proportion of the wider representative biota. Impacts associated with anchoring and mooring, will occur beyond the footprint of the existing infrastructure, but the area disturbed will be limited. Project-specific Mooring Design Analysis will help avoid any direct physical impacts to natural hard substrate that may occur in the Operational Areas. ROV activities near the seafloor and associated sediment relocation activities may result in localised impacts to deep-water biota, as a result of elevated turbidity and the clogging of respiratory and feeding parts (turbidity) of filter-feeding organisms. However, elevated turbidity would only be expected to be very localised, and temporary, and is therefore not expected to have any significant impact to environment receptors, particularly given the low densities of benthic organisms at the water depths of the Operational Areas.

The use of AWJ cutting, diamond wire saw cutting, ROV operation nearby, water jetting to remove marine growth on the wellhead structures will result in temporary suspension of organic matter and localised increase in turbidity. Water jetting will be limited to what is necessary to perform well intervention activities, P&A of the wells and removal of well infrastructure.

Removal of the well infrastructure will disturb artificial habitats on the wellheads and associated fauna, with impacts expected to be localised and restricted to the footprint of the wellhead and small areas around it. The cutting and removal of the well infrastructure, including the laydown of mud mats will affect a relatively small footprint of the seabed and lead to localised, temporary suspension of sediments. As such, no significant impacts to benthic fauna are expected.

KEFs

The Operational Areas overlap two KEFs: the ancient coastline at 125 m depth contour KEF and Glomar Shoal KEF (Operational B only, 45 km south-east of Operational Area A and 70 km from Operational Area C). The ecological values of the KEFs are described in Appendix C. These include the potential of enhanced productivity associated with sessile communities due to increased availability of nutrients and enhanced vertical mixing of water layers. As the Operational Areas only overlap a small portion of the KEFs, the ecological functions of the KEFs (submerged coastline providing areas of hard substrate, diverse biological assemblages, enhanced productivity) are not predicted to be impacted by the Petroleum Activity.

Benthic habitats of the Glomar Shoals KEF are characterised by sand/silt substrate and low epibenthic cover (approximately 53% total cover), with soft corals and sponges the most abundant fauna (AIMS, 2014a). While Operational Area B overlaps the Glomar Shoals KEF (approximately 2.53 km² of the Glomar Shoals KEF lies within Operational Area B), the hard coral communities associated with the Glomar Shoals KEF feature are over 15 km from the Operational Area. The majority of suspended sediments from drilling, subsea installation and

Activities are expected to remain localised adjacent to the wells, with anchoring up to 4000 m from each well (i.e., potentially impacting a small area of the Glomar Shoals KEF but not impact Glomar Shoals itself). The NWS Province experiences naturally high episodic sediment resuspension due to events such as tidal movements and cyclones, and the biota in the region are adapted to such conditions. Thus, impacts to Glomar Shoals KEF due to seabed disturbance are not expected to occur.

Based on the above assessment, seabed disturbance is unlikely to impact on the ecological values of the Operational Areas and surrounding environment, including the Ancient Coastline at 125 m Depth Contour KEF and Glomar Shoals KEF.

Cultural heritage

As described in Section 4.9.1, the Operational Areas overlap the Ancient Coastline at 125 m depth contour KEF and therefore, seabed disturbance within each Operational Area may directly disturb a very small, localised area of the KEF and there is the potential that Indigenous Cultural features may exist. These may potentially be disturbed from removal of infrastructure, placement of supporting equipment on the seabed or the operation of equipment near the seabed.

It is noted that an archaeological assessment of the area where seabed disturbance may occur (500 m radius) was undertaken for the TPA-03 well by a qualified and experienced maritime archaeologist, including review of remote sensing data, which did not identify any underwater cultural heritage that will be affected by well intervention activities (Nutley, 2023). Further archaeological studies will be undertaken prior to the activity commencing to understand any potential cultural features (see C2.9).

Cultural features or heritage values identified through consultation with Traditional Custodians are not expected to be impacted by the projects seabed disturbance activities.

Cumulative impacts

Cumulative impacts in relation to other relevant petroleum activities (as described in Section 3.7.1) are not predicted to occur as it is expected that any activities associated with the Petroleum Activity will be spatially and temporally separated from activities associated with other decommissioning activities occurring in the relevant petroleum licences. The predicted impacts of these other activities will be similar to those described above, with localised seabed impacts in the vicinity of the subsea infrastructure.

Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[31]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
Legislation, codes and standards				
An ROV as left survey is undertaken at the end of activity, to confirm all temporary equipment has been removed.	F: Yes. CS: Minimal cost. ROV as-left survey is standard practice	In accordance with OPGGS Act Section 572 all equipment is removed when no longer in use.	Control based on legislative requirements – must be adopted.	Yes **C 2.1**
In the event that the well infrastructure cannot be removed, remaining infrastructure will comply with the *Environmental Protection (Sea Dumping) Act 1981* (to the extent that Act is applicable).	F: Yes. CS: Minimal cost, legislative requirement	Compliance with the *Environmental Protection (Sea Dumping) Act 1981* will mean material left on the seabed is managed appropriately.	Benefits outweigh cost/sacrifice. Control is a legislative requirement.	Yes **C 2.2**
Good practice				
Monitor inventory deployed to field and track removal of equipment during activity, and list residual infrastructure.	F: Yes. CS: Minimal cost. Standard practice.	Removing wet stored items will reduce the duration of impact.	Benefits outweigh cost/sacrifice.	Yes **C 2.3**
Project specific mooring design analysis.	F: Yes. CS: Additional costs associated with upgraded MODU mooring design.	The mooring design analysis determines the number and spread of anchors required based on	Benefits outweigh cost/sacrifice.	Yes **C 2.4**

[31] *Qualitative measure.*

Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[31]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
		sediment type and seabed topography, reducing the likelihood of anchor drag leading to seabed disturbance.		
Limit area for laydown of equipment to a 500 m radius of the TPA-03 well.	F: Yes. CS: Minimal cost. Standard practice.	Limiting area of laydown of equipment to a 500 m radius of the TPA-03 well minimises the area over which seabed disturbance may occur.	Benefits outweigh cost/ sacrifice.	Yes **C 2.5**
Environmental monitoring of the seabed prior to and following the Petroleum Activity to assess any impacts to seabed.	F: Yes. CS: Significant. Monitoring of the seabed would have significant additional costs to obtain and analyse data with the spatial resolution to accurately assess changes to the seabed habitat.	Environmental monitoring would not result in any additional information about the seabed above what is provided by the Woodside Well Location and Site Appraisal Data Sheet and mooring design analysis. Therefore, no additional reductions in likelihood or consequence would occur.	Control grossly disproportionate. Monitoring will not reduce the consequence or likelihood of any impacts to the seabed, and the cost associated with the level of monitoring required to accurately assess any impacts greatly outweighs the benefits gained. Although adoption of this control could be used to verify EPOs, alternative controls identified also allow demonstration that the environmental outcome has been met based on the nature of the activity (i.e. predictable impacts) and relatively low sensitivity of the area.	No
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 7.2.3.	F: Yes. CS: Minimal costs associated with implementation of process.	Allows management of Unexpected Finds in accordance with legislative requirements, (including Underwater Cultural Heritage Guidance for Offshore Developments and the Guidelines to assessing and managing impacts to Underwater Cultural Heritage in Australian waters (DCCEEW, 2024) under the	Benefits outweigh cost/sacrifice.	Yes **C 2.6**

Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[31]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
		Underwater Cultural Heritage Act 2018, 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 *Aboriginal and Torres Strait Islander Heritage Protection Act 1984.*	F: Yes. CS: Minimal costs associated with reporting process.	Meets legislative requirements and community expectations.	Benefits outweigh cost/sacrifice.	Yes **C 2.7**
Relevant vessel crew and ROV operators will be advised in an induction of the potential to encounter UCH and requirement to follow the Unexpected Finds Procedure (Section 7.2.3).	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 2.8**
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 in depths of <130m 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 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, 2024a).	Benefits outweigh cost/ sacrifice.	Yes **C 2.9**
Professional judgement – Eliminate				
Remove well infrastructure above the mudline (if removed under this EP).	F: Yes. CS: Moderate cost.	Removal of infrastructure minimises potential	Benefits outweigh cost/sacrifice.	Yes **C 1.8**

Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[31]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
		long-term impacts to the seabed.		
Do not complete anchor hold testing for the MODU.	F: No. Anchor hold testing is a requirement for a moored MODU and it is not technically feasible for the MODU to use DP in the water depth of the well location (up to about 130 m). Woodside has a demonstrated capacity to manage the environmental risks and impacts from mooring to a level that is ALARP and acceptable. CS: Not considered – control not feasible.	Not considered – control not feasible.	Not considered – control not feasible.	No
Review of existing survey data by a suitably qualified maritime archaeologist to inform areas for laydown 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.	Wells are located in operating fields where extensive ROV footage exists. Given the seabed disturbance around the wells is limited to a small area, this controls is not considered practicable and costs outweigh benefits.	Not considered – control not feasible.	No
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 the main tool used to guide and manipulate equipment during plug and abandon activities. ROV usage is already limited to only that required to conduct the work effectively and safely. Due to visibility and operational issues, ROV work on or close to the seabed is avoided unless necessary.	Not considered – control not feasible.	Not considered – control not feasible.	No

Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[31]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
	CS: Not considered – control not feasible.			
Remove any items wet stored within a year period.	F: Yes. CS: Moderate to high cost.	Tracking and recovery of any items temporarily placed on the seabed ensures items are removed within an acceptable period of time. The proposed control ensures no additional impacts to benthic habitats and no impacts would occur to any protected species. Remaining Angel and PoG infrastructure brought onto the title is managed under the overarching permissioning documents until the fields reach cessation of production.	Benefits outweigh cost/sacrifice.	Yes **C 2.3**
ROV survey before laydown of equipment on the seabed.	F: Yes. CS: Time/ cost associated with operating ROV survey and review of data.	ROV conducting a survey prior to placing equipment on the seabed could identify any potential cultural heritage or prospective areas not identified during the archaeological review. However, the archaeological review conducted for the TPA-03 activity considered that the existing bathymetrical modelling is sufficient to inform the submerged cultural heritage impacts assessment, meaning an ROV survey before laydown of equipment on the seabed would provide negligible benefit in identifying cultural features or prospective cultural features.	Given the results of the archaeological survey for TPA-03, the negligible benefit, and the implementation of C 2.1.	No
Professional judgement – Substitute				
No additional controls identified.				

Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[31]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
Professional judgement – Engineered solution				
No additional controls 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 2.2.4.2) and Woodside's criteria for demonstrating ALARP (Section 2.3.1), Woodside considers the adopted controls appropriate to manage potential impacts associated with seabed disturbance. As no reasonably practicable additional/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 may result in slight, short-term impacts (<1 year) on species, habitat (but not effecting ecosystem function), physical or biological attributes. Further opportunities to reduce the impact have been investigated above. West Australian Museum (WAM) provided feedback during consultation in relation to potential impacts to underwater cultural heritage. Woodside has addressed this feedback in Appendix F and adopted relevant controls below. On the basis of the assessment outcomes, use of the relevant tools appropriate to the decision type (i.e. Decision Type A; Section 2.2.4.2) and Woodside's criteria for demonstrating acceptability (Section 2.3.2), Woodside considers the adopted controls appropriate to manage the impacts 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			
EPO	***Controls***	***PS***	***MC***
EPO 3 Seabed disturbance to be limited to planned activities and impacts described as part of the Petroleum Activities Program and will not occur outside the Operational Area.	**C 1.8** Refer Section 6.6.1.	**PS 1.8** Refer Section 6.6.1.	**MC 1.8.1** Refer Section 6.6.1.
	C 2.1 An ROV as left survey is undertaken at the end of activity, to confirm all temporary equipment has been removed.	**PS 2.1** Temporary equipment is removed.	**MC 2.1.1** As left survey confirms temporary equipment is removed.
	C 2.2 In the event that the well infrastructure cannot be removed, remaining infrastructure will comply with the *Environmental Protection (Sea Dumping) Act 1981* (to the extent that Act is applicable).	**PS 2.2** Woodside continues to engage with DCCEEW regarding the application of the *Environmental Protection (Sea Dumping) Act 1981* and to comply with requirements under the Act (to the extent that Act is applicable).	**MC 2.2.1** Records demonstrate DCCEEW continues to be engaged on the application of the *Environmental Protection (Sea Dumping) Act 1981* relevant to the petroleum activity and demonstrate Woodside's compliance with the Act (to the extent that Act is applicable).
	C 2.3 Monitor inventory deployed to field and track removal	**PS 2.3** Any wet stored items will be tracked and removed	**MC 2.3.1** Surveys demonstrate wet stored items have been

EPOs, EPS and MC			
EPO	***Controls***	***PS***	***MC***
	of equipment during activity, and list residual infrastructure.	from the seabed within a year period.	removed from the seabed within a year period.
	C 2.4 Project-specific Mooring Design Analysis.	**PS 2.4** Seabed disturbance from MODU mooring limited to that required to ensure adequate MODU station keeping capacity.	**MC 2.4.1** Records demonstrate Mooring Design Analysis completed and implemented during anchor deployment.
	C 2.5 Limit area for laydown of equipment to a 500m radius of the TPA-03 well.	**PS 2.5** Laydown of equipment occurs within a 500m radius of the TPA-03 well.	**MC 2.5.1** Records demonstrate equipment laydown occurs within a 500m radius of the TPA-03 well.
EPO 4 No adverse impact to unexpected finds of Underwater Cultural Heritage[32] without a permit[33].	**C 2.6** 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 7.2.3.	**PS 2.6** In the event that an underwater cultural heritage site or feature is identified implement the Unexpected Finds Procedure set out in Section 7.2.3.	**MC 2.6.1** No non-compliance with the Unexpected Finds Procedure.
	C 2.7 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.*	**PS 2.7** Report any finds of potential UCH in accordance with the Unexpected Finds Procedure (Section 7.2.3) including to the Australasian Underwater Cultural Heritage Database.	**MC 2.7.1** Records of potential UCH finds reported to relevant authorities and stakeholders.
	C 2.8 Relevant vessel crew and ROV operators will be advised in an induction of the potential to encounter UCH and requirement to follow the Unexpected Finds Procedure.	**PS 2.8** Relevant vessel crew (including ROV operators) are made aware of the requirements of the Unexpected Finds Procedure through an induction.	**MC 2.8.1** Records demonstrate vessel crew are made aware of potential to encounter UCH.
	C 2.9 Review of existing survey data by a suitably qualified maritime archaeologist to inform areas for survey	**PS 2.9** Existing survey data reviewed by a suitably qualified maritime archaeologist to inform	**MC 2.9.1** Records demonstrate review of existing archaeological data completed prior to

[32] 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.

[33] Permit for Entry into a Protected Zone or to Impact Underwater Cultural Heritage would be acquired under the UCH Act.

EPOs, EPS and MC			
EPO	***Controls***	***PS***	***MC***
	activities and/or installation of equipment that will cause seabed disturbance (in areas not previously disturbed) at depths of <130 m to avoid or where not possible, minimise physical impacts to cultural heritage areas or prospective areas.	areas for seabed disturbance activities.	commencement of seabed disturbance activities.

6.6.3 Routine acoustic emissions: generation of noise from project vessels, mobile offshore drilling unit, mechanical equipment and helicopter operations

Context		
Project vessels – Section 3.5 Helicopters – Section 3.6 Well intervention activities – Section 3.10 Permanent plugging activities – Section 3.11	Protected species – Section 4.6	Stakeholder consultation – Section 5

Impact evaluation summary

Source of impact	***Environmental value 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
Generation of acoustic signals from DP systems on support vessels					X		A	F	-	-	LCS GP PJ	Broadly Acceptable	EPO 5, 6
Generation of acoustic signals from MODU (hybrid) and project vessels during normal operations					X		A	F					
Generation of acoustic signals from cutting equipment					X		A	F					
Generation of atmospheric noise from helicopter transfers within Operational Areas					X		A	F					
Underwater and atmospheric noise from flaring					X		A	F					

Description of source of impact

Project vessels and the MODU will generate noise both in the air and underwater, due to the operation of thruster engines, propeller cavitation, plugging operations, on-board machinery, etc. These noises will contribute to and can exceed ambient noise levels which range from around 90 dB re 1 µPa (root square mean sound pressure level (rms SPL)) under very calm, low wind conditions, to 120 dB re 1µPa (rms SPL) under windy conditions (McCauley, 2005). The following information describes the source sound levels for the MODU, with standby and resupply vessel support and other project vessels. The most significant noise source will be the operation of thruster engines while operating the DP systems on the support vessels and MODU.

The MODU and support vessels are expected to remain within the Operational Areas for approximately eight months in total (refer to Section 3.7). Xmas tree cleaning and preparatory activities will occur up one to six months before P&A and will take about 7-10 days per well. Permanent P&A will take 19-33 days per well. Following plugging activities, cut and recovery of infrastructure (where required) will take 1-5 days per well. Recovery of ancillary equipment including pre-laid moorings and BOP tether system (if used) will be conducted within about one month following MODU demobilisation and will take 1-2 days per well. Well intervention activities at the TPA-03 well are expected to take between five and 14 days.

MODU operations (moored)

During the activity, the MODU will produce low-intensity continuous sound. Sound produced from an active MODU is predominantly below 2 kHz, with peak frequencies below 500 Hz. A range of broadband values, 59 to 185 dB re 1 µPa at 1 m (SPL), have been quoted for various MODUs (Simmonds et al., 2004). McPherson et al. (2021) recorded the source level spectrum of the Ocean Onyx, a column-stabilised moored MODU. The Ocean Onyx was measured to have a broadband (10 Hz to 31 kHz) source level of 175.4 dB re 1 µPa m whilst anchored and drilling. This source level is considered representative of the activities for this EP. The measured source level for the Ocean Onyx is consistent with or slightly higher than levels recorded for other moored MODUs during drilling operations. For example, McCauley (1998) recorded source noise levels for moored MODUs from 149-154 dB re 1 µPa at 1 m while actively drilling (with support vessel on anchor) and Greene (1987) recorded source levels of two moored drillships from 145-158 dB re 1 µPa at 1 m during drilling (with support vessels idling nearby). Austin et al. (2018) recorded broadband source levels from MODU operations (excluding DP thrusters) to be 170.7 dB re 1 µPa. Accordingly, noise levels from the moored MODU are likely to be lower than other sounds sources present during P&A activities, such as support vessels on DP.

Rig Anchor Release system

Should a hybrid MODU be utilised, Rig Anchor Release (RAR) moorings may be installed to allow the DP capable rig rapidly disengage from a mooring system. An RAR device will couple each of the moorings to the MODU (8 – 12 devices depending on mooring spread). RAR devices typically emit pulses (impulsive noise) of low frequency, in the range of 9-11 kHz. Transmissions are expected to be limited to short pulses with a duration of minutes, during weekly testing. When activated to release moorings, they are expected to emit pulses of ~two minutes duration for each RAR.

Project vessels and MODU operation of dynamic positioning systems

Subsea support vessels and general support vessels will not anchor within the Operational Areas due to water depth; therefore, vessels will use DP. The MODU (hybrid) will also have DP capability to assist positioning where required. Vessels maintain DP for varying durations during the Petroleum Activity, depending on the activity being undertaken. A subsea support vessel will be used to conduct removal of marine growth prior to the permanent plugging activity and IMR activities, set anchors and to cut and recover infrastructure following plugging activities. The general support vessel(s) will be transporting equipment and materials from port/staging area to the Operational Areas, and for general re-supply and support for the MODU. The main source of noise from a DP vessel relates to using DP thrusters.

McCauley (1998) measured underwater broadband noise equivalent to about 182 dB re 1 µPa at 1 m (RMS SPL) from a support vessel holding station in the Timor Sea; it is expected that similar noise levels will be generated by support vessels used for this Petroleum Activity. Hannay et al. (2004) recorded sound measurements from an AHV to be 184.4 dB re 1 µPa at 1 m (rms SPL) while completing anchor pulls. The AHVs that will be used for this activity have not been identified, but it is expected that they will be typical AHVs of a similar size and configuration as the vessel measured by Hannay et al. (2004).

Indicative DP MODU underwater noise measurements were taken for the West Aquarius MODU by JASCO on the Scotian Shelf in Canada (Wecker et al., 2022). The 90th percentile of the broadband radiated sound levels was 186.3 dB re 1 µPa (Martin et al., 2019). This is similar to measurements taken for the Maersk Discoverer drill rig on the North West Shelf (Woodside Energy Ltd, 2011), where the system emitted tonal signals between 200 Hz to 1.2 kHz, at a source level between 176 and 185 dB re 1 µPa SPL at 1 m.

Project vessels and the MODU are conservatively expected to have an overall combined source level of 191 dB re 1 µPa (rms SPL), which represents a doubling of noise output from the single loudest source (i.e. 185 dB + 6 dB).

Cutting of well infrastructure

Additional noise from the cutting of the wellhead casing and conductors is likely to be generated. The casings and conductors will be cut below the mudline to enable wellhead recovery using either AWJ cutting method, or mechanical cutting method.

Pangerc et al. (2016) described the underwater sound measurement data during an underwater diamond wire cutting of a 0.76 m conductor (10 m above seabed in approximately 80 m depth) and found the sound radiated from the diamond wire cutting of the conductor was not easily discernible above the background noise at the closest recorder located 100 m from the source. The sound that could be associated with the diamond wire cutting was primarily detectable above the background noise at the higher acoustic frequencies (above approximately 5 kHz) (Pangerc et al., 2016). Background noise was attributed to surface vessel activity, such as DP. In another study, the United States Navy measured underwater sound levels when the diamond saw was cutting caissons for replacing piles at an old fuel pier at Naval Base Point Loma (Naval Base Point Loma Naval Facilities Engineering Command Southwest, 2018). They reported an average SPL for a single cutter at 136.1 to 141.4 dB SPL at 10 m, as reported in Fairweather Science (2018).

Any noise propagating at seabed from either AWJ cutting or mechanical cutting of the wellhead casing and conductors is likely to attenuate to levels at, or close to, background ambient levels within less than 100 m of the source, with ambient levels being significantly elevated by the concurrent presence of a project vessel on DP

immediately above the wellhead locations. As such, noise from the cutting of the casing and conductors is not expected to add to cumulative noise levels for the operation to any extent.

Generation of underwater noise from positioning equipment

An array of long baseline (LBL) and/or ultra-short baseline (USBL) transponders may be installed on the seabed for metrology and positioning. An array of transponders is proposed within a radius of 500 m from the proposed location of the wells for the duration of the activity. During Xmas tree removal activities ultra-short baseline transponders (USBL) may be installed on the seabed or mounted to the wellhead as required by the subsea installation activities. Transmissions from USBL transponders are similar to LBL transponders. Transponders typically emit pulses (impulsive noise) of medium frequency sound, generally within the range 21 to 31 kHz. The estimated SPL would be 180 to 206 dB re 1 µPa at 1 m (Jiménez-Arranz et al., 2017). Transmissions are not continuous but consist of short 'chirps' with a duration that ranges from 3 to 40 milliseconds. Transponders will not emit any sound when on standby and are planned to only actively emit sound for about six hours per well. When required for general positioning they will emit one chirp every five seconds (estimated to be required for four hours at a time). When required for precise positioning they will emit one chirp every second (estimated to be required for two hours at a time). An array of transponders will be active whilst a MODU is on location.

Helicopter transfers

Helicopter activities may occur in the Operational Areas, including the landing and take-off of helicopters on the MODU or vessel helidecks. Sound emitted from helicopter operations is typically below 500 Hz (Richardson et al., 1995). The peak received level diminishes with increasing helicopter altitude, but the duration of audibility often increases with increasing altitude. Richardson et al. (1995) reports that helicopter sound is audible in air for four minutes before it passed over underwater hydrophones, but detectable underwater for only 38 seconds at 3 m depth and 11 seconds at 18 m depth. Received underwater noise levels of a Bell 212 helicopter flying at an altitude of 152 m have been measured at 109 dB dB re 1 µPa (RMS) (Jiminez-Arranz et al. (2020), while Berrow et al. (2002) measured a Sikorsky air-sea rescue helicopter at 110 dB re 1 µPa at 91 m.

Flaring

Flaring of annulus gas during plug and abandonment activities will be relatively minor with about 1.55 MMscf of gas potentially flared per well. Only a very small fraction of the acoustic energy produced from flaring will transmit through the air/water boundary due to the surface of water acting as a reflective plane and a significant component of acoustic energy reflecting back into the air. The angle at which the sound path meets the surface (angle of incidence) influences the transmission of noise energy from the atmosphere through the sea surface; with angles ±>13° from vertical being almost entirely reflected (Richardson et al., 1995). It is not credible that airborne noise from flaring would add to levels of underwater noise emanating from the MODU, project vessels and positioning equipment. Accordingly, the potential impacts associated with noise produced during flaring is considered highly localised and not expected to result in any significant impacts to marine fauna.

Cumulative sound sources

As outlined in Section 3.7.1, if SIMOPs were to occur, up to four vessels and the MODU may be in the field at the same time based on:

- semi-submersible MODU
- anchor handling tug supply vessel
- up to three general support vessels including IMR vessel(s).

Additional vessels may increase the area in which elevated noise levels could occur, however, vessel noise is not likely to exceed levels estimated above, with project vessels and the MODU conservatively expected to have an overall combined source level of 191 dB re 1 µPa (rms SPL).

Impact assessment

Environmental value(s) potentially impacted

Receptors

The Operational Areas are located in waters ~80-130 m deep. The fauna associated with these areas are predominantly pelagic species of fish, with migratory species such as cetaceans, whale sharks and marine turtles present in the area seasonally (Section 1.1.1). Noise interference is a key threat to a number of migratory and threatened cetaceans and marine turtles identified as potentially occurring within the Operational Areas.

The Operational Areas overlap a whale shark foraging BIA that extends northward from Ningaloo along the 200 m isobath. Whale sharks may be present during the spring months with individuals occasionally transiting the Operational Areas.

The Operational Areas do not overlap biologically important areas or habitat critical to the survival of any marine turtle species, although flatback turtles are known to occur and loggerhead, green, leatherback and hawksbill turtles are likely to occur. Given water depths and distance from shore, the area does not constitute foraging or internesting habitat and occurrence of turtles is expected to be infrequent.

Pygmy blue whale and humpback whale migration BIAs are located about 33 km north and south of the Operational Areas respectively (Section 4.6.3). Pygmy blue whale individuals may occasionally transit the Operational Areas during April to August and October to January during their seasonal migrations. Migrating humpback whales may be present between about May and November. Occasional individuals may therefore transit through the Operational Areas.

Potential impact 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)
- 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.

Exposure to sufficiently intense sound may lead to an increased hearing threshold. If this shift is reversed and the hearing threshold returns to normal, the effect is called a TTS. Southall et al. (2007) defined TTS as a threshold shift of 6 dB above the normal hearing threshold. If the threshold shift does not return to normal, PTS has occurred. Threshold shifts can be caused by acoustic trauma from a very intense sound of short duration, as well as from exposure to lower-level sounds over longer time periods (Houser et al., 2017).

Sound propagation

Increasing the distance from the noise source 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) depends upon several factors, such as water column depth, pressure, temperature gradients, and salinity, as well as surface and bottom conditions.

Cetaceans

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 (NRC, 2003; Erbe, 2012; Rolland et al., 2012).

The thresholds that could result in a behavioural response, temporary threshold shift (TTS) and permanent threshold shift (PTS) for cetaceans as a result of continuous and impulsive noise sources are presented in Table 6-2 (Southall et al., 2019; NOAA 2019). These thresholds have been adopted and updated by the United States National Oceanic and Atmospheric Administration (NOAA) (National Marine Fisheries Service [NMFS], 2014, 2018; NOAA 2019). 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 for continuous (non-impulsive) and impulsive sound sources.

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 and other large mysticete (baleen) whales are categorised as low frequency (LF) cetaceans, while odontocetes (toothed whales and dolphins) are categorised as high frequency (HF) or very high frequency (VHF) cetaceans (Southall et al., 2019).

For continuous noise, only frequency-weighted sound exposure level (SEL) metrics are provided in the literature for PTS and TTS impacts, while for impulsive noise, thresholds have been defined for both SEL and peak (PK) sound pressure level (SPL). Behavioural response metrics are provided root mean squared (RMS) SPL. Estimating SEL provides a metric that integrates cumulative exposures. For PTS and TTS to occur, 24 hours has been provided as a suitable timeframe to estimate SEL, while the PK and RMS SPL metrics do not depend on duration of exposure.

Continuous noise generated from the Petroleum Activity is expected to be up to 191 dB re 1 µPa at 1 m and impulsive noise 206 dB re 1 µPa at 1 m. However, the potential for received levels to exceed weighted SEL thresholds defined for PTS or TTS for marine mammals is considered very low due to their mobility and ability to avoid the sound sources. Continuous noise generated by an operating moored MODU is not expected to exceed cetacean PTS or TTS thresholds.

Continuous noise generated by project vessels or the MODU on DP is not expected to exceed cetacean PTS thresholds, but it may exceed TTS thresholds in proximity to the sound source if an individual is exposed for prolonged periods. Transponders are the only source of impulsive noise planned during the activity. The typical frequencies of 18 to 26 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 206 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), received levels from USBL transponders are expected to exceed the cetacean behavioural response threshold for impulsive sources (160 dB) out to about 42 m.

Marine mammals that may occur within the Operational Areas are outlined in Section 4.6.3. It is reasonable to expect that cetaceans may demonstrate avoidance or attraction behaviour to the noise generated by the Petroleum Activity. For example, when transiting through the area, humpback whales may deviate from their migration route, but continue on their migration pathway. Considering proximity of the pygmy blue whale and humpback whale migration BIAs to the Operational Areas, it is possible that individuals may transit in and around the Operational Areas during migratory periods; however, only transient individuals or small groups are expected. The Operational Areas are surrounded by open water, with no restrictions (e.g. shallow waters, embayments) to an animal's ability to avoid the activities. Because the Operational Areas are approximately 33 km from the blue whale migration BIA and 34 km from the humpback whale migration BIA, no impacts are predicted to occur from project vessel noise on individuals using these areas.

The potential for impacts from underwater noise is therefore not inconsistent with the requirements of the Conservation Management Plan for the Blue Whale (BWCMP) (Commonwealth of Australia, 2015a). Potential impacts from predicted noise levels from project vessels (including MODU and support vessels), helicopters and flaring will be limited to temporary and localised changes in behaviour at the individual level with no lasting effect.

Table 6-2: Thresholds for permanent threshold shift (PTS), temporary threshold shift (TTS) and behavioural response onset for low-frequency (LF), high-frequency (HF) and very high-frequency (VHF) cetaceans for continuous and impulsive noise

Hearing group	*Impulsive*					*Continuous*		
	PTS onset		*TTS onset*		*Behavioural response*	*PTS onset*	*TTS onset*	*Behavioural response*
	SEL24h	*PK*	*SEL24h*	*PK*	*SPL*	*SEL24h*	*SEL24h*	*SPL*
LF cetaceans	183	219	168	213	160	199	179	120
HF cetaceans	185	230	170	224	160	198	178	120
VHF cetaceans	155	202	140	196	160	173	153	120

Sources: Southall et al. 2019; NOAA, 2019.

SEL24h expressed as dB re 1 µPa².s; Peak pressure (PK) and SPL expressed as dB re 1 µPa.

Marine turtles

The Recovery Plan for Marine Turtles (Commonwealth of Australia, 2017) notes there is limited information available about 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). Electro-physical studies have indicated the best hearing range for marine turtles is in the 100 to 700 Hz range (Bartol and Musick, 2003). McCauley et al. (2000) observed the behavioural response of caged green and loggerhead turtles to impulsive sound (an approaching seismic airgun). For received levels above 166 dB re 1 µPa SPL, the turtles increased their swimming activity and above 175 dB re 1 µPa they began to behave erratically, which was interpreted as an agitated state. The 166 dB re 1 µPa SPL has been used as the threshold level for a behavioural disturbance response by the US NMFS (NSF, 2011) and is applied to this impact assessment. No quantitative (numerical) thresholds have been developed for behavioural effects from continuous sources (e.g., vessel noise) on marine turtles. However, Popper et al. (2014) propose qualitative impact criteria for near-field, intermediate and far-field exposures (Popper et al., 2014). Finneran et al. (2017) presents thresholds for turtle PTS and TTS for both impulsive and continuous sound exposures. The thresholds listed in Table 6-3 are considered appropriate for the assessment of impacts from impulsive and continuous acoustic discharges to marine turtles from the Petroleum Activity.

Given the thresholds outlined in Table 6-3, it is reasonable to expect that marine turtles may demonstrate avoidance or attraction behaviour to the noise generated by the Petroleum Activity. Potential impacts from predicted noise levels from the project vessels (including MODU and support vessels), helicopters and flaring will be limited to temporary and localised changes in behaviour at the individual level, which are considered negligible with no lasting effect. Based on empirical spreading loss estimates measured by Warner and McCrodan (2011), received levels from USBL transponders are expected to exceed the marine turtle behavioural response threshold for impulsive sources (160 dB) out to about 36 m. Transponders typically operate at frequencies of 21 to 31 kHz which is well outside the peak hearing frequency range of turtles (0.1 to 2 kHz). Therefore, no impacts are expected to occur.

Table 6-3: Thresholds for PTS, TTS and behavioural response onset in marine turtles for impulsive and continuous noise

Receptor	***Impulsive***					***Continuous***			
	PTS		***TTS***		***Behavioural***	***PTS***	***TTS***	***Masking***	***Behaviour***
	SEL24h	***PK***	***SEL24h***	***PK***	***SPL***	***SEL24h***	***SEL24h***		
Marine turtles	204	232	189	226	166*	220	200	(N) High (I) High (F) Moderate	(N) Moderate (I) Moderate (F) Low

*Source: PTS and TTS thresholds (Finneran et al., 2017) * behavioural response threshold (impulsive) (NSF 2011), # behavioural response threshold (continuous) (Popper et al., 2014).*

Note: The sound units provided in the table above for continuous noise are based on relative risk (high, medium and low) 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).

Fish

Fish perceive sound through the ears and the lateral line, which are sensitive to vibration. Some species of teleost or bony fish (e.g. herring) have a structure linking the gas-filled swim bladder and ear, and these species usually have increased hearing sensitivity. These species are considered to be more sensitive to anthropogenic underwater noise sources than species such as cod (Gadus sp.), which do not possess a structure linking the swim bladder and inner ear. Fish species that either do not have a swim bladder (e.g. elasmobranchs and scombrid fish (mackerel and tunas)) or have a much-reduced swim bladder (e.g. flat fish) tend to have a relatively low auditory sensitivity. Considering these differences in fish physiology, Popper et al. (2014) developed sound exposure guidelines for fish; these are presented in Table 6-4 and are considered appropriate to assess continuous acoustic discharges to fish from the Petroleum Activity.

Table 6-4: Continuous sources – fish and turtle impact threshold for environmental receptors

Receptor	***Mortality and potential mortal injury***	***PTS***	***TTS***	***Masking***	***Behaviour***
Type 1 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
Type 2 Fish: swim bladder not involved in hearing	(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
Type 3 Fish: swim bladder involving hearing	(N) Low (I) Low (F) Low	170 dB rms SPL for 48 hours	158 dB rms SPL for 12 hours	(N) High (I) High (F) High	(N) High (I) Moderate (F) Low

Note: A range of sound units are provided in the table above, reflecting the range of studies from which this data has been derived. The difference in units presents difficulty in reliably comparing threshold values. Where practicable, the threshold values have been compared with indicative sound sources levels of the same sound unit types to facilitate comparison. The sound units provided in the table above include:

- *Root mean square (rms) sound pressure level (SPL): root mean square of time-series pressure level, useful for quantifying continuous noise sources (as per SEL point above).*
- *Relative risk (high, medium and low) is given for fish (all types), turtles and eggs and larvae at three distances from the source defined in relative terms as near (N), intermediate (I) and far (F) (after Popper et al. 2014).*

Source: Popper et al. (2014)

None of the noise sources are expected to result in mortality of fish, of any type described by Popper et al. (2014). Pelagic fish species, including sharks and rays, may display behavioural responses, such as avoidance of the area, within close proximity of the vessels. While continuous noise levels associated with vessels may exceed recoverable injury and TTS thresholds for Type 3 species, for pelagic species, it is unlikely individuals will remain within areas of exceeded noise levels. The Operational Areas are not known to be an important spawning or aggregation habitat for commercially caught targeted species. Therefore, no impacts to fish stocks are expected. Transponders typical operating frequencies of 21 to 31 kHz are well outside the hearing frequency range of fish. Therefore, no impacts are expected to occur.

A foraging BIA for whale sharks overlaps the Operational Areas. As a cartilaginous fish lacking a swim bladder, whale sharks are categorised as a Type 1 fish. Thresholds for mortality or injury from impulsive noise (more than 213 dB re 1 µPa2·s, Popper et al. (2014)) are greater than any noise source of the Petroleum Activity. Type 1 fish are considered low risk of mortality or injury from continuous noise sources (Popper et al. 2014) and thresholds for TTS (193 dB re 1 µPa2·s) exceed predicted continuous noise source levels from project activities. In summary, impacts to whale sharks foraging within the BIA are not expected.

Cultural values and heritage

Through consultation and review of available literature (Section 4.9.1), Woodside understands that marine fauna that may be affected by noise emissions, such as marine mammals and turtles, are culturally important to Traditional Custodians. 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.

For example, activities that impact turtle populations and their marine environment may have an indirect impact on some Indigenous communities if they deplete hunting areas and threaten local food security (Delisle et al. 2018:251).

Whale species are subject of First Nations' increase ceremonies/rituals which are performed to enhance or maintain populations. As these Thalu ceremonies are performed to maintain and increase populations of marine species, it is considered 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.

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). Inter-generational transmission of cultural knowledge (including songlines) relating to marine reptiles may be impacted where changes 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).

As described, 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 ecologically significant proportions of the populations of the species, nor 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 these species are expected to be maintained.

Cumulative impacts

Additional vessels associated with SIMOPS within the Operational Areas (refer to Section 3.7.1) will contribute noise into the marine environment; however, this is not expected to exceed levels already assessed above. The potential for received levels to exceed weighted SEL thresholds defined for PTS or TTS for individual marine mammals is considered very low due to their mobility and ability to avoid the sound sources. Potential impacts to individuals are confined to behavioural responses localised around vessels. A larger number of vessels may increase the area in which elevated noise levels could lead to a behavioural response. However, given the minor behavioural responses expected and the localised area of potential impact, the presence of multiple vessels within the Operational Areas does not increase the consequence rating of this impact.

Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[34]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
Legislation, codes and standards				
EPBC Regulations 2000 – Part 8 Division 8.1 Interacting with cetaceans, including the following measures[35]: • Project vessels will not travel greater than six knots within 300 m of a cetacean or turtle (caution zone) and not deliberately approach closer than 100 m from a whale. • Project vessels will not deliberately approach closer than 50 m for a dolphin or turtle and/or 100 m for a whale (with the exception of animals bow riding). • If the cetacean or turtle shows signs of being disturbed, project vessels will immediately withdraw from the caution zone at a constant speed of less than six knots. • Project vessels will not travel greater than eight knots within 250 m of a whale shark and not allow the vessel to deliberately approach closer than 30 m of a whale shark.	F: Yes. CS: Minimal cost.	Implementation of these controls will not significantly reduce negligible impacts to marine fauna from underwater noise given outcomes of impact assessment.	Disproportionate – cost/sacrifice outweighs benefit to be gained. However, control has been adopted to minimise vessel collisions with marine fauna in Section 6.7.7.	Yes **C 3.1**
Good practice				
Flaring restricted to a duration necessary to	F: Yes. CS: Minimal cost. Standard practice.	Reduces noise emissions to the marine environment.	Benefits outweigh cost/sacrifice.	Yes **C 3.2**

[34] Qualitative measure.

[35] 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.

Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[34]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
perform the activity for well bleed-off.				
The use of dedicated Marine Fauna Observers (MFOs) on project vessels for the duration of the Petroleum Activity to watch for whales and provide direction on and monitor compliance with Part 8 of the EPBC Act Regulations.	F: Yes. However, activity support vessel bridge crews already maintain a constant watch during operations in compliance with the Woodside Marine – Charterers Instructions, on the requirements of vessel and whale interactions. In the event of a cetacean (or other sensitive fauna) in close proximity to project vessels, it is unlikely that DP (the most significant source of underwater noise expected during the Petroleum Activity) will be deactivated given it is a safety critical requirement for project vessels to hold station. As such, an MFO implementing management/ shut down zones is considered to be ineffective. CS: Additional cost of MFOs.	Given that support vessel bridge crews already maintain a constant watch during operations, additional MFOs would not further reduce the likelihood or consequence of impact.	Disproportionate – cost/sacrifice outweighs benefit to be gained.	No
Undertake site-specific acoustic modelling.	F: Yes, it is feasible to undertake site-specific modelling; however, the generation of noise from these sources is already well understood and this noise cannot be eliminated due to operating requirements. CS: Additional cost of modelling.	Given that noise cannot be eliminated due to operating requirements, modelling would not further reduce the likelihood or consequence of impact, noting that no activities of significant noise generation (i.e. explosives) are proposed.	Not considered – control not feasible.	No
Use of aircraft to carry out visual observations for pygmy blue whale foraging activity (aerial survey).	F: Yes CS: Time/ cost associated with chartering aircraft and use of dedicated MFOs.	Aerial surveys could assist in identifying pygmy blue whale foraging activity over a larger monitoring zone.	Disproportionate. The cost/ sacrifice outweighs benefit gained. As the Operational Areas do not overlap the pygmy blue whale migration and foraging BIAs, presence of	No

Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[34]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
			PBWs carrying out opportunistic foraging activities in the area is not likely. Adequate observations are able to be made from support vessel bridge crews. It is not expected that an aircraft would add significantly more value than this, to warrant deployment.	
Move support vessel(s) away from MODU (>3.6 km) if foraging pygmy blue whale(s) observed within 500 m – when support vessel is not being used to perform functionality as required by Safety Case	F: Yes CS: Time / Cost associated with vessel moving and delay to activities which cannot be carried out without support vessel present and at required standby distance	Can reduce cumulative noise and potential reduction in likelihood of impact to foraging Pygmy Blue Whales	Disproportionate. The cost/ sacrifice outweighs benefit gained. As the Operational Areas do not overlap the pygmy blue whale migration and foraging BIAs, presence of PBWs carrying out opportunistic foraging activities is not likely.	No
Professional judgement – Eliminate				
Remove activity support vessel on standby at the Petroleum Activity location.	F: No. Activity support vessel required for safety reasons, particularly for maintaining the 500 m exclusion zone around the MODU or vessel engaged in P&A activities. CS: Not considered – control not feasible.	Not considered – control not feasible.	Not considered – control not feasible.	No
Elimination of noise from the project vessels (including MODU and support vessels), positioning transponders, helicopters or flaring.	F: No. The generation of noise from these sources cannot be eliminated due to operating requirements. Note: Operating vessels on DP may be a safety critical requirement. CS: Inability to conduct the Petroleum Activity. Loss of project.	Not considered – control not feasible.	Not considered – control not feasible.	No
Professional judgement – Substitute				
Avoid peak migration periods for migratory cetaceans.	F: Yes. Migration periods for cetaceans that may occur in the Operational Areas	Avoiding migration periods would reduce the likelihood of impacts to cetaceans.	Disproportionate – cost/sacrifice outweighs benefit to be gained.	No

Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[34]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
	(pygmy blue whales) are well known. CS: Potentially significant. Woodside has not finalised the schedule for the Petroleum Activity, and some activities may be undertaken on an opportunistic basis and in succession to one another while a vessel is available. Precluding operations during cetacean migration periods may impose a considerable cost and operational burden, while resulting in little environmental benefit.	However, given that the predicted impacts from noise sources associated with the Petroleum Activity are considered to be localised with no lasting effect, the overall benefit is minimal.		
Professional judgement – Engineered solution				
No additional controls 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 2.2.4.2) and Woodside's criteria for demonstrating ALARP (Section 2.3.1), Woodside considers the adopted controls appropriate to manage potential impacts associated with routine acoustic emissions. As no reasonably practicable additional/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 may result in in negligible, localised l impacts (<1 month) on species, habitat (but not affecting ecosystem function), physical or biological attributes. Further opportunities to reduce the impact have been investigated above. The impacts are consistent with good oil-field practice/industry best practice. On the basis of the assessment outcomes, use of the relevant tools appropriate to the decision type (i.e. Decision Type A; Section 2.2.4.2) and Woodside's criteria for demonstrating acceptability (Section 2.3.2), Woodside considers the adopted controls appropriate to manage the impacts 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			
EPO	***Controls***	***PS***	***MC***
EPO 5 No injury of, or mortality to, EPBC Act 1999 and *WA Biodiversity Conservation Act 2016* listed marine fauna as a result of noise generated by the	**C 3.1** EPBC Regulations 2000 – Part 8 Division 8.1 Interacting with cetaceans,	**PS 3.1** Compliance with EPBC Regulations 2000 – Part 8 Division 8.1 (Regulations 8.05 and 8.06) Interacting with cetaceans to minimise	**MC 3.1.1** Records demonstrate no breaches of EPBC Regulations 2000 – Part 8 Division 8.1 Interacting with cetaceans and application of these

EPOs, EPS and MC			
EPO	***Controls***	***PS***	***MC***
Petroleum Activities Program. **EPO 6** Ensure biologically important behaviour can continue for marine turtles from during nesting/breeding (inc. internesting periods for turtles) in biologically important areas.	including the following measures[36]: • Project vessels will not travel greater than six knots within 300 m of a cetacean or turtle (caution zone) and not deliberately approach closer than 100 m from a whale. • Project vessels will not deliberately approach closer than 50 m for a dolphin or turtle and/or 100 m for a whale (with the exception of animals bow riding). • If the cetacean or turtle shows signs of being disturbed, project vessels will immediately withdraw from the caution zone at a constant speed of less than six knots. • Project vessels will not travel greater than eight knots within 250 m of a whale shark and not allow the vessel to deliberately approach closer than 30 m of a whale shark.	potential for vessel strike and application of these regulations to whale sharks and marine turtles.	regulations to whale sharks and marine turtles.
	C 3.2 Flaring restricted to a duration necessary to perform the activity for well bleed-off.	**PS 3.2** Flaring restricted to a duration necessary to perform the activity for well bleed-off.	**MC 3.2.1** Records demonstrate flaring was restricted to a duration necessary to perform the activity for well bleed-off.

[36] *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.*

6.6.4 Routine light emissions: external lighting on the mobile offshore drilling unit and vessels

Context		
Project vessels – Section 3.5 Permanent plugging activities – Section 3.11	Habitats and biological communities – Section 4.5 Protected species – Section 4.6 Socio-economic environment – Section 4.9	Stakeholder consultation – Section 5

Impact evaluation summary

Source of impact	***Environmental value 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
External light emissions onboard MODU and project vessels				X	X	X	A	F	-	-	GP PJ	Broadly Acceptable	EPO 7, 8

Description of source of impact

Routine light emissions include light sources that alter the ambient light conditions in an environment. The MODU and project vessels will routinely use external lighting to navigate and conduct safe operations at night throughout the Petroleum Activity. External light emissions from the MODU and project vessels are typically managed to maintain good night vision for crew members. Vessel/MODU lighting will also be used to communicate the vessel's presence to other marine users (i.e. navigation/warning lights). Lighting is required for safely operating project vessels/MODU and cannot reasonably be eliminated.

The vessels/MODU that may be required for the Petroleum Activity are outlined in Section 3.5. External lighting is located on vessel/MODU decks, with most external lighting directed towards working areas such as the main decks. These areas are typically <20 m above sea level for vessels, and ~30 m for MODUs.

Indicative timing for activities is provided in Section 3.7 and may occur throughout the year.

Flaring, which is a relatively bright light source, is sometimes necessary for short periods of time during permanent plugging of wells (Section 3.11.1). It is planned that there will be limited flaring of gas or liquids during the Petroleum Activity. The base case is that tubing fluids are bullheaded back into wells, but hydrocarbons present in the annuli of the wells may be bled off to the MODU. If bullheading of the tubing is not successful, the tubing gas may also be flared. Flaring is for a limited duration as it is constrained by the volume of gas/liquids in the annulus and well bore. It is estimated that there would be a maximum of 1,080-minutes (~18-hours) of flaring. Flaring will only be at low flow rates, unlike unload operations, and would take place during both daytime and nighttime. Hence, the duration of any flaring events (if they occur) during nighttime would be very limited.

Lighting from vessels/MODU may appear as a direct light source from an unshielded lamp with direct line of sight to the observer or through sky glow. Direct lighting falling upon a surface is referred to as light spill. Sky glow is the diffuse glow caused by light that is screened from view, but through reflection and refraction creates a glow in the atmosphere. The distance at which direct light and sky glow may be visible from the source depends on the characteristics of vessel/MODU lighting (including height above sea level) and environmental conditions (e.g. cloud cover).

Cumulative light sources

Cumulative impacts from light sources may occur during the Petroleum Activity where vessel-based preparatory activities overlap with MODU mobilisation and the commencement of plugging activities within the Operational Areas (refer to Section 3.7.1).

There is also potential for cumulative light sources to occur from flaring, IMMR activities and project vessel lighting from other petroleum activities in proximity to licences WA-1-L, WA-3-L and WA-5-L. Infrastructure in the vicinity includes Woodside-owned Okha FPSO, North Rankin Complex and GWA Platform, as well as MODEC-owned Venture 11 FPSO (collectively ~19 to 89 km from the Operational Areas) which may result in slightly elevated ambient light levels.

Impact assessment

Environmental value(s) potentially impacted

Lighting from the facility, MODU and project vessels may appear from direct unshielded light sources or through skyglow. Where direct light falls upon the ocean, this area of light is referred to as light spill. Skyglow is the diffuse glow caused by light that is screened from view, but through reflection and refraction creates a glow in the atmosphere. The distance at which direct light and skyglow may be visible from the source is dependent on the lighting on the facility / vessel and environmental conditions.

Receptors that have important habitat within a 20 km buffer of the Operational Areas were considered for the impact assessment, based on recommendations of the National Light Pollution Guidelines for Wildlife Including Marine Turtles, Seabirds and Migratory Shorebirds (NLPG). The 20 km threshold provides a precautionary limit based on observed effects of sky glow on marine turtle hatchlings, demonstrated to occur at 15–18 km, and fledgling seabirds grounded in response to artificial light 15 km away (Commonwealth of Australia, 2020).

Light emissions can affect fauna in two main ways:

- Behaviour: Many organisms are adapted to natural levels of lighting and the natural changes associated with the day and night cycle, as well as the nighttime phase of the moon. Artificial lighting has the potential to create a constant level of light at night that can override these natural levels and cycles.
- Orientation: Species such as marine turtles and birds may also use lighting from natural sources to orient themselves in a certain direction at night. In instances where an artificial light source is brighter than a natural source, the artificial light may act to override natural cues leading to disorientation.

The marine fauna within the Operational Areas are predominantly pelagic fish and zooplankton, with a low abundance of transient species such as marine turtles, whale sharks, whales and migratory seabirds. As described in Section 4.6, the Operational Areas overlap with BIAs for whale shark foraging and wedge-tailed shearwater breeding.

Marine turtles

Hatchlings

Turtle hatchlings emerge from the nest and orient towards the sea. After entering the water, hatchlings use a combination of cues (wave direction and currents) to orient and travel into offshore waters. Impacts to the sea-finding behaviour of hatchlings are more common for light sources behind a beach, as lighting offshore will orient emerging hatchlings towards the sea. Artificial light at close distances can also impact hatchling dispersal once they are in the water. Light spill may ‘entrap’ hatchling swimming behaviour, reducing the success of their seaward dispersion and potentially increasing their exposure to predators via silhouetting (Salmon et al., 1992).

The Operational Areas do not contain any known Habitat Critical for the Survival of the Species for any species of marine turtle, with the nearest location at Montebello Islands, about 72 km south-west of Operational Area C (for flatback, green and loggerhead hawksbill turtles).

The distance between the most significant light source on the MODU (flare boom) and the edge of visibility, or the visible horizon, was calculated using a manual calculation that takes atmospheric refraction into consideration (Young’s method) as expressed by the formula $d = 3.86\sqrt{h}$, where ‘d’ is the distance to the visible horizon, and ‘h’ is the light source height in metres. For a flare boom height of 32 m (maximum likely for potential MODUs that could be contracted for the Petroleum Activity), the distance to the visible horizon is ~22 km – i.e. anything beyond this distance is below the horizon and direct light would not be visible. Sky glow (particularly from flaring) is also unlikely to be visible at the closest nesting locations resulting in no behavioural impact (i.e. not biologically relevant). External lighting on vessels is typically lower than MODU lighting, with vessel lighting usually reduced to improve night vision of bridge crew.

Since the Operational Areas are located ~72 km from turtle nesting beaches in the Montebello Islands, the risk of significant numbers of dispersing hatchlings becoming attracted to direct light or sky glow from project vessels/MODU is not considered credible. At this distance the density of dispersing hatchlings is expected to be low and very few individuals will be at risk of attraction. For any isolated individuals potentially attracted to light spill from project vessels/MODU, following sunrise, any effect of these light sources on hatchlings will be eliminated allowing dispersal behaviour to resume.

Any impacts to hatchling turtles from artificial light will be limited to possible localised behavioural impacts to isolated individual hatchlings offshore, with no lasting effect to the species.

Adults

Artificial lighting may affect the location that turtles emerge to the beach, the success of nest construction, whether nesting is abandoned, and even the seaward return of adults (Salmon et al., 1995a, 1995b; Salmon & Witherington, 1995). However, such lighting is typically from residential and industrial development overlapping the coastline, rather than offshore from nesting beaches. As the Operational Areas do not overlap any marine turtle BIAs or Habitat, it is unlikely to affect nesting adults. Given the water depth of the Operational Areas (80-128 m), turtles are unlikely to be foraging. It is acknowledged that marine turtles may be present transiting the Operational Areas in low densities, however light cues aren't used to guide this behaviour.

Seabirds

Artificial lighting can attract and disorient seabird species resulting in species behavioural changes (e.g. circling light sources or disrupted foraging), injury or mortality near the light source as a result of collision (Longcore and Rich, 2004; Gaston et al., 2014). The Operational Areas may be occasionally visited by seabirds and migratory shorebirds, There is no emergent land that could be used for roosting or nesting habitat in the Operational Areas or close proximity. The nearest emergent land that could be used for roosting or nesting habitat is the Montebello Islands (about 72 km from Operational Area C).

One BIA for wedge-tailed shearwater breeding overlaps the Operational Areas, with the breeding period occurring from August to April (Section 1.1.1). Adult shearwaters are vulnerable to artificial lighting during the breeding cycle, when returning to and leaving the nesting colony to maintain nesting sites or forage. Foraging wedge-tailed shearwaters may be attracted to sources of light emissions to feed on fish drawn to the light, however, the species feeds predominantly during the day (Catry et al. 2009). Migratory shorebirds may be present in or fly through the region between July and December, and again between March and April as they complete migrations between Australia and offshore locations (Commonwealth of Australia, 2015). The risk associated with collision from seabirds or migratory shorebirds attracted to artificial lighting is considered to be low, impacts are expected to be limited to localised behavioural disturbance to isolated individuals, with no displacement from important habitat.

The most vulnerable life stages for seabirds and migratory shorebirds are nesting adults or fledglings. Nesting or fledgling seabirds and migratory shorebirds are vulnerable to artificial lighting within 20 km of the nesting location (Commonwealth of Australia, 2020). For shearwater species, fledglings are predominantly impacted by onshore lighting sources, which can override sea finding cues and attract fledglings further inland, preventing them from reaching the sea (Mitkus et al., 2018; Telfer et al., 1987). Artificial light can also impact important behaviour of nesting adults (e.g. adult nest attendance, maintaining nest sites) or confuse shearwater species, resulting in injury or mortality as a result of birds colliding with structures (Cianchetti-Benedetti et al., 2018; Rodriguez et al., 2017). As the Operational Areas are over 70 km from the nearest emergent land, impacts to adult nesting or fledgling seabirds and migratory shorebirds are not expected. Artificial light from the Petroleum Activity is not predicted to disrupt critical breeding behaviours within important nesting habitat or displace seabirds from nesting habitat.

Fish

Lighting from ROV or project vessel/MODU activities during the Petroleum Activity may result in the localised aggregation of fish. These aggregations of fish due to light are considered localised and temporary and any long-term changes to fish species composition or abundance is considered highly unlikely. This localised increase in fish extends to those comprising the whale shark's diet. However, given that a large proportion of the diet comprises krill and other planktonic larvae, it is unlikely that a light source would lead to a significant increase in whale shark abundance in the vicinity of the MODU or vessels. Similarly, any localised impacts to marine fish is not expected to impact on any commercial fishers in the area.

Cultural values and heritage

Through consultation and review of available literature (Section 4.9.15), Woodside understands that marine fauna that may be affected by light emissions, such as turtles and plankton, are culturally important to Traditional Custodians. 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. For example, activities that impact turtle populations and their marine environment may have an indirect impact on some First Nations communities if they deplete hunting areas and 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 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).

As described in the assessment of impacts to marine fauna (above) potential impacts are predicted to be at an individual level, which are not considered to be ecologically significant at a population level. Impacts will not occur to significant proportions of the populations of the species, nor 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 these species are expected to be maintained.

Cumulative impacts

There is potential for cumulative light impacts to occur where preparatory activities overlap with MODU mobilisation and the commencement of plugging and intervention activities within the Operational Areas (refer to Section 3.7.1). There is also potential for nearby infrastructure and associated activities to result in slightly elevated ambient light levels. The cumulative impact is likely to be no lasting effect, due to the low light intensities of the vessel navigational lighting, MODU and facility lighting, short and intermittent nature of the impact, and is not anticipated to adversely affect any sensitive receptors.

Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[37]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
Legislation, codes and standards				
No additional controls identified.				
Good practice				
Lighting will be limited to the minimum required for navigational and safety requirements, with the exception of emergency events	F: Yes. Lighting is typically appropriate for navigation and safety. CS: Minimal cost sacrifice – usual mode of operation.	Limiting light during the Petroleum Activity will minimise potential for light attraction and vessel interaction with seabirds.	While the control does not result in reduction of impacts, it is good practice and not at significant cost.	Yes **C 4.1**
Implement the Offshore 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	F: Yes; however, a minimum level of lighting is required on vessels for safety. CS: Costs associated with implementation.	Implementation of the Offshore Seabird Management Plan, particularly the adaptive management framework, will ensure population level impacts to nocturnal seabirds will not occur.	Benefit outweighs cost, given the low costs in implementation and potential benefits in providing certainty that population level impacts to nocturnal seabirds will not occur.	Yes **C 4.2**

[37] *Qualitative measure.*

Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[37]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
nocturnal seabirds be detected.				
Professional judgement – Eliminate				
No use of external lighting during Petroleum Activity.	F: No. Light management will be consistent with that required to provide a safe working environment onboard MODU and support vessels. CS: Not considered – control not feasible.	Not considered – control not feasible	Not considered – control not feasible.	No
Restrict the Petroleum Activity to daylight hours, eliminating the need for external work lights.	F: Yes. Restricting the Petroleum Activity to daylight hours is technically feasible, although not considered to be reasonably practicable. CS: Significant cost sacrifice. Limiting the Petroleum Activity to daylight hours would significantly increase the duration of the Petroleum Activity, and therefore result in additional impacts from other sources (such as interference with other marine users, noise, vessel discharges, or potential for unplanned risks.	Negligible reduction in consequence, given the duration and nature of the activity.	Grossly disproportionate. Implementation of the control requires considerable cost sacrifice for minimal environmental benefit.	No
Substitute external lighting with light sources designed to minimise impacts to seabirds (as per NLPG 2020 management actions): • Use flashing or intermittent lights instead of fixed beam. • Use motion sensors to turn lights on only when needed. • Use luminaires with spectral	F: Yes. Replacement of external lighting with lighting appropriate for turtles is technically feasible, although is not considered to be practicable. CS: Significant cost sacrifice. The retrofitting of all external lighting on vessels would result in considerable cost and time expenditure. Considerable logistical effort to source sufficient inventory of	Given the potential impacts to turtles, nesting seabirds and fledglings during this activity are insignificant, implementation of this control would not result in a reduction in consequence. Potential for minor reduction in impact to individual foraging seabirds that may transit the Operational Areas, as outlined in the NLPG.	Grossly disproportionate. Implementation of the control requires considerable cost sacrifice for minimal environmental benefit. The cost/sacrifice outweighs the benefit gained.	No

Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[37]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
content appropriate for the species present. • Avoid high-intensity light of any colour.	the range of light types			
No flaring during Petroleum Program activities.	F: No. While not a routine activity, the ability to flare hydrocarbons is a safety critical requirement on-board the facility. Flaring will only occur for a limited duration as it is constrained by the volume of gas/liquids in the annulus and well bore. CS: Not considered – control not feasible.	Not considered – control not feasible.	Not considered – control not feasible.	No
Professional judgement – Substitute				
No additional controls identified.				
Professional judgement – Engineered solution				
No additional controls 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 2.2.4.2) and Woodside's criteria for demonstrating ALARP (Section 2.3.1), Woodside considers the adopted controls appropriate to manage potential impacts associated with routine light emissions. As no reasonably practicable additional/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 light emissions from external lighting on the MODU and vessels may result in negligible, localised impacts (<1 month) on species, habitat (but not affecting ecosystem function), physical or biological attributes. Further opportunities to reduce the impacts have been investigated above. Regard has been given to relevant conservation advice and wildlife conservation plans during the assessment of potential impacts and the NLPG were taken into consideration during the impact evaluation. No concerns or objections regarding light emissions from project vessels have been raised by relevant persons. However, marine species such as turtles and plankton have been identified, during consultation for this EP as well as for other Woodside activities, as a cultural value for Traditional Custodians. Given impacts will be temporary and minor behavioural disturbance to individuals and no impacts on a population level will occur, cultural values and intangible cultural heritage associated with these species are expected to be maintained. On the basis of the assessment outcomes, use of the relevant tools appropriate to the decision type (i.e. Decision Type A; Section 2.2.4.2) and Woodside's criteria for demonstrating acceptability (Section 2.3.2), Woodside considers the adopted controls appropriate to manage the impacts 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			
EPO	***Controls***	***PS***	***MC***
EPO 7 No impacts to marine fauna greater than that caused by minimum required light emissions for safe work / navigation. **EPO 8** Ensure biologically important behaviour can continue for marine turtles during nesting/breeding (inc. internesting periods and marine turtles) in biologically important areas.	**C 4.1** Lighting will be limited to the minimum required for navigational and safety requirements, with the exception of emergency events.	**PS 4.1.1** Lighting limited to that required for safe work/navigation.	**MC 4.1.1** Inspection verifies no excessive light being used beyond that required for safe work/navigation
		PS 4.1.2 Project vessels will use available block-out blinds on portholes and windows not necessary for safety and/or navigation when operating at night.	**MC 4.1.2** Vessel contractor procedures include requirement to use available block-out blinds not necessary for safety and/or navigation when operating at night.
	C 4.2 Implement the Offshore 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.	**PS 4.2** Implementation of the Seabird Management Plan to minimise potential for light attraction.	**MC 4.2.1** Records demonstrate Seabird Management Plan implemented.

6.6.5 Routine atmospheric and greenhouse gas emissions associated with fuel use and flaring

Context		
Project vessels – Section 3.5 Permanent plugging activities – Section 3.11	Socio-economic environment – Section 4.9	Stakeholder consultation – Section 5

Impact evaluation summary

Source of impact	***Environmental value 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
Exhaust emissions from internal combustion engines and incinerators on MODU, project vessels and helicopters			X				A	F	-	-	LCS GP PJ	Broadly Acceptable	EPO 9
Flaring of residual hydrocarbons and produced water			X				A	F					
Cold venting of residual gas			X				A	F					
Small volume gas releases subsea			X				A	F					

Description of source of impact

Internal combustion engines and incinerators

Atmospheric emissions will be generated by the MODU, project vessels and helicopters from internal combustion engines (including all equipment and generators, which may be diesel powered and/or LNG powered) and incineration activities (including onboard incinerators) during the Petroleum Activity. Emissions associated with these operations will include SO2, NOx, ozone depleting substances, CO2, particulates and volatile organic compounds (VOCs).

Flaring/venting of residual gas, oil and produced water

During plugging for abandonment, residual hydrocarbons from the wells may need to be vented or flared. Up to 1.55 MMscf of gas may be vented or flared per well. During well bleed-off activities, up to about 155 m^3 of produced fluid may be bled from the well and brought back to the MODU. These fluids will be flared or discharged to the marine environment after treatment via the well bleed off water treatment package which cycles the water through a water filtration system with solids and polishing (see Section 6.6.6). The flaring would occur at limited volumes, given the activity is to permanently plug the well (e.g., in comparison to well unloading operations).

Venting of residual gas in case of well kick

During permanent plugging, a kick may occur. A kick is an undesirable influx of formation fluid into the well bore. The resultant effect would be a release of a small volume of residual gas via the degasser to the atmosphere during well control operations, known as ‘venting’. Venting is required so that well integrity is maintained in the event of a kick, thereby avoiding an emergency condition.

Cold venting of residual gas

During well intervention activities there are several scenarios that may cause small amounts of gas to be vented directly to the atmosphere in an intrinsically safe manner via the choke manifold onboard the MODU. Due to the small quantities of gas, it is not viable to flare this gas. These sources of direct gas emissions include:

- WOCS/WORS disconnect – The WOCS/WORS will be disconnected at the end well intervention activities.

Pressurised gas will be vented to the atmosphere.

- Wireline tool string & tool change – During the well intervention activity it is estimated that there will be 3 to 5 tool changes which will cause a small quantity of venting to the atmosphere via the–wireline lubricator.
- Surface returns – Small volumes of hydrocarbon gas from annular spaces will be cold vented via a choke manifold in a controlled and safe manner from the MODU.

Small volume gas releases subsea

Xmas Tree Caps will be in place and will be recovered to allow access to the wellbore during well intervention activities. During the Xmas Tree Cap removal small volumes of gas could be released. Tree valves will be pressure tested prior to operations to confirm integrity.

An ESD may be implemented if the MODU is required to rapidly disengage from the well. ESD aims to leave the wellhead and WCP/PCE in a secure condition but will result in the loss of small volumes of fluids/gases in the umbilical or upper PCE around the disconnection points following disconnection.

Impact assessment

Environmental value(s) potentially impacted

Atmospheric emissions associated with fuel combustion, incineration, venting and flaring have the potential to result in localised, temporary reduction in ambient air quality.

Given the short duration and exposed location of project vessels (which will lead to the rapid dispersion of the low volumes of atmospheric emissions), the potential impacts are expected to be localised and of no lasting effect.

Venting of hydrocarbon gases may result in a temporary gas plume and a localised contribution to greenhouse gas emissions. There is potential for human health effects for workers in the immediate vicinity of atmospheric emissions. However, the closest sensitive residential receptor is the town of Dampier, approximately 123 km south of Operational Area B; therefore, any risks associated with off-site human health effects are negligible beyond the immediate zone of release and dispersion.

Demonstration of ALARP

Control considered	***Control feasibility (F) and cost/sacrifice (CS)[38]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
Legislation, codes and standards				
Marine Order 97 (Marine Pollution Prevention – Air Pollution), which details requirements for: • International Air Pollution Prevention (IAPP) Certificate, required by vessel class • use of low sulphur fuel when available • Ship Energy Efficiency Management Plan, where required by vessel class	F: Yes. CS: Minimal cost.	Legislative requirements to be followed may slightly reduce the likelihood of air pollution.	Control based on legislative requirements – must be adopted.	Yes **C 5.1**

[38] *Qualitative measure.*

Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[38]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
• onboard incinerator to comply with Marine Order 97.				
Reporting of GHG emissions as required by regulatory requirements.	F: Yes. CS: Minimal cost. Standard practice for Woodside activities.	Tracking and reporting of emissions gives visibility to performance and enables improvement opportunities to be identified. Reporting increases transparency and accountability which can also drive performance improvements.	Control based on legislative requirements – must be adopted.	Yes **C 5.2**
Good practice				
Flaring restricted to a duration necessary to perform the activity for well kill.	F: Yes. CS: Minimal cost. Standard practice for Woodside activities.	Reduces the likelihood of atmospheric emissions impacting air quality. Consequence remains unchanged.	Benefits outweigh cost/sacrifice.	Yes **C 3.2**
Vessel operations planned such that fuel consumption and therefore subsequent emissions are minimised. Examples may include such aspects as vessel speeds, cleaning of biofouling, preventative maintenance on equipment such as thrusters, or turning off equipment when not in use.	F: Yes CS: Schedule delays	Managing vessel operations including vessel speeds, use of project vessels, cleaning of biofouling, preventative maintenance and turning off equipment when not in use can reduce fuel usage and subsequent GHG / air emissions.	Potential benefit outweighs cost/sacrifice.	Yes **C 5.3**
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 contract is considered in evaluation of responses, allowing for competitive consideration of low carbon alternatives (batteries).	Minimise cost and emissions through eco-efficiency approach recognising cost of fuel and carbon emissions over the contract term.	Benefits outweigh cost/sacrifice.	Yes **C 5.4**
Professional judgement – Eliminate				
Do not combust fuel.	F: No. There are no MODUs or vessels that do not use	Not considered – control not feasible.	Not considered – control not feasible.	No

Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[38]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
	internal combustion engines. CS: Not considered – control not feasible.			
Do not vent during well kick.	F: No. Venting is a safety- critical activity required in the event of a kick to reduce pressure build up. CS: Not considered – control not feasible.	Not considered – control not feasible.	Not considered – control not feasible.	No
Do not vent or flare well fluids during well kill operations.	F: No. venting or flaring of well fluids is a safety- critical activity required to facilitate permanent plugging operations.	Not considered – control not feasible.	Not considered – control not feasible.	No
Professional judgement – Substitute				
Fuel types selected to reduce expected GHG emissions.	F: Yes CS: Monetary cost of fuel, logistics associated with fuel type supply (especially with regard to international vessels) and fuel inventory management for international vessels which may be required to change fuel type.	Alternative fuel types such as Marine Gas Oil and Marine Diesel Oil (MGO & MDO) can reduce GHG emissions during use when compared to heavy or intermediate fuel oils (HFO or IFO).	Potential benefit outweighs cost/sacrifice.	Yes **C 5.5**
Professional judgement – Engineered solution				
Manage vessel speed to reduce fuel combustion.	F: Yes. CS: Standard practice.	Reducing fuel combustion reduces atmospheric emissions.	Benefits outweigh cost/sacrifice.	Yes **C 5.6**
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 2.2.4.2) and Woodside's criteria for demonstrating ALARP (Section 2.3.1), Woodside considers the adopted controls appropriate to manage potential impacts associated with routine atmospheric and GHG emissions. As no reasonably practicable additional/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 atmospheric and GHG emissions from fuel combustion, flaring and venting may result in negligible, localised impacts (<1 month) to habitat (but not affecting ecosystem function), physical or biological attributes. The adopted controls are considered consistent with legislation, codes and standards, and professional judgment and meet the requirements of Australian Marine Orders. On the basis of the assessment outcomes, use of the relevant tools appropriate to the decision type (i.e. Decision Type A; Section 2.2.4.2) and Woodside's criteria for demonstrating acceptability (Section 2.3.2), Woodside considers the adopted controls appropriate to manage the impacts 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			
EPO	***Controls***	***PS***	***MC***
EPO 9 Emissions to atmosphere associated with fuel combustion, incineration, flaring and venting limited to those necessary to complete the Petroleum Activities Program.	**C 3.2** See Section 6.6.3.	**PS 3.2** See Section 6.6.3.	**MC 3.2.1** See Section 6.6.3.
	C 5.1 Marine Order 97 (Marine Pollution Prevention – Air Pollution) which details requirements for: • International Air Pollution Prevention (IAPP) Certificate, required by vessel class • use of low sulphur fuel when available • Ship Energy Efficiency Management Plan, where required by vessel class • onboard incinerator to comply with Marine Order 97.	**PS 5.1** MODU and project vessels compliant with Marine Order 97 (marine pollution prevention – air pollution) to restrict emissions to those necessary to perform the activity. Vessel marine assurance process conducted prior to contracting vessels, to ensure suitability and compliance with vessel combustion certification/ Marine Order requirements.	**MC 5.1.1** Marine Assurance inspection records demonstrate compliance with Marine Order 97.
	C 5.2 Reporting of GHG emissions as required by regulatory requirements.	**PS 5.2** GHG emission regulatory reporting undertaken as required.	**MC 5.2.1** Records demonstrate required regulatory GHG emission reported.
	C 5.3 Vessel operations will be planned such that fuel consumption is minimised where practicable. Examples may include such aspects as vessel speeds, cleaning of biofouling, preventative maintenance on equipment such as thrusters, or turning off equipment when not in use.	**PS 5.3.1** Vessel operations planned, where practicable, to minimise fuel consumption and associated GHG/air emissions.	**MC 5.3.1** Plan/records show fuel use/emissions have been considered in vessel operations.
		PS 5.3.2 Relevant vessel crew aware of requirement to consider GHG/air emissions in vessel operations.	**MC 5.3.2** Awareness training records include information on consideration of fuel use/GHG emissions for vessel operations.
	C 5.4 Contracting strategy and evaluation for hire of	**PS 5.4** Evaluation of tenders of support vessels considers	**MC 5.4.1**

EPOs, EPS and MC			
EPO	***Controls***	***PS***	***MC***
	support vessels includes consideration of vessel emissions parameters and low carbon / alternative fuels.	emissions parameters and low carbon / alternative fuels.	Records demonstrate that emissions were considered in tender evaluations.
	C 5.5 Fuel types selected to reduce expected GHG emissions.	**PS 5.5** Project vessels will not use heavy fuel oil (HFO) or intermediate fuel oil (IFO)	**MC 5.5.1** Records show project vessels use alternative fuels to HFO / IFO
	C 5.6 Manage vessel speed to reduce fuel consumption.	**PS 5.6** Vessel speed will be managed to reduce fuel consumption where practicable.	**MC 5.6.1** Records demonstrate speed of support vessels managed.

6.6.6 Routine and non-routine discharges: mobile offshore drilling unit and project vessels

Context		
Project vessels – Section 3.5 Permanent plugging activities – Section 3.11 Well intervention activities – Section 3.10	Physical environment – Section 4.4 Habitats and biological communities – Section 4.5	Stakeholder consultation – Section 5

Impact evaluation summary

Source of impact	***Environmental value 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
Routine discharge of sewage, grey water and putrescible wastes to marine environment from MODU and project vessels		X					A	F	-	-	LCS PJ	Broadly Acceptable	EPO 10
Routine discharge of deck and bilge water to marine environment from MODU and project vessels		X					A	F					
Routine discharge of cooling water or brine to the marine environment from MODU and project vessels		X					A	F					

Description of source of impact

The MODU and project vessels routinely generate/discharge:

- Small volumes of treated sewage, putrescible wastes and grey water to the marine environment (impact assessment based on approximate discharge of 15 m³ per vessel/MODU per day), using an average volume of 75 L/person/day and a maximum of 200 persons on board. However, it is noted that vessels such as support vessels will have considerably less persons on board.
- Routine/periodic discharge of relatively small volumes of bilge water. Bilge tanks receive fluids from many parts of the project vessels or MODU. Bilge water can contain water, oil, detergents, solvents, chemicals, particles and other liquids, solids or chemicals.
- Variable water discharge from MODU/vessel decks directly overboard or via deck drainage systems. Sources could include rainfall events and/or deck activities such as cleaning/wash-down of equipment/decks.
- Cooling water from machinery engines or mud cooling units and brine water produced during the desalination process of reverse osmosis to produce potable water onboard project vessels and MODU.

Environmental risks relating to the unplanned disposal/discharges from the MODU/project vessels are addressed in Section 6.7.5 and 6.7.6.

Impact assessment
Environmental value(s) potentially impacted
Routine discharges generated from the Petroleum Activity have the potential to cause temporary and localised reduction in water quality. The principal environmental impact associated with ocean disposal of sewage and other organic wastes (i.e. putrescible waste) is eutrophication. Eutrophication occurs when the addition of nutrients, such as nitrates and phosphates, causes adverse changes to the ecosystem, such as oxygen depletion and phytoplankton blooms. Other contaminants of concern occurring in these discharges may include ammonia, E. coli, faecal coliform, volatile and semi-volatile organic compounds, phenol, hydrogen sulphide, metals, surfactants and phthalates. Woodside conducted monitoring of sewage discharges at its Torosa-4 Appraisal Drilling campaign which demonstrated that a 10 m^3 sewage discharge reduced to about 1% of its original concentration within 50 m of the discharge location. In addition to this, monitoring at distances 50 m, 100 m and 200 m downstream of the platform and at five different water depths confirmed that discharges were rapidly diluted; no elevations in water quality monitoring parameters (e.g. total nitrogen, total phosphorous and selected metals) were recorded above background levels at any station (Woodside, 2011). Mixing and dispersion would be further facilitated in deep offshore waters, consistent with the location of the Operational Areas, through regional wind and large-scale current patterns resulting in the rapid mixing of surface and near surface waters where sewage discharges may occur. Studies investigating the effects of nutrient enrichment from offshore sewage discharges indicate that the influence of nutrients in open marine areas is much less significant than that experienced in enclosed areas (McIntyre and Johnston, 1975). Furthermore, open marine waters do not typically support areas of increased ecological sensitivity, due to the lack of nutrients in the upper water column and lack of light penetration at depth. Therefore, presence of other receptors such as fish, reptiles, birds and cetaceans in significant numbers, and in proximity to the Operational Areas, is unlikely. Research also suggests that zooplankton composition and distribution are not affected in areas associated with sewage dumping grounds (McIntyre and Johnston, 1975). Plankton communities are expected to rapidly recover from any such short-term, localised impact, as they are known to have naturally high levels of mortality and a rapid replacement rate. Additional discharges outlined, which may include other non-organic contaminants (e.g. bilge water, deck drainage and cooling water), will be rapidly diluted through the same mechanisms as above. They are expected to be intermittent and in very small quantities and concentrations as to not pose any significant risk to any relevant receptors. Activities associated with the Petroleum Activity will occur over a period of two years (2025-2027), however actual project activities are expected to take approximately 300 days in total, therefore project vessels and the MODU will not be continuously in the Operational Areas during this time. Vessels will also be moving (i.e. not in a single location for an extended period of time). Rather, these routine discharges are expected to be intermittent in nature for the duration of the Petroleum Activity. Therefore, cumulative impacts to water quality within the Operational Areas are expected to be localised with no lasting effect. It is possible that marine fauna transiting the localised area may come into contact with these discharges (e.g. marine turtles, humpback whales, whale sharks, as they traverse the Operational Areas, Section 4.6). However, given the localised extent of cumulative impacts from multiple vessel discharges within the Operational Areas, significant impacts to marine fauna are not expected. There are two KEFs that overlap with at least one Operational Area: Ancient Coastline and Glomar Shoals (Section 4.7). Glomar Shoals is a submerged feature at depths of 33 to 77 metres (Falkner et al., 2009) and the Ancient Coastline is defined by a depth range of 115 to 135 m. Given the water depths and open ocean environment, impacts to the values of these KEFs are not expected. As such, no significant impacts from the planned discharges that are listed above are anticipated because of the minor quantities involved, the expected localised mixing zone and high level of dilution into the open water marine environment of the Operational Areas.

Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[39]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
Legislation, codes and standards				
Marine Order 95 – pollution prevention –	F: Yes.	No reduction in likelihood or	Controls based on legislative	Yes **C 6.1**

[39] *Qualitative measure.*

Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[39]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
garbage (as appropriate to vessel class), which requires putrescible waste and food scraps to pass through a macerator, so it is capable of passing through a screen with no opening wider than 25 mm.	CS: Minimal cost. Standard practice.	consequence would result.	requirements – must be adopted.	
Marine Order 96 – pollution prevention – sewage (as appropriate to vessel class), specifically: • a valid International Sewage Pollution Prevention Certificate, as required by vessel class • an AMSA-approved sewage treatment plant • sewage comminuting and disinfecting system • a sewage holding tank sized appropriately to contain all generated waste (black and grey water) • discharge of sewage that is not comminuted or disinfected to only occur at a distance of more than 12 nm from the nearest land • discharge of sewage that is comminuted or disinfected using a certified approved sewage treatment plant to only occur at a distance of more than 3 nm from the nearest land • discharge of sewage to occur at a moderate rate	F: Yes. CS: Minimal cost. Standard practice.	No reduction in likelihood or consequence would result.	Controls based on legislative requirements – must be adopted.	Yes **C 6.2**

Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[39]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
while the vessel is proceeding (more than 4 knots), to avoid discharges in environmentally sensitive areas.				
Where there is potential for loss of primary containment of oil and chemicals on the project vessels, deck drainage must be collected via a deck drainage water management system.	F: Yes. CS: Minimal cost. Standard practice.	Reduces the likelihood of contaminated deck drainage water being discharged to the marine environment. No change in consequence would occur.	Benefits outweigh cost/sacrifice.	Yes **C 6.3**
Marine Order 91 – oil (as relevant to vessel class) requirements, which include mandatory measures for the processing of oily water prior to discharge: • machinery space bilge/oily water to have International Maritime Organization (IMO) approved oil filtering equipment (oil/water separator) with an online monitoring device to measure oil in water (OIW) content to be less than 15 ppm prior to discharge • IMO-approved oil filtering equipment to also have an alarm and an automatic stopping device or be capable of recirculating in the event OIW concentration exceeds 15 ppm • a deck drainage system capable of controlling the content of discharges for areas of high risk of fuel, oil, grease or	F: Yes. CS: Minimal cost. Standard practice.	No reduction in likelihood or consequence would result.	Controls based on legislative requirements – must be adopted.	Yes **C 6.4**

Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[39]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
hazardous chemical contamination • a waste oil storage tank available, to restrict oil discharges • in the event that machinery space bilge discharges cannot meet the oil content standard of more than 15 ppm without dilution or be treated by an IMO-approved oil/water separator, to be contained on-board and disposed of onshore • a valid International Oil Pollution Prevention (IOPP) Certificate, as required by vessel class.				
Good practice				
No additional controls identified.				
Professional judgement – Eliminate				
Storage, transport, disposal and onshore treatment of sewage, greywater, putrescible and bilge wastes.	F: Not feasible. Would present additional safety and hygiene hazards resulting from the storage, loading and transport of the waste material. Distance of activity offshore also makes implementing this control not feasible. CS: Not considered – control not feasible.	Not considered – control not feasible.	Not considered – control not feasible.	No
Professional judgement – Substitute				
No additional controls identified.				
Professional judgement – Engineered solution				
No additional controls identified.				

Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[39]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
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 2.2.4.2) and Woodside's criteria for demonstrating ALARP (Section 2.3.1), Woodside considers the adopted controls appropriate to manage potential impacts associated with planned (routine and non-routine) MODU and vessel discharges. As no reasonably practicable additional/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, planned (routine) discharges from project vessels may result in negligible, localised impacts (<1 month) to habitat (but not affecting ecosystem function), physical or biological attributes. Further opportunities to reduce the impacts and risks have been investigated above. On the basis of the assessment outcomes, use of the relevant tools appropriate to the decision type (i.e. Decision Type A; Section 2.2.4.2) and Woodside's criteria for demonstrating acceptability (Section 2.3.2), Woodside considers the adopted controls appropriate to manage the impacts 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			
EPO	***Controls***	***PS***	***MC***
EPO 10 Vessel and MODU discharges shall meet requirements defined by Marine Orders.	**C 6.1** Marine Order 95 – Pollution prevention – Garbage (as appropriate to vessel class) which requires putrescible waste and food scraps are passed through a macerator so that it is capable of passing through a screen with no opening wider than 25 mm.	**PS 6.1** MODU and project vessels compliant with Marine Order 95 – Pollution prevention – Garbage.	**MC 6.1.1** Environmental and MARPOL inspection records demonstrate MODU and project vessels are compliant with Marine Order 95 – Pollution prevention (as appropriate to vessel class).
	C 6.2 Marine Order 96 – pollution prevention – sewage (as appropriate to vessel class), specifically: • a valid International Sewage Pollution Prevention Certificate, as required by vessel class • an AMSA-approved sewage treatment plant • sewage comminuting and disinfecting system • a sewage holding tank sized appropriately to contain all generated	**PS 6.2** MODU and project vessels compliant with Marine Order 96 – Pollution prevention – Sewage (as appropriate to vessel class).	**MC 6.2.1** Environmental and MARPOL inspection records demonstrate MODU and project vessels are compliant with Marine Order 96 – Pollution prevention – Sewage (as appropriate to vessel class).

EPOs, EPS and MC			
EPO	***Controls***	***PS***	***MC***
	waste (black and grey water) • discharge of sewage that is not comminuted or disinfected to only occur at a distance of more than 12 nm from the nearest land • discharge of sewage that is comminuted or disinfected using a certified approved sewage treatment plant to only occur at a distance of more than 3 nm from the nearest land • discharge of sewage to occur at a moderate rate while the vessel is proceeding (more than 4 knots), to avoid discharges in environmentally sensitive areas.		
	C 6.3 Where there is potential for loss of primary containment of oil and chemicals on the MODU, deck drainage must be collected via a closed drainage system. E.g. drill floor.	**PS 6.3** Contaminated drainage contained, treated and/or separated prior to discharge.	**MC 6.3.1** Environmental inspection records demonstrate MODU has a functioning bilge/oily water management system.
	C 6.4 Marine Order 91 – oil (as relevant to vessel class) requirements, which include mandatory measures for the processing of oily water prior to discharge: • machinery space bilge/oily water to have International Maritime Organization (IMO) approved oil filtering equipment (oil/water separator) with an online monitoring device to measure oil in water (OIW) content to be less than 15 ppm prior to discharge • IMO-approved oil filtering equipment to also have an alarm and	**PS 6.4** Discharge of machinery space bilge/oily water will meet oil content standard of <15 ppm without dilution.	**MC 6.4.1** Environmental and MARPOL inspection records demonstrate discharge specification met for MODU and project vessels.

EPOs, EPS and MC			
EPO	***Controls***	***PS***	***MC***
	an automatic stopping device or be capable of recirculating in the event OIW concentration exceeds 15 ppm • a deck drainage system capable of controlling the content of discharges for areas of high risk of fuel, oil, grease or hazardous chemical contamination • a waste oil storage tank available, to restrict oil discharges • in the event that machinery space bilge discharges cannot meet the oil content standard of more than 15 ppm without dilution or be treated by an IMO-approved oil/water separator, to be contained on-board and disposed of onshore • a valid IOPP Certificate, as required by vessel class.		

6.6.7 Routine and non-routine discharges: well clean-out fluids, well kill fluid, cement cuttings, swarf, formation rock, drilling fluids (water-based and non-water-based muds), and wellhead removal fluids (grit and flocculant)

Context		
Mooring installation and anchor hold testing – Section 3.9.2 Permanent plugging activities – Section 3.11 Additional potential MODU based activities – Section 3.12 Project fluids – Section 3.15	Physical environment – Section 4.4 Habitats and biological communities – Section 4.5	Stakeholder consultation – Section 5

Impact evaluation summary

Source of impact	***Environmental value 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 well fluids from the subsea xmas trees to the marine environment	X	X		C			A	F	-	-	GP PJ	Broadly Acceptable	EPO 11
Discharge of well kill fluids and well clean out fluids (weighted brine, surfactants, lost circulation material) to the marine environment	X	X		X			A	F					
Discharge of WBM, residual NWBM, swarf, cement cuttings and formation rock cuttings to the marine environment during milling	X	X		X			A	F					
Discharge of WBM and cement cuttings to the marine environment during drilling out of a cement plug	X	X		X			A	F					
Discharge of grit, flocculant and/or metal swarf during removal of well infrastructure	X	X		X			A	F					
Discharges during IMR activities	X	X		X			A	F					

Degradation of up to 1 m of well infrastructure left in situ resulting in the non-routine discharge of trace amounts of metals to the marine environment	X	X		X			A	F					

Description of source of impact

Permanent plugging program and removal of well infrastructure

The case for permanently plugging the wells includes the use of well kill fluid, well clean out fluid and wet cement and will produce well annulus fluids (NWBM, lift gas (see Section 6.7.6 on atmospheric emissions), residual hydrocarbons and residual produced formation water). These fluids will be generated during the well kill, well bore clean out, circulation of the annulus and washing out of the mud pit.

A potential additional activity that may be required as part of the Petroleum Activity includes milling, which will produce metal swarf, drilled cement cuttings and formation rock that will be discharged overboard. Another potential additional activity is drilling out a cement plug, with WBM, if it does not pass the verification test, resulting in cement cuttings. These potential discharges are further described below.

The downhole plugging for permanent abandonment activities are conducted through the marine riser. This includes displacing the well from one fluid system to another. The marine riser is a closed system, meaning there are no planned discharges directly to sea during these activities. Planned discharges of the above fluids are only planned to occur after they have been received on the MODU.

The following describes the source of impact with respect to discharge of cement cuttings, drilling fluids, clean-up fluids, well kill fluids, grit and flocculant only (see Section 6.6.8 for cement, cementing fluids and subsea control fluids). For the purposes of this impact assessment, the indicative dimensions, discharge locations and approximate volumes are provided in Table 6-5.

Table 6-5: Estimated discharges of planned solids and volumes of drilling fluids used per well for the Petroleum Activity*

Description	***Discharge point***	***Discharge***	***Approximate cuttings discharged (m³)****	***Approximate fluid discharged (m³)****	***Potential additional cuttings (m³)****	***Potential additional fluid discharge (m³)****
Discharge from bleed off package	Below the sea surface	Well kill and well bore fluids	0	155^,**	0	0
Discharge from mud system operations	Below the sea surface	B-annulus NWBM	0	0**	0	0
Discharge from mud system operations	Below the sea surface	WBM#	0	0	0	635
Milling (potential activity using WBM)	Below the sea surface	WBM, swarf, cement and formation rock	0	0	2 (swarf) 3 (cement) 3.5 (formation rock)	1600 (WBM)
Drilling out cement plug (potential additional activity using WBM)	Below the sea surface	WBM, cement cuttings	0	0	25 (cement cuttings)	250 (WBM)
Abrasive water jet cutting to	Within the well below the mudline	Flocculant and grit	4 tonnes per well (planned to be	250 L per well (planned to be released	Small volumes may be released to surface sediments if cut is made at or close to the	

remove wellheads (removal option)			released within the well above the top permanent plug with small volumes entering sediments at the cutting depth)	within the well above the top permanent plug with small volumes entering sediments at the cutting depth)	mudline
Mechanical cutting of wellheads (removal option)	Within the well, 3-5 m below the mudline	Metal and cement cuttings from the well infrastructure and lubrication for the cutting tool	0	0	Negligible volumes may be released to surface sediments

^Represents maximum current in-well reservoir fluid. This will only be discharged if <30 ppm OIW can be achieved.

**Volumes described are approximate and may be subject to change due to well design and operational requirements*

***Seawater or brine volume not included in the estimated "fluid volume"*

 # Viscosified brine is planned on being used for B-annulus NWBM removal, however, WBM may be used for efficient clean out.

Wellbore, well kill and circulation fluids

During permanent plugging activities, fluids will generally be displaced from one well to another. During such operations, fluids will be returned to the MODU via bleeding off fluids from the well or by circulated through the well during various operations (e.g. well kill, well-bore clean-out, NWBM removal, milling operations). Depending on the operation, returned fluids may include reservoir fluids, annulus fluids, brine, WBM, NWBM or solids. This includes a number of chemicals that are already present in the well from either the time of drilling, well intervention or injected during operations. The majority of chemicals that may be present are low toxicity and biodegradable, with the exception of NWBM.

During these operations, two separate systems are in place for managing returns from the wellbore, where the routing to either of the two systems is dictated by the operation and well status.

Fluids returned to the fluid handling bleed-off package

During well kill operations, the aim is to bullhead tubing contents into the formation. Fluids remaining in the well after bullheading (e.g. remaining annulus fluids, tubing fluids where bullheading was not successful) will be bled off or circulated out of the well to the MODU and routed to the bleed-off package. All well kill fluids (contaminated brine) and produced water either condensed or formation water returned to the bleed-off package, shall be treated via the water filtration package to less than 30 ppm oil in water content and discharged overboard.

The bleed-off package is designed to handle fluids and cannot handle solids. It will be used for well kill operation only where the well status allows line-up to the bleed-off package.

Fluids and solids returned to the mud system

Where fluids are circulated from the well and the bleed-off package cannot be used, the MODU's mud system will be used to take any returns from the well. This mud system contains mud pits (tanks) which can contain and handle WBM, NWBM, and brine. Fluids required for the permanent plugging activities is planned to be inhibited and/or viscosified brine, but may include WBM for contingency activities such as milling or drilling out a cement plug (see Table 6-5). In this instance, returns from the well handled by the mud system may be re-circulated or re-used if feasible. To re-use the fluids, solids are removed using solids control equipment (SCE). The solids handling and discharges are described below. The WBM fluids, where re-use is not feasible, will be discharged to sea.

The mud system will be used for circulating out NWBM from the B-annulus. Bulk Fluids circulated from the well to the MODU containing greater than 1% NWBM (up to 160 m^3 per well) will be retained and disposed of onshore, or injected into the well and isolated from the environment.

At the completion of permanent plugging activities, the mud pits will be cleaned out, typically using seawater. The mud pit wash residue, including residual NWBM where a mud pit was used to collect B-annulus fluids, will be discharged to the sea when the oil content is less than 1% by volume. Where the mud pit residue exceeds 1% oil content by volume, the residue will be retained and disposed onshore.

Base oil and chemicals used in WBM and NWBM are assessed in accordance with the Woodside Chemical Selection and Assessment Environment Guideline. As the NWBM from the B-annulus are currently in the well they will not

require further chemical assessment however the discharge of the residual NWBM from mud pit wash out has been considered in the impact assessment below.

Milling

During permanent plugging activities, there is a potential additional activity where the well casing needs to be milled out (up to 120 m per well). This will produce milled swarf (2 m^3 per well), drilled cement cuttings (3 m^3 per well) and formation rock (3.5 m^3 per well) and will preferentially be completed using WBM. As the steel swarf within the milled fluids is hard and sharp, these fluids from the well will not be processed through drilling muds process equipment such as cuttings driers and centrifuges, because they will damage or excessively wear the equipment. Given the small volumes of solids and only limited drilling into formation rock, no oil on cuttings (OOC) discharge limits have been applied, as would be the case for a drilling activity. As a result of restricted milling speeds, the rate of swarf and cement will be generated over several days (the rate is expected to be about 50 m per 18 hours).

Cement plug drilling

During permanent plugging activities, there is a potential additional activity where a permanent abandonment plug needs to be drilled out if positive verification cannot be obtained. Up to about 25 m^3 of cement cuttings and about 250 m^3 of WBM will be processed through the MODU's shakers and mud system before being discharged. Given the small volumes and the fact the drilling would be performed with WBM, no oil on cuttings (OOC) discharge limits have been applied.

Removal (cutting) of well infrastructure

As the planned cutting depth is approximately 3-5 m below the mudline, discharges from cutting of well infrastructure using either an abrasive water jet cutting method or a mechanical cutting tool are expected to be confined predominately within the well and settle on the top of the permanent plug. During final cut through the conductor pipe, small amounts of flocculant and grit will be released below the mudline to sediments immediately surrounding the well.

Should cutting at a shallower depth be required, however, these discharges may be released to the seabed surface. For the mechanical cutting tool, discharges will be limited to small quantities of metal and cement cuttings from the infrastructure itself as well as small quantities of lubricant. For the abrasive water jet cutting method, discharges include a small amount of grit and flocculant. Depending on the cutting depth, pressure from the jet cutting could push some of the material up to the seabed surface causing localised smothering of benthic communities as well as create localised and temporary increases in turbidity around the well.

Venting

Small volumes of gas may be released subsea during Xmas tree cap removal or valve functioning in preparation for P&A activities.

See Section 6.6.8 for description and assessment of other potential discharges from plugging and infrastructure removal and recovery.

Impact assessment

Environmental value(s) potentially impacted

The identified potential impacts associated with discharging WBM and brine (collectively referred to as drilling fluids), as well as metal and cement cuttings and grit and flocculant from infrastructure removal include a localised and temporary reduction in water and localised change in seabed sediment quality, as well as localised burial of benthic biota (species) and change to habitats and communities.

A number of direct and indirect impact pathways are identified for these discharges, including:

- 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 physico-chemical composition of sediments, and burial and potential smothering effects to sessile benthic biota
- potential contamination and toxicity effects to benthic and in-water biota.

The Operational Areas are situated in offshore waters (about 72 km from the nearest shoreline of the Montebello Islands) in water depths of ~80 to 130 m. The abiotic habitat in the area is mostly comprised of deep, soft, unconsolidated sediment, which is relatively flat and featureless. However, the Ancient Coastline at 125 m Depth Contour KEF overlaps both Operational Areas and the Glomar Shoals KEF overlaps Operational Area B; therefore, there may be areas of hard substrate associated with these KEFs.

The permanent plugging activities occur with a riser fitted, creating a closed loop system. Small volumes of cement cuttings and/or formation cuttings with unrecoverable fluids are brought to the surface via the riser and discharged below the water line from the MODU, resulting in drilled cement and drilling fluids (WBMs and/or brine) rapidly diluting and dispersing through the water column. The dispersion and fate of the solids are determined by particle size and density of the unrecoverable fluids; the larger solid particles will drop out of suspension and deposit in proximity to the well site (tens of metres) with potential for localised spreading downstream, while the fluids and finer particles will remain in suspension and will be transported away from the well site, rapidly diluting and eventually depositing over a

larger area (hundreds of metres) downstream of the well site. Elevated TSS will occur and will be highest at the point of discharge in the water column, rapidly decreasing with depth and distance over a period of short duration (minutes). The finer particles (associated with the drilling fluids) will remain in suspension and are transported further before settling on the seabed over a wider area (hundreds of metres) downstream of the well site (defined as an area of influence). They will form an undetectable thin sediment veneer with negligible ecological impact to benthic biota. Within the area of influence, drilling fluids are likely to be naturally reworked into surface sediment layers through bioturbation (US Environmental Protection Agency, 2000).

WBM cuttings discharged from the surface (though below the waterline) during drilling activities are generally confined to a maximum of 500 m from the discharge point (IOGP, 2016). For the Petroleum Activity, because the volumes of cement cuttings are so low, and formation cuttings are only associated with contingency plug and abandonment activities and would also be in low volumes, the extent of the environment impacted is expected to be significantly lower than what is stated in the literature, which is based on drilling new wells with much higher volumes of solids.

If removal of infrastructure results in discharges to the seabed then this will result in localised disturbance to the sediments and communities immediately surrounding the well infrastructure and potentially localised temporary increases in turbidity, with no toxicological effects.

Habitats and communities (physical impact of cement cuttings and formation cuttings)

Ecological impacts to sessile benthic organisms is predicted when sediment deposition is equal to or greater than 6.5 mm (in thickness) (IOGP, 2016). Given the volumes of discharges expected and that they will be released from the MODU, this is not expected to occur.

No hard coral habitat or other light-dependent benthic primary producer communities are expected to be present within the Operational Areas given the water depths. However, the overlap with the Ancient Coastline at the 125 m Depth Contour KEF and the Glomar Shoals KEF does present the possibility of the presence of hard substrate within the Operational Areas and associated encrusting assemblages, such as soft corals and sponges. The Ancient Coastline at the 125 m Depth Contour KEF is widely represented outside of the Operational Areas and the discharges are expected to be in small volumes, therefore the potential ecological impacts will be localised and would have negligible impact on the whole KEF. While the Glomar Shoals KEF overlaps Operational Area B, the shoal feature itself is 5.4 km from the Operational Area; therefore, planned discharges will not impact on hard coral cover associated with shoal habitat.

Water quality

As outlined above, increased turbidity and TSS levels in the water column will be temporary and highly localised at the point of discharge. Nelson et al. (2016) identified less than 10 mg/L TSS has no effect or sub lethal minimal effect concentration. Given the generally low concentration of TSS (due to rapid dispersion from the MODU, the offshore open ocean site in conjunction with rapid dispersion of sediment, the small volumes of discharge and the short period of intermittent discharge impacts to water quality are expected to be negligible with no impacts to any protected species.

Sediment quality and habitats and communities (contamination from toxicological effects of drilling muds)

Indicative components of the WBM system outlined in Section 3.15.1.1 have a low toxicity. Bentonite and a chemical from the family of XC polymers (Xanthan Gum or similar) are listed as ‘E’ category fluids under the OCNS and are included on the OSPAR list of chemicals used and discharged offshore that are considered to ‘pose little or no risk to the environment’ (PLONOR). These metals are present primarily as insoluble mineralised salts. Consequently, they are not released in significant amounts to the pore water of marine sediments and have low bioavailability to those benthic fauna that may come into contact with the discharged barite (Crecelius et al., 2007; Neff, 2008).

The XC polymer and bentonite sweeps have very low toxicities and are included on the PLONOR list. They may, however, cause physical damage to benthic organisms by abrasion or clogging, or through changes in sediment texture that can inhibit the settlement of planktonic polychaete and mollusc larvae (Swan et al., 1994). However, these impacts are expected to be negligible, due to the low volumes that will be discharged and rapid biodegradation and dispersion of WBM drilling fluids (Terrens et al., 1998). The dilution of solid elements of the WBM into substrate largely depends on the energy level of the local environment and the ‘mixing’ that occurs but is expected to occur rapidly after release (especially with WBM).

Base fluids for NWBM (which may be recovered from the wells during B-annulus NWBM remediation activities) are designed to be low toxicity and biodegradable in offshore marine sediments. Biodegradation can result in a low oxygen (anoxic) environment, resulting in changes in benthic community structure. However, given the small volumes that may be discharged, impacts to benthic habitats and communities will be negligible.

One chemical within the B-annulus NWBM was identified as non-biodegradable; however, it would only be discharged to the marine environment as residual contamination in the mud pit wash and due to the negligible volume, it is expected to rapidly dilute within the vicinity of the release location with no lasting effect.

Fluids released during Xmas tree and wellhead removal

After permanent plugging and B-annulus NWBM removal is complete, the Xmas tree and wellheads may be cut and recovered. Upon removal, the remaining water-based casing and annulus fluids become exposed to the sea. The small volumes and non-instantaneous nature of the release of the well fluids is expected to result in rapid dilution to a

no- effect concentration within metres of the release location. Therefore, impacts will be limited to negligible.

Cumulative impacts

No cumulative impacts to water quality are expected to occur, as discharged sediments are predicted to settle in between the plug and abandon activities for each well.

Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[40]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
Legislation, codes and standards				
No additional controls identified.				
Good practice				
Fluids, flocculant and additives intended or likely to be discharged to the marine environment will have an environmental assessment completed before use.	F: Yes. CS: Minimal cost. Standard practice.	Environmental assessment of chemicals will reduce the consequence of impacts resulting from discharges to the marine environment by ensuring chemicals have been assessed for environmental acceptability. Planned discharges are required for the safe execution of activities and therefore no reduction in likelihood can occur.	Benefits outweigh cost/sacrifice.	Yes **C 7.1**
Six-monthly chemical reviews will be performed on all previously approved chemicals to confirm potential chemical impacts are reduced to ALARP.	F: Yes. CS: Minimal cost. Standard practice.	Reviews will ensure chemicals selected for drilling and completions fluids remain ALARP.	Benefits outweigh cost/sacrifice.	Yes **C 7.2**
Brine, WBM and clean-up fluids routed via the MODU mud system which are contaminated with NWBM, will be captured on the MODU for discharge if oil concentration is less than 1% by volume. If discharge contains greater than 1% OIW volume, fluid will be returned to shore or injected into the well and isolated from the environment.	F: Yes. CS: Minimal cost. Standard practice.	By taking the fluid with >1% OIW onshore or reinjecting it into the well and isolating it from the marine environment the consequence of the release on the environment is eliminated. Although no change in likelihood is provided, the decrease in consequence results in an environmental benefit.	Benefits outweigh cost/sacrifice.	Yes **C 7.3**

[40] *Qualitative measure.*

Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[40]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
Bulk operational discharges conducted under MODU's PTW system (to operate discharge valves/pumps).	F: Yes. CS: Minimal cost. Standard practice.	The MODU's PTW may slightly reduce the likelihood of bulk discharges occurring, but it is unlikely to be significant given bulk discharges are often operationally required and cannot be eliminated.	Benefits outweigh cost/sacrifice.	Yes **C 7.4**
Mud pit wash residue and fluids received to the MODU during well kill will be measured for oil content and treated by the bleed off package before discharge or retained and disposed onshore.	F: Yes. CS: Minimal cost. Standard practice.	Ensuring less than 1% oil content, will provide a small reduction in consequence and toxicity when residue is discharged to the environment.	Benefits outweigh cost/sacrifice.	Yes **C 7.5**
Professional judgement – Eliminate				
Brine, WBM and clean-up fluids routed via the MODU mud system which are contaminated with < 1% NWBM captured on the MODU not discharged to the marine environment.	F: Yes. CS: Not standard practise. Significant cost, labour and resources required due to volumes of brine, WBM and clean-up fluids that would require handling from being generated from the permanent plugging activities. Other cost/sacrifice elements which are considered include: • further treatment of the fluids onshore is required to ensure a standard suitable for landfill: Class II disposed locally (e.g. Karratha); Class III landfill requires transport to Geraldton or Perth • potential halt to permanent plugging activity if transfer	Slight reduction in consequence to the marine environment due to small volume of oil (<1% by content) not being discharged. However, generates onshore disposal consequences.	Cost/sacrifice outweighs benefits.	No

Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[40]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
	operations are delayed due to weather or operational issues • additional environmental impact incurred (air emissions) from vessel use and onshore trucking for transporting fluids • disposal via onshore treatment does not eliminate an environmental impact. These options have their own impacts and therefore disadvantages if implemented.			
Professional judgement – Substitute				
No additional controls identified.				
Professional judgement – Engineered solution				
Drilled cement formation rock and swarf cuttings returned to the MODU will be discharged below the water line.	F: Yes. CS: Minimal cost. Standard practice.	Discharge below the water line will reduce carriage and dispersion of solids, thereby reducing the consequence of solids discharges during the Petroleum Activity.	Benefits outweigh cost/sacrifice.	Yes **C 7.6**
Water quality and/or sediment monitoring of drilling fluids and cement/formation cuttings to verify impact during activity.	F: Yes. CS: For in-water sampling using ROV – Time and logistics for tool change-out from operational tools to specialised scientific sampling tools. Additional personnel onboard to operate ROV and coordinate sampling program.	No environmental benefit would be gained by implementing monitoring during the activity. Monitoring could be used to inform additional control measures in future drilling activities; however, there is a considerable body of scientific literature about potential impacts of drilled	Disproportionate. Cost/sacrifice outweighs benefit to be gained in the context of existing environment (deepwater, open ocean communities with no proximity to sensitive benthic communities or receptors). Although adoption of this control	No

Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[40]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
	Low ROV availability due to operations can limit time to perform environment monitoring. If additional ROV is required on the MODU, deck space and resources to run, store, service ROV. Resources for sample processing (space, equipment, personnel).	cement and impacts are generally well understood. Furthermore, it is not guaranteed that additional controls would be feasible, or if they would provide any environmental benefit, and the volumes that are proposed to be discharged are so small that meaningful monitoring may not be possible.	could be used to verify EPOs associated with drilling mud and cutting discharge, alternative controls identified achieve an appropriate outcome.	
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 2.2.4.2) and Woodside's criteria for demonstrating ALARP (Section 2.3.1), Woodside considers the adopted controls appropriate to manage potential impacts/risks associated with routine and non-routine discharges (well clean-out fluids, well kill fluid, cement cuttings, swarf, formation rock, drilling fluids (WBM and brine), NWBM and wellhead removal fluids (grit and flocculant)). 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 impact assessment has determined that, given the adopted controls, routine and non-routine discharges (well clean-out fluids, well kill fluid, cement cuttings, swarf, formation rock, drilling fluids (WBM and brine), NWBM and wellhead removal fluids (grit and flocculant)) may result in negligible, localised impact (<1 month) on habitat (but not affecting ecosystem function), physical and biological attributes. On the basis of the assessment outcomes, use of the relevant tools appropriate to the decision type (i.e. Decision Type A/B/C; Section 2.2.4.2) and Woodside's criteria for demonstrating acceptability (Section 2.3.2), Woodside considers the adopted controls appropriate to manage the impacts 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			
EPO	***Controls***	***PS***	***MC***
EPO 11 Impacts from routine and non-routine discharges from well clean-out fluids, well kill fluid, cement cuttings, swarf, formation rock, drilling fluids (water-based and non-water based muds), and	**C 7.1** Fluids, flocculant and additives intended or likely to be discharged to the marine environment will have an environmental assessment completed before use.	**PS 7.1** All chemicals, planned to be used and intended or likely to be discharged to the marine environment reduced to ALARP using the chemical assessment process.	**MC 7.1.1** Records demonstrate chemical selection, assessment and approval process is followed.
	C 7.2	**PS 7.2**	**MC 7.2.1**

EPOs, EPS and MC			
EPO	***Controls***	***PS***	***MC***
wellhead removal fluids (grit and flocculant) will be limited to planned activities and impacts described as part of the Petroleum Activities Program.	Six-monthly chemical reviews will be performed on all previously approved chemicals to confirm potential chemical impacts are reduced to ALARP.	Acceptability of previously approved chemicals are re-evaluated to ensure ALARP and alternatives are considered.	Records confirm reviews have occurred, and any actions/changes are implemented.
	C 7.3 Brine, WBM and clean-up fluids routed via the MODU mud system which are contaminated with NWBM, will be captured on the MODU for discharge if oil concentration is less than 1% by volume. If discharge contains greater than 1% OIW volume, fluid will be returned to shore or injected into the well and isolated from the environment.	**PS 7.3** Fluids containing >1% OIW taken onshore or injected into the well and isolated from the marine environment.	**MC 7.3.1** Records demonstrate fluids containing >1% OIW have been taken onshore or injected into the well and isolated from the marine environment.
	C 7.4 Bulk operational discharges conducted under MODU's PTW system (to operate discharge valves/pumps).	**PS 7.4** All bulk operational discharges conducted under MODU's PTW system.	**MC 7.4.1** Records demonstrate that bulk discharges are conducted under the MODU PTW system.
	C 7.5 Mud pit wash residue and fluids received to the MODU during well kill will be measured for oil content and treated by the bleed off package before discharge or retained and disposed onshore.	**PS 7.5** Less than 1% by volume oil content achieved before discharge of mud pit wash residue.	**MC 7.5.1** Records after pit clean-out (for pits potentially contaminated with base oil) demonstrate mud pit wash residue was less than 1% by volume oil content before discharge.
	C 7.6 Drilled cement, formation rock and swarf returned to the MODU will be discharged below the water line to reduce carriage and dispersion of solids by surface currents.	**PS 7.6** Drilled cement, formation rock and swarf discharged below the water line.	**MC 7.6.1** Records confirm solids discharge chute/line is below the water line.

6.6.8 Routine and non-routine discharges: wet cement, cementing fluids, subsea fluids, unused bulk products and marine riser clean-out

Context		
Marine growth removal – Section 3.9.7.1 IMR activities – Section 3.9.8 BOP and subsea control systems – Sections 3.10.3 and 3.11.1.1 Installation of permanent barriers – Section 3.11.1.7 Cement, barite and bentonite discharge – Section 3.11.2 Marine riser clean out – Section 3.12.1 Project fluids – Section 3.15	Physical environment – Section 4.4 Habitats and biological communities – Section 4.5	Stakeholder consultation – Section 5

Impact evaluation summary

Source of impact	***Environmental value 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
Routine and non- routine discharge of wet cement, cementing fluids, subsea control fluids (e.g. BOP control fluids), marine growth cleaning fluids and marine riser clean-out debris to the marine environment	X	X		X			A	F	-	-	GP PJ	Broadly Acceptable	EPO 12

Description of source of impact

Wet cement and cementing fluids

Cementing fluids, including cementing mix water, may require discharge to the marine environment under various scenarios. After each cement job, 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 is estimated to be about 20 m³ per well (based on up to four cement jobs per well, with 5 m³ discharged per job). In the event that the cement job does not meet barrier requirements, the cement will be drilled out and cement operations redone.

Cement spacers can be used as part of the cementing process, within the well casing, to assist with cleaning the casing sections before cement flows through.

Following completion of all plugging operations at the end of the campaign, excess cement, bentonite and barite (dry bulk, after well operations are completed) will either be: used for subsequent wells; provided to the next operator at the end of the plug and abandon program (as it remains on the rig); or, if these options aren't practicable, discharged to the marine environment as dry bulk or as a slurry up to 5 m³. Maximum discharges are 100 tonnes of cement, 120 tonnes of barite and 120 tonnes of bentonite. However, these volumes are highly conservative and discharge volumes (if required) are likely to be much smaller. The process that will be followed to determine discharge is the last option is presented in Figure 6-1.

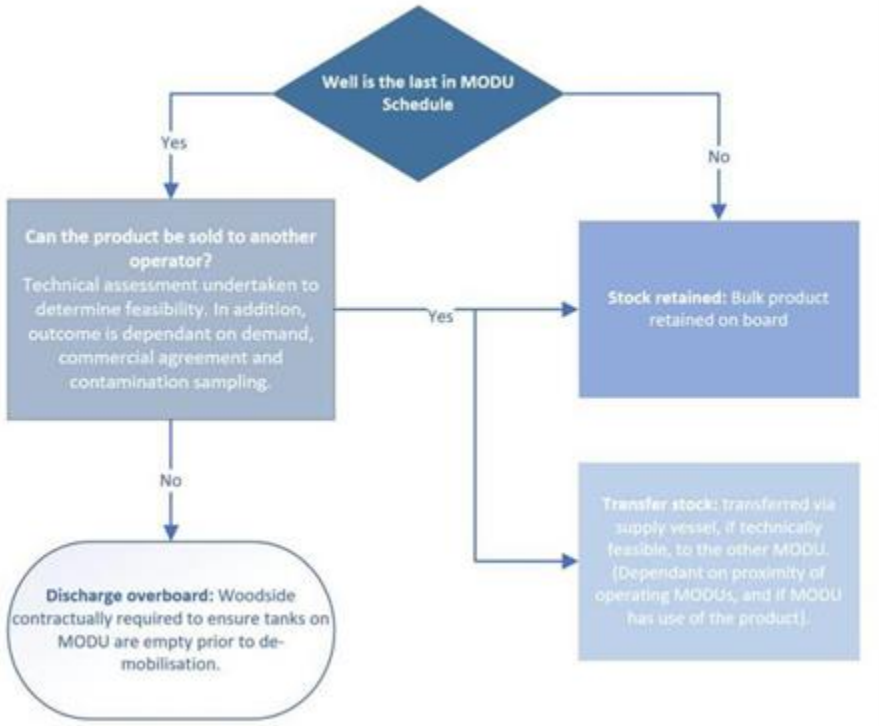

Figure 6-1: Management process for excess bulk product

Upon arrival on location at the Operational Areas, the MODU may need to perform a cement unit test, or 'dummy cement job'. Discharges from the test are made through the usual cement unit discharge line, which may be up to 10 m, above the sea surface, and occur as a cement slurry. The slurry is usually a mix of cement and water (about 10 m^3); however, may sometimes contain stabilisers or chemical additives.

Subsea fluids (BOP/Xmas tree and well plugging activity control fluids)

Subsea fluids are likely to be released during permanent plugging for abandonment activities including Xmas tree removal. These substances include hydraulic fluids, BOP control fluids and subsea control fluids.

The BOP is required to be regularly function tested when subsea, as defined by legislative requirements. The BOP is function tested during assembly and maintenance and during operation on the seabed. As part of this testing, small volumes of BOP control fluid (generally consisting of water mixed with a glycol based detergent or equivalent water based anti-corrosive additive) is released to the marine environment. The BOP will be function tested about every seven days (when a pressure test is not occurring) and pressure tested about every 21 days as per API 53 (an American Petroleum Institute standard for Well Control Equipment Systems for Drilling Wells). The maximum volume of BOP control fluid per function is up to about 90 L per test.

All other plug and abandon activities that result in subsea control fluid discharges are likely to only discharge small, intermittent volumes.

During marine growth removal activities it may be necessary to remove marine growth from the Xmas trees and wellheads using acid (typically sulphamic acid).

Marine riser clean out

There is potential for the marine riser and BOP to be susceptible to rust and other minor build up between wells. This can lead to operational issues. To avoid this, the marine riser will be cleaned by running riser brushes through it while the riser and BOP are suspended in open water. The BOP cavities will also be cleaned before deployment and, if equipment needs to be cleaned after deployment, large diameter brushes, clean drill pile and high rate circulation subs will be available to enable riser cleaning/flushing to the MODU mud pits. If debris continues to be a problem, the riser will be disconnected and an ROV will be used to flush the remaining debris from the top of the Xmas Tree Cap.

Impact assessment

Environmental value(s) potentially impacted

Pelagic and benthic habitats in the Operational Areas are considered to be of low sensitivity (no known significant benthic habitat or infauna habitat). Although the Ancient Coastline at 125 m Depth Contour KEF overlaps with the Operational Areas, the values and sensitivities of this KEF occur on a broad scale outside of the Operational Areas (Section 4.5.3). Operational Area B also overlaps with the Glomar Shoals KEF but is located 5.4 km from the Glomar

Shoals feature itself. Coupled with the low toxicity of the fluids to be used for the Petroleum Activity, the likelihood of any significant impact to marine biota is considered to be low.

Cement

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 impact of cement discharge at the seabed will be limited to any surrounding benthic and/or infauna communities, in a small, localised area immediately around the wells.

Minimum cement (50 t), barite (60 t) and bentonite (60 t) volumes are required to be stored on the MODU for use in well control and plug and abandon activities. While volumes are calculated before use to minimise excess, the requirement for additional volumes on the MODU for operational contingencies means there may be greater than the minimum onboard at the end of campaign. The requirement for additional volumes on the MODU means some cement may require discharge. Discharge of excess cement, barite and bentonite (if required) may occur as dry bulk or as a slurry. Dry bulk has the potential to disperse across a wider area, but at lower concentration, compared to slurry which would have a greater tendency to settle on the seafloor closer to the well location. In either case, discharges are not expected to widely disperse before settling on the seabed.

Reduction in water quality from bulk discharges will be temporary and subject to rapid dispersion and dilution by prevailing currents away from the discharge location. Impacts to plankton populations will therefore be localised over the duration of the plume and would be expected to return to previous conditions within a relatively short period of time.

The potential impacts to 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. Cement is inert and does not pose toxicological impacts. As described in Section 6.6.7, barite and bentonite have very low toxicities and are considered by OSPAR to pose little or no risk to the environment (PLONAR). They may, however, cause physical damage to benthic organisms by abrasion or clogging, or through changes in sediment texture that can inhibit the settlement of planktonic polychaete and mollusc larvae (Swan et al., 1994). However, these impacts are expected to be negligible, due to the low volumes that will be discharged given that this is a one-off discharge and due to and rapid biodegradation and dispersion of bulk discharges (Terrens et al., 1998). Any impacts to soft sediment communities is not expected to affect the diversity or ecosystem function in this area and is only considered a localised impact with no lasting effect.

The impact of cement discharge (if required) at the seabed will therefore be limited to any surrounding benthic and/or infauna communities, in a small, localised area immediately around the well and likely within the area previously impacted.

Cementing fluids and subsea fluids (BOP/Xmas tree and well plugging activity control fluids)

All chemicals that may be operationally released or discharged to the marine environment must be selected and approved as per the Chemical Selection and Assessment Environment Guideline (Section 7.2.1). Therefore, any chemicals selected and potentially released are expected to be of low toxicity and biodegradable. Additionally, where cements have been mixed in excess and cannot be reused or returned to shore, these will be turned into a slurry. As chemicals have initially been chosen based on the environmental performance and an ALARP assessment, additional dilution before discharge further reduces the environment impact to water quality, sediment quality and marine benthic and/or infauna communities. Given the minor quantities of routine and non-routine planned discharges, short discharge durations and the low toxicity and high dispersion in the open, offshore environment, any impacts on the marine environment are expected to be negligible.

No cumulative impacts to water quality are expected to occur, as discharged cements etc. are predicted to settle in between the plug and abandon activities for each well.

Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[41]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
Legislation, codes and standards				
No additional controls identified.				
Good practice				
Fluids, flocculant and additives intended or likely to be discharged to the marine environment will have an environmental assessment completed before use.	F: Yes. CS: Minimal cost. Standard practice.	Environmental assessment of chemicals will reduce the consequence of impacts resulting from discharges to the marine environment, by ensuring chemicals have been assessed for environmental acceptability. Planned discharges are required for the safe execution of activities and therefore no reduction in likelihood can occur.	Benefits outweigh cost/sacrifice.	Yes C 7.1
Six monthly chemical reviews will be performed on all previously approved chemicals to confirm potential chemical impacts are reduced to ALARP.	F: Yes. CS: Minimal cost. Standard practice.	Reviews will ensure chemicals selected for Drilling and Completions fluids remain ALARP.	Benefits outweigh cost/sacrifice.	Yes C 7.2
Bulk operational discharges conducted under MODU's PTW system (to operate discharge valves/pumps).	F: Yes. CS: Minimal cost. Standard practice.	The MODU's PTW may slightly reduce the likelihood of bulk discharges occurring, but it is unlikely to be significant, given that bulk discharges are often operationally required and cannot be eliminated.	Benefits outweigh cost/sacrifice.	Yes C 7.4
Professional judgement – Eliminate				
Do not use BOP control fluids.	F: No. BOP control fluids are critical to the operation of the BOP. CS: Not considered – control not feasible.	Not considered – control not feasible.	Not considered – control not feasible.	No
Return wet cement and other down-well products onshore for treatment/disposal.	F: Yes. However, cement slurry may harden during transport, introducing difficulty in handling and transportation.	No discharge of cement to the marine environment would eliminate the consequence of	Disproportionate. Given the non-toxic nature of cement, the cost/sacrifice outweighs the benefit gained.	No

[41] *Qualitative measure.*

Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[41]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
	CS: The cost involved in transporting cement for shore-based disposal is significant.	impacts from such activities.		
Return bulk cement, barite and bentonite for onshore disposal.	F: No. The technical requirements to be able to undertake this safely are unresolved due to: • significant risks with tank high pressure differentials to transfer material onshore • high risk with the vessel to waste truck transfer due to tank corrosion concerns and pressure relief valve issues. CS: Not considered. Control not feasible.	Not considered – control not feasible.	Not considered – control not feasible.	No
Options for use of excess bulk cement, bentonite and barite will be managed as per Figure 6-1 assessed and only discharged to the marine environment as a last option.	F: Yes. However, the cement may not meet the required technical specifications, and hence not be usable. CS: Minor.	Using excess bulk cement, bentonite and barite for subsequent campaigns wells would eliminate the bulk discharge to the marine environment and eliminate the likelihood and consequence of impacts from such activities.	Benefits outweigh cost/sacrifice.	Yes C 8.1
Professional judgement – Substitute				
No additional controls identified.				
Professional judgement – Engineered solution				
No additional controls 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 2.2.4.2) and Woodside's criteria for demonstrating ALARP (Section 2.3.1), Woodside considers the adopted controls appropriate to manage potential impacts associated with routine and non-routine discharges of wet cement, cementing fluids, subsea fluids and unused bulk products. As no reasonably practicable additional/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/risk assessment has determined that, given the adopted controls, routine and non-routine discharges of wet cement, cementing fluids, subsea fluids and unused bulk products may result in negligible, localised impact (<1 month) on habitat (but not affecting ecosystem function), physical and biological attributes. On the basis of the assessment outcomes, use of the relevant tools appropriate to the decision type (i.e. Decision Type A; Section 2.2.4.2) and Woodside's criteria for demonstrating acceptability (Section 2.3.2), 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			
EPO	***Controls***	***PS***	***MC***
EPO 12 Impacts from routine and non-routine discharges from wet cement, cementing fluids, subsea fluids, unused bulk products and marine riser clean-out will be limited to planned activities and impacts described as part of the Petroleum Activities Program.	**C 7.1** See Section 6.6.7.	**PS 7.1** See Section 6.6.7.	**MC 7.1.1** See Section 6.6.7.
	C 7.2 See Section 6.6.7.	**PS 7.2** See Section 6.6.7.	**MC 7.2.1** See Section 6.6.7.
	C 7.4 See Section 6.6.7.	**PS 7.4** See Section 6.6.7.	**MC 7.4.1** See Section 6.6.7.
	C 8.1 Options for use of excess bulk cement, bentonite and barite will be managed as per Figure 6-1.	**PS 8.1.1** Where the MODU is contracted for a subsequent Woodside drilling activity immediately following the Petroleum Activity, bulk cement, bentonite and barite is retained on-board for reuse.	**MC 8.1.1** Records demonstrate that if the MODU is contracted for subsequent drilling activity immediately following the Petroleum Activity, dry bulk cement, bentonite and barite retained on board MODU for reuse at the conclusion of drilling campaign.
		PS 8.1.2 Where activity is last in Woodside MODU schedule, assess feasibility to transfer unused dry bulk cement, bentonite and barite to next titleholder who has the MODU on hire, or another Woodside- or other titleholder-contracted MODU operating in the region. If deemed feasible, bulks to be retained on board or transferred for reuse.	**MC 8.1.2** Records demonstrate that where activity is the last in the Woodside MODU schedule, feasibility of transfer of unused dry bulk cement, bentonite and barite to next operator of the MODU, another Woodside or other titleholder rig in the region assessed and implemented if feasible.

EPOs, EPS and MC			
EPO	***Controls***	***PS***	***MC***
		PS 8.1.3 Technical assessment of elimination of dry bulk discharge of barite on completion of drilling campaign undertaken, where options for reuse of bulk products on MODU or other MODUs in the region are not feasible. Assessment to consider: • environmental risk • health and safety risk • feasibility and timeframes for onshore disposal.	**MC 8.1.3** Records demonstrate study undertaken where other options for reuse are not applicable.
		PS 8.1.4 No discharge of bulk barite at completion of the drilling campaign, where assessment deems onshore transportation considered technically feasible and ALARP.	**MC 8.1.4** Records demonstrate bulk barite transported onshore where transportation options are feasible and ALARP.

6.6.9 Routine and non-routine discharges: subsea fluids and WCP fluids

Context		
Connection of Integrated WOCS/WORS – Section 3.10.3 Subsea Equipment Preservation Chemicals – Section 3.10.6 Marine Growth Removal – Section 3.9.7.1 Project Fluids – Section 3.153.15	Physical Environment – Section 4.4 Habitats and biological communities – Section 4.5	Stakeholder consultation – Section 5

Impact and risk evaluation summary

Source of impact/risk	***Environmental value 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
Routine and non-routine discharge of subsea intervention WOCS/WORS fluids	X	X		X	X		A	F	-	-	GP PJ	Broadly Acceptable	EPO 13
Routine and non-routine discharge of chemicals used for removal of marine growth	X	X		X	X		A	F	-	-			

Description of source of impact or risk

Subsea Fluids (Well Intervention Fluids, Control Fluids and Other Subsea Fluids)

Subsea fluids are likely to be released during well intervention activities including during Xmas tree valve actuation. Should repair activities be required, including pressure/leak testing, valve functioning, flushing, hot stab change out or Xmas tree repair or replacement, environmental discharges may occur. All well intervention activities that result in subsea control fluid discharges are likely to only discharge small, intermittent volumes.

The WOCS/WORS is operated using open hydraulic systems (utilising water-based control fluids). Each time a pressure and function test schedule is undertaken, between 1000L and 3000 L of water-based fluid is released to the marine environment, of this approximately 4% is control fluid additive (Section 3.10.3). WOCS/WORS operation includes function and pressure testing approximately every 21 days, and a function test approximately every seven days, excluding the week a pressure test is conducted (Section 3.10.3).

Wireline pressure-containing equipment onboard includes a grease system comprised of a readily biodegradable vegetable-based oil, that will only be used during contingency or emergency operations. If contingency wireline operations take place, approximately 50mL/min would be applied through the wellbore (25L for a single run) and some may be released to the environment Under normal operations, grease would be applied in the event of an emergency to fill the void between a dual pack off, where a small quantity (<10L) could be released to the environment.

An ESD (Emergency Shut Down) may be implemented if the MODU is required to rapidly shut in the well. ESD aims to leave the Xmas tree and WOCS/WORS in a secure condition but may result in the loss of small volumes of fluids/gases in the umbilical or upper PCE around the disconnection points (<50L).

During a drift off / drive off the vessel will autonomously separate from the WOCS/WORS, and autonomously shut in the well (if an ESD has not been initiated). Disconnection aims to leave the Xmas tree and WOCS/WORS in a secure condition but may result in the loss of small volumes of fluids/gases in the umbilical or upper PCE around the

disconnection points (<1 m^3).

Marine Growth Removal

During marine growth removal activities, it may be necessary to remove marine growth from the Xmas tree and wellhead using acid (typically sulphamic acid).

Impact or consequence assessment

Environmental value(s) potentially impacted

Pelagic and benthic habitats in Operational Area C where well intervention activities are planned, are considered to be of low sensitivity (no known significant epibenthic habitat or infauna habitat). Although the Ancient Coastline at 125 m Depth Contour KEF overlaps with Operational Area C, the values and sensitivities of this KEF occur on a broad scale outside of the Operational Areas (Section 4.7). Coupled with the low toxicity of the fluids to be used for the Petroleum Activity, the likelihood of any significant impact to marine biota is considered low.

Subsea Fluids (WOCS/WORS Xmas tree and Well Intervention Activity Control Fluids)

Subsea control fluids are water-based hydraulic fluids containing ~3% active ingredients. Modelling undertaken for another offshore drilling project indicates that a release of subsea control fluids during function testing is expected to reach a dilution of 3000 times within a maximum displacement of the plume within 98 m distance from the release site (BP Azerbaijan, 2013). Based on this information, concentrations of subsea control fluid are expected to be ~10 ppm within 100 m of the well. Using a conservative ocean current speed of 0.1 m/s, fluids would be expected to travel 100 m (and thus reach concentrations of 10 ppm) in ~16 minutes. Changes in water quality, would comprise the presence of low toxicity contaminants for a short duration and extent in the water column above the seabed. Given the small volumes associated with this discharge and limited exposure times due to rapid dilution, any potential impact to this aspect is expected to be localised and short term. There is potential for some toxins in the control fluid to accumulate in the sediment, but due to the very small volumes and rapid dispersal, it is considered negligible.

The wireline grease is comprised primarily of vegetable-based oils and is considered non-toxic to aquatic organisms. It contains no OSPAR SUB (phase out) components and is readily biodegradable (>70% biodegradation over 28 days). Given the relatively small volumes of potential discharges, low toxicity, readily biodegradable nature and rapid dispersion in the open ocean environment of Operational Area C, any potential impacts to water quality from these discharges are likely to be localised and temporary.

Marine Growth Removal

The use of water jetting and acid washing to remove marine growth on subsea infrastructure will result in temporary suspension of organic matter and localised increase in turbidity. Water jetting will be limited to what is necessary to clean infrastructure for intervention activities to take place. Due to the very minor quantities of acid used, the limited duration and rapid dispersion in the water column, impacts to the marine environment are expected to be negligible.

Demonstration of ALARP

Control considered	***Control feasibility (F) and cost/sacrifice (CS)[42]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
Legislation, Codes and Standards				
No additional controls identified.				
Good practice				
Fluids, flocculant and additives intended or likely to be discharged to the marine environment will have an environmental assessment completed before use.	F: Yes. CS: Minimal cost. Standard practice.	Environmental assessment of chemicals will reduce the consequence of impacts resulting from discharges to the marine environment, by ensuring chemicals have been assessed for environmental acceptability. Planned discharges are required for the safe execution of activities and therefore no reduction in	Benefits outweigh cost/sacrifice.	Yes **C 7.1**

[42] *Qualitative measure.*

Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[42]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
		likelihood can occur.		
Six-monthly chemical reviews will be performed on all previously approved chemicals to confirm potential chemical impacts are reduced to ALARP.	F: Yes. CS: Minimal cost. Standard practice.	Reviews will ensure chemicals selected for Drilling and Completions fluids remain ALARP.	Benefits outweigh cost/sacrifice.	Yes **C 7.2**
Professional judgement – Eliminate				
Do not use control fluids.	F: No. Control fluids are critical to the operation of the WOCS/WORS. CS: Not considered – control not feasible.	Not considered – control not feasible.	Not considered – control not feasible.	No
Professional judgement – Substitute				
No additional controls identified.				
Professional judgement – Engineered solution				
No additional controls 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 2.2.4.2) and Woodside's criteria for demonstrating ALARP (Section 2.3.1), Woodside considers the adopted controls appropriate to manage potential impacts associated with routine and non-routine discharges of subsea fluids and WOCS/WORS fluids. As no reasonably practicable additional/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/risk assessment has determined that, given the adopted controls, routine and non-routine discharges of subsea fluids and WOCS/WORS fluids products may result in negligible, localised impact (<1 month) on habitat (but not affecting ecosystem function), physical and biological attributes. On the basis of the assessment outcomes, use of the relevant tools appropriate to the decision type (i.e. Decision Type A; Section 2.2.4.2) and Woodside's criteria for demonstrating acceptability (Section 2.3.2), 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***	***Performance standards***	***Measurement criteria***
EPO 13 Impacts from routine and non-routine discharges from subsea fluids and WCP fluids will be limited to planned activities and impacts described as part of the Petroleum Activities Program.	**C 7.1** See Section 6.6.7.	**PS 7.1** See Section 6.6.7.	**MC 7.1.1** See Section 6.6.7.
	C 7.2 See Section 6.6.7.	**PS 7.2** See Section 6.6.7.	**MC 7.2.1** See Section 6.6.7.

6.7 Unplanned activities (accidents, incidents, emergency situations)

6.7.1 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.

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 hydrocarbon types under the influence of changing meteorological and oceanographic forces. Near-field subsurface discharge modelling was performed using OILMAP, which predicts the droplet sizes that are generated by the turbulence of the discharge as well as the centreline velocity, buoyancy, width and trapping depth (if any) of the rising gas and oil plumes. The OILMAP output parameters were used as input into SIMAP.

The algorithms in the SIMAP model are based on the best available scientific knowledge and are updated when necessary in response to significant advances in knowledge. Recent improvements have been implemented to the entrainment algorithm, which have been adjusted to implement the findings of published data based on field research performed during the Macondo spill event in the Gulf of Mexico (Spaulding et al., 2017; Li et al., 2017; French McCay et al., 2018).

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 simulations that show something unusual or unexpected make an important contribution to the overall outcomes and fate of the hydrocarbon.

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. The model also calculates the accumulation of hydrocarbon mass that arrives on each section of shoreline over time, taking into account any mass that is lost to evaporation and/or subsequent removal by current and wind forces.

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.

6.7.1.1 Worst-case scenarios

In assessing the potential impacts of an unplanned hydrocarbon release, representative worst-case scenarios (in terms of volume and location) were assessed. A summary of the credible hydrocarbon spill scenarios that could occur during the Petroleum Activity are provided in Table 6-6.

Table 6-6: Credible hydrocarbon spill scenarios

Scenario	Hydrocarbon type	Duration (days)	Maximum credible volume (m^3)	Modelled Location
Scenario 1 Well blowout: hydrocarbon release caused from a loss of well containment	Angel condensate	68	107,779	Seabed release at AP3 Angel Field
Scenario 2 Well blowout: hydrocarbon release caused from a loss of well containment	Perseus condensate	73	219,093	Seabed release at PER-02 PoG Field
Scenario 3 Well Loss of containment during well intervention	TPA Condensate	71	56,441	Subsea Blowout at TPA-03 well
Scenario 4 Well blowout: hydrocarbon release caused from a loss of well containment	Perseus condensate	68	76, 679	Seabed release at PER-04 PoG Field
Scenario 5 Instantaneous release after a loss of marine vessel separation or vessel collision	Marine diesel	Instantaneous	500	AP3 wellhead location (closest wellhead to Glomar Shoals)
Scenario 6 Marine fuel loss during hydrocarbon bunkering	Marine diesel	Over 15 minutes (1.6 m^3/min)	24	Surface release within the Operational Areas (not modelled)

6.7.1.2 Hydrocarbon characteristics

Woodside has undertaken physical and ecotoxicology testing on Angel and Perseus (Searipple) condensate, which are the hydrocarbons that can credibly be released from a loss of well containment event from the Angel and PoG wells. For TPA-03 Woodside has determined that GWA condensate has a similar chemical composition to TPA-03 condensate and has been used as a surrogate (refer to Table 6-7).

Table 6-7: Similarities in chemical composition of GWA Condensate and TPA-03 Condensate

GWA Condensate	%	Cumulative (gas/condensate)	TPA Condensate	%	Cumulative (gas/condensate)
Hydrogen Sulfide	0.00	91.64	Hydrogen Sulfide	0.00	92.07
Carbon Dioxide	1.54		Carbon Dioxide	2.26	
Nitrogen	1.10		Nitrogen	0.83	
Methane	82.57		Methane	82.71	
Ethane	6.43		Ethane	6.27	

GWA Condensate	%	Cumulative (gas/condensate)	TPA Condensate	%	Cumulative (gas/condensate)
Propane	2.82	8.37	Propane	2.69	7.93
iso-Butane	0.42		iso-Butane	0.39	
n-Butane	0.94		n-Butane	0.87	
iso-Pentane	0.31		iso-Pentane	0.29	
n-Pentane	0.37		n-Pentane	0.35	
Hexanes	0.44		Hexanes	0.42	
Heptanes	0.69		Heptanes	0.67	
Octanes	0.75		Octanes	0.73	
Nonanes	0.40		Nonanes	0.39	

Table 6-8 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 subsections below.

Table 6-8: Characteristics of the hydrocarbon types used for modelling and ecotoxicological studies

Hydrocarbon type	Density (g/m³) at 25 °C	Viscosity (cP) at 25 °C	Component	Volatile (%)	Semi-volatile (%)	Low volatility (%)	Residual (%)	Aromatics (%)
			Boiling Point (°C)	<180	180–265	265–380	>380	Of whole oil <380
Angel condensate	0.733 @ 25 °C	0.205 @ 25 °C	% of total	67.0	23.8	5.4	3.8	8.3
			% aromatics	5.8	2.0	0.5	-	-
Perseus (Searipple) condensate	0.7562 @ 15 °C	0.747 @ 20 °C	% of total	66.5	20.15	12.97	0.38	10.6
			% aromatics	6.23	4.37	-	-	-
Marine diesel	0.829 @ 25 °C	4.0 @ 25 °C	% of total	6.0	34.6	54.4	5.0	3.0
			% aromatics	1.8	1.0	0.2	-	-
TPA Condensate / GWA Condensate	*0.7449 @ 15 °C*	1.61 @ 15 °C	% of total	65.9	22.5	10.8	0.8	16.3
			% aromatics	9.1	2.7	0.9	-	-

6.7.1.2.1 Angel condensate

Angel condensate is a mixture of volatile and persistent hydrocarbons with high proportions of volatile and semi-volatile components. In favourable evaporation conditions, about 67.0% of the oil mass should evaporate within the first 12 hours (BP < 180 °C); a further 23.8% should evaporate within the first 24 hours (180 °C < BP < 265 °C); and a further 5.4% should evaporate over several days (265 °C < BP < 380 °C). Approximately 3.8% of the oil is shown to be persistent.

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 8.3% by mass of the whole oil. Around 5.8% by mass is highly soluble and highly volatile. A further 2.5% 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.

6.7.1.2.2 Perseus (Searipple) condensate

Perseus (Searipple) condensate (API 55.5) contains a low proportion (~0.38% 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 low dynamic viscosity (0.747 cP) so that the fluid condensate will flow easily to form thin sheens if the condensate is on the water surface. Low levels of wave energy would be required to break up and entrain any surface films that form at the sea surface.

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 66.5% of the oil mass should evaporate within the first 12 hours (BP < 180 °C); a further 20.2% should evaporate within the first 24 hours (180 °C < BP < 265 °C); and a further 13% should evaporate over several days (265 °C < BP < 380 °C).

The whole oil has 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 10.6% by mass of the whole oil. The fate of these compounds would vary depending upon the spill scenario. These compounds will evaporate rapidly from surface films as well as from droplets of condensate that are entrained in the highly mixed surface layer (upper few metres), reducing the potential for dissolution into the water if the condensate mixture is at the water surface or suspended in the upper metre of the water column. If the condensate droplets were trapped in deeper density layers, a high rate of dissolution would occur.

6.7.1.2.3 TPA/GWA condensate

GWA condensate from the GDA05 production well and TPA condensate from the TPA-03 well are chemically similar. Therefore, TPA condensate is expected to behave in the same manner as GWA condensate, outlined above, in the event of a loss of well containment.

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 (BP < 180 °C); a further 22.5% should evaporate within the first 24 hours (180 °C < BP < 265 °C); and a further 10.8% should evaporate over several days (265 °C < BP < 380 °C). Approximately 0.8% of the oil is shown to be persistent.

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. Around 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.

6.7.1.2.4 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 (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) (RPS, 2022). Approximately 5% of the oil is shown to be persistent. The aromatic content of the oil is approximately 3%. The characteristics of the marine diesel are given in Table 6-8.

6.7.1.3 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 exceeding selected hydrocarbon threshold concentrations if a credible hydrocarbon spill scenario occurred. 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, and the EMBA represents the total extent of all the locations where hydrocarbon thresholds could be exceeded from all modelling runs.

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.

Given the EMBA comprises the results of many individual simulations, the total area covered at the thresholds has been smoothed to create a continuous boundary for the purpose of describing the environment within it (Figure 4-1).

The spill modelling outputs are presented as areas that meet threshold concentrations for surface, entrained and dissolved hydrocarbons for the modelled scenarios. Surface spill and accumulated shoreline concentrations are expressed as grams per square metre (g/m²), with entrained and dissolved aromatic hydrocarbon concentrations expressed as parts per billion (ppb). A conservative approach to selecting thresholds was taken by adopting the guideline impact thresholds (NOPSEMA, 2019) for surface, entrained, dissolved and accumulated hydrocarbons to define the EMBA for Angel, Perseus (Searipple), and TPA-03 condensate spills from a loss of well control and marine diesel spills. An additional threshold has been included to define the boundary within which socio-cultural impacts may occur, based on visible surface oil (1 g/m²) impacting on the visual amenity of the marine environment. Each of these hydrocarbon thresholds are presented in Table 6-9 and described in the subsections below.

Table 6-9: Summary of thresholds applied to the quantitative hydrocarbon spill risk modelling results

Hydrocarbon type	EMBA				Socio-cultural EMBA
	Dissolved hydrocarbon (ppb)	***Entrained hydrocarbon (ppb)***	***Surface hydrocarbon (g/m²)***	***Accumulated/shoreline hydrocarbon (g/m²)***	***Surface hydrocarbon (g/m²)***
Condensate	10	50	100	100	1
Marine diesel	10	50	100	100	1

Surface hydrocarbon threshold concentrations

The spill modelling outputs defined the EMBA for surface hydrocarbons resulting from a spill (contact on surface waters) using a threshold of ≥10 g/m². This threshold 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. A surface threshold of 10 g/m² represents a ‘dull metallic colour’ (Bonn Agreement, 2015) (Table 6-10).

Thresholds for registering biological impacts resulting from contact of surface slicks have been estimated by different researchers at about 10–25 g/m² (French et al., 1999; Koops et al., 2004; National Oceanic and Atmospheric Administration, 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/m² 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 low concentrations that may be visible but are not expected to cause ecological impacts. The threshold for visible surface oil (1 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. This area is referred to as the socio-cultural EMBA. Any ecological impacts from dissolved and entrained hydrocarbons above prescribed thresholds, as in Table 6-9, may also result in socio-cultural impacts. Potential impacts to socio-cultural values assessed within these EMBAs include:

- protected areas
- national and Commonwealth Heritage Listed places
- tourism and recreation
- fisheries.

Table 6-10: 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

Dissolved hydrocarbon threshold 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; National Resource Council, 2005). The dissolved aromatic threshold of 50 ppb has been selected as a medium level threshold to approximate the potential toxic effects, particularly sublethal effects to sensitive species, as consistent with the NOPSEMA Oil Spill Modelling Guidance Bulletin (NOPSEMA, 2019).

Entrained hydrocarbon threshold concentrations

This threshold is used to define an area within which ecological impacts to the marine environment may occur from entrained hydrocarbons. Therefore, it may also be associated with socio-cultural impacts.

Entrained hydrocarbons present a number of possible mechanisms for toxic exposure to marine organisms. The entrained hydrocarbon droplets may contain soluble compounds, hence have the potential for generating elevated concentrations of dissolved aromatic hydrocarbons (e.g. if mixed by breaking waves against a shoreline). Physical and chemical effects of the entrained hydrocarbon droplets have also been demonstrated through direct contact with organisms; for example, through physical coating of gills and body surfaces, and accidental ingestion (National Research Council, 2005).

The entrained threshold has been selected to be consistent with the NOPSEMA Oil Spill Modelling Guidance Bulletin (NOPSEMA, 2019). An entrained threshold of 100 ppb is considered to be appropriate given the oil characteristics for informing potential impacts to receptors.

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. Further, any ecological impacts at the shoreline accumulation threshold may also result in socio-cultural impacts.

6.7.1.4 Operational and scientific monitoring

A planning area for operational 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. This low exposure threshold is based on the potential for exceeding water quality triggers.

An operational 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.

6.7.2 Unplanned hydrocarbon release: loss of well containment (loss of well control)

Context		
Permanent plugging activities – Section 3.11	Physical environment – Section 4.4 Habitats and biological communities – Section 4.5 Protected species – Section 4.6 Socio-economic environment – Section 4.9	Stakeholder consultation – Section 5

Risk evaluation summary

Source of risk	***Environmental value 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
Loss of hydrocarbons to marine environment due to loss of well containment	X	X	X	X	X	X	B	B	1	M	LCS GP PJ RB A	Acceptable	EPO 14

Description of source of risk

Background

Woodside has identified a well blowout as the scenario with the worst-case credible environmental outcome as a result of loss of well containment. A loss of well containment is an uncontrolled release of reservoir hydrocarbon or other well fluids to the environment. A blowout is an incident where formation fluid flows out of the well or between formation layers after all the predefined technical well barriers (e.g. the BOP) or activation of the same has failed.

Industry experience

A risk assessment by AMSA of oil spills in Australian ports and waters (Det Norske Veritas 2011) concluded that:

- overall national exceedance frequency for oil spills from offshore drilling in Australia is 0.033 for spills > 1 tonne/year decreasing to 0.008 for spills > 100 tonnes/year
- probability of a blow-out from a well intervention is 1 × 10-4 (0.0001, or 0.01%), considerably lower than drilling activities (International Association of Oil and Gas Producers 2010).

Woodside has a good history of implementing industry standard practice in well design and construction. In the company's 60-year history, it has not experienced any well containment events that have resulted in significant releases or significant environmental impacts.

Therefore, in accordance with the Woodside Risk Matrix, Woodside considers a loss of well containment and resulting blowout event a 'highly unlikely' event as it has not occurred in the Company's history.

Credible scenarios – loss of well containment

- The credible scenarios to be considered during the permanent plugging of the Angel and PoG production wells and intervention of the TPA-03 well are uncontrolled surface and subsurface releases to the environment due to a loss of well control or containment.

Quantitative hydrocarbon spill modelling – loss of well containment

Spill modelling was undertaken by RPS, on behalf of Woodside, to determine the fate of hydrocarbon released from the loss of well containment scenarios, based on the assumptions in Table 6-12, Table 6-13 and Table 6-14. The modelled release rates provided assumes the worst-case scenarios for the largest oil volume releases of Angel condensate, Perseus (Searipple) condensate, and TPA condensate. Three credible scenarios were selected for simulation to represent worst-case scenarios:

- Scenario 1 – A long-term (68-day) uncontrolled subsurface release of 107,779 m³ of Angel condensate from the AP3 production well, representing worst-case loss of containment after a loss of well control.
- Scenario 2 – A surface/subsurface release of Perseus condensate, due to a loss of well containment at the PER-02 subsea well, resulting in a release of 219,093 m³ of condensate over 73 days.
- Scenario 3 – A subsurface release of TPA condensate, due to a loss of well containment at the TPA-03 subsea well, resulting in a release of 56,441 m³ of condensate over 71 days. Well intervention blowout scenarios are analogous to production blowout when considering rates, flow constraints and response options. For this reason, the production well blowout scenario that has previously been modelled for GDA05, located approximately 6 km away, was deemed a conservative representation of the well intervention subsea blowout that may occur for the TPA-03 well, and has been adopted throughout this section. The similarities between GDA05 and TPA-03 credible well blowout are outlined in Table 6-11, and the similarities between GWA and TPA-03 condensates are outlined in Table 6-7.

Table 6-11: GDA05 & TPA-03 Blowout characteristics

Characteristics	GDA05	TPA-03
Condensate type	Condensate comparison has been performed between the TPA and GWA reservoirs in the appendix below, key comparisons indicate: • GWA and TPA-03 condensate have very similar hydrocarbon profiles, including the same residues (0.8%) • GWA condensate contains slightly more longer chain hydrocarbon – 8.37% (GWA) vs. 7.93% (TPA) propane and above	
Res Pressure (psia)	4703	2412
Condensate gas ratio (stb/mmscf)	40.5	29
Total condensate blowout (m³)	108,843	56,441
Permit area production licence	WA-5-L	WA-5-L
Water depth (at well)	125 m	113 m
Exist within the same impact region?	Yes, the TPA-03 and GDA05 wells are located ~6 km apart. Given the GDA05 blowout scenario is more conservative and already located in close proximity to TPA-03, there is a high confidence that all sensitive receptors potentially contacted by a TPA-03 release will be represented in the GDA05 modelling.	

Modelling considered metocean conditions throughout the year; this was done to inform the determination of consequence of loss of well control during intervention at any time of the year.

Table 6-12: Summary of modelled credible scenario 1 – loss of well containment at AP3

Parameter	***Loss of well containment***[43]
Total discharge	68 days 107,779 m³
Water depth	79 m
Fluid	Angel condensate

Table 6-13: Summary of modelled credible scenario 2 – loss of well containment at PER-02

Parameter	***Loss of well containment***[42]
Total discharge to seabed	73 days 219,093 m³
Water depth	127 m
Fluid	Perseus condensate

[43] *The discharge volumes in this table are predicted using reservoir modelling software packages that take into account a number of factors (well design, reservoir properties and environmental conditions (e.g. water depth, temperature and pressure) to provide a production profile over the oil spill modelling period.*

Table 6-14: Summary of modelled credible scenario 3 – loss of well containment at GDA05 (surrogate for TPA-03)

Parameter	*Loss of well containment*[44]
Total discharge to seabed	71 days 108,843 m³
Water depth	125 m
Fluid	GDA05 Condensate

Hydrocarbon weathering characteristics

The characteristics of Angel condensate, Perseus (Searipple) condensate, and TPA condensate are presented in Table 6-15 and described in Section 6.7.1.2.

Angel condensate

The mass balance forecast for the constant-wind case for Angel condensate shows that approximately 90.8% 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.

Under the variable-wind case (Figure 6-2), where the winds are of greater strength on average, entrainment of Angel condensate into the water column is predicted to increase. Approximately 24 hours after the spill, around 14.5% of the oil mass is forecast to have entrained and a further 83.5% 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).

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 0.7% per day with an accumulated total of ~4.5% after 7 days, in comparison to a rate of <0.15% per day and an accumulated total of 0.8% after 7 days in the constant-wind case. Given the proportion of entrained oil and the tendency for it to remain mixed in the water column, the remaining hydrocarbons will decay over time scales of several weeks.

Perseus (Searipple) condensate

The mass balance forecast for the low-wind case indicates rapid evaporation of Perseus (Searipple) condensate over the first 6 hours and then progressively slower evaporation over the following days. Approximately 87% of the oil is predicted to evaporate within the first 12 hours.

Under these calm conditions, most of the remaining oil will stay on the water surface and will evaporate at a slowing rate due to shift of the remaining mixture towards longer-chain compounds with higher boiling points. Weathering of the residual compounds will slow significantly, subject to more gradual decay through biological and photochemical processes. Under the variable, and stronger, wind case (Figure 6-3), significant levels of entrainment into the water column are forecasted, with a resultant decrease in the mass of oil floating on the surface and a small decrease in the proportion that evaporates. Approximately 24 hours after the spill, around 17% of the oil mass is forecast to have entrained and a further 81% is forecast to have evaporated, leaving less than 0.06% of the oil floating on the water surface. The increased level of entrainment in the variable-wind case will result in a higher dissolution of the soluble compounds. However, the proportion of mass that is dissolved is forecasted to remain low (~1.9% of the original mass) after 12 hours, in comparison to <0.02% in the low-wind case.

The proportion of the spill volume that entrains will vary with the timing of the release relative to sea conditions. Entrainment would occur more rapidly if the spill occurred when winds exceed more than a moderate breeze (>9-10 m/s), generating breaking waves on the ocean surface. Higher rates of evaporation would occur under calmer conditions, reducing the mass available for entrainment.

TPA/GWA condensate

The mass balance forecast for the constant-wind case for GWA condensate (surrogate for TPA-03) shows that approximately 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.

[44] *The discharge volumes in this table are predicted using reservoir modelling software packages that take into account a number of factors (well design, reservoir properties and environmental conditions (e.g. water depth, temperature and pressure) to provide a production profile over the oil spill modelling period.*

Under the variable-wind case (Figure 6-4), where the winds are of greater strength on average, entrainment of GWA condensate into the water column is predicted to increase. Approximately 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).

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 0.7-1% per day with an accumulated total of ~5.9% after 7 days, in comparison to a rate of 0.03% per day and an accumulated total of 0.2% after 7 days in the constant-wind case. Given the proportion of entrained oil and the tendency for it to remain mixed in the water column, the remaining hydrocarbons will decay over time scales of several weeks.

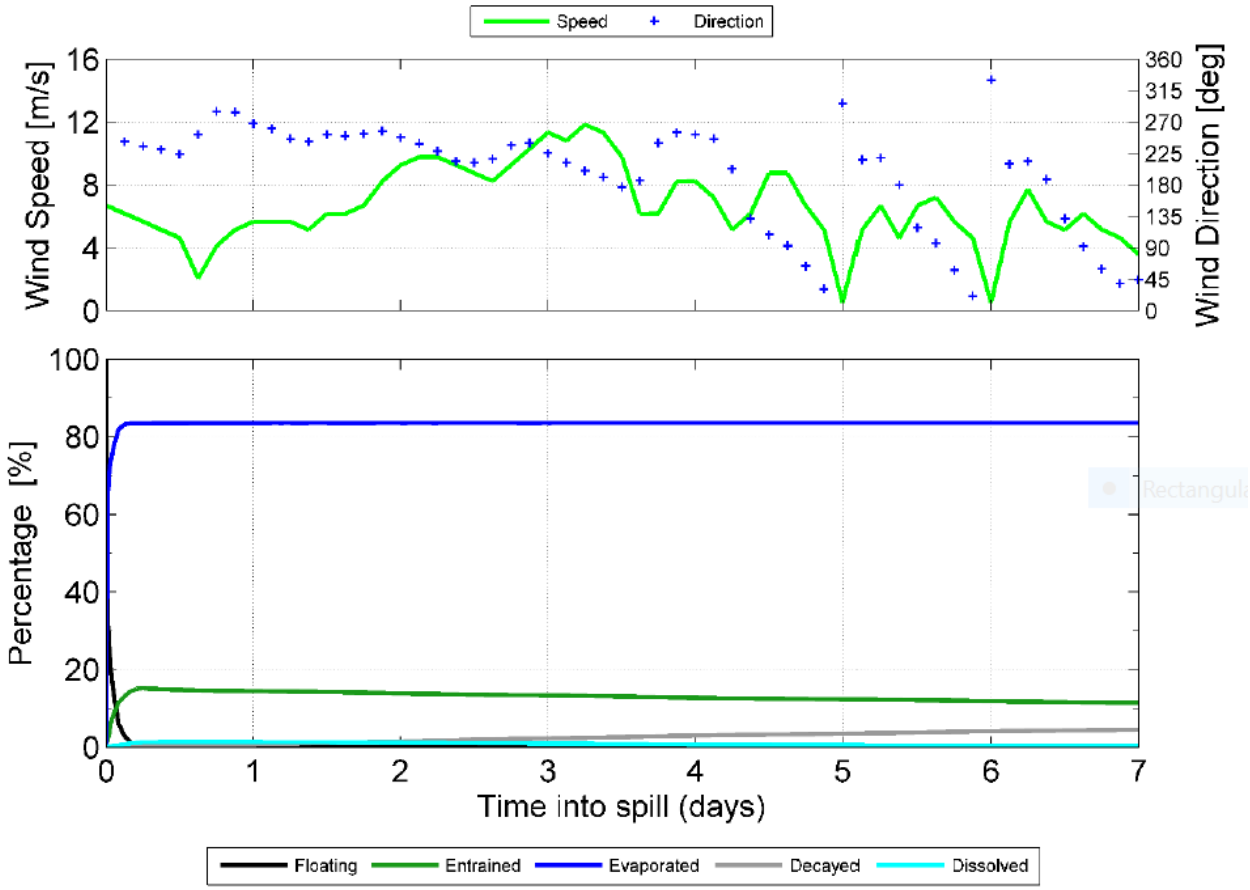

Figure 6-2: Proportional mass balance plot representing the weathering of Angel condensate spilled onto the water surface as a one-off instantaneous release and subject to variable wind at 27 °C water temperature and 25 °C air temperature

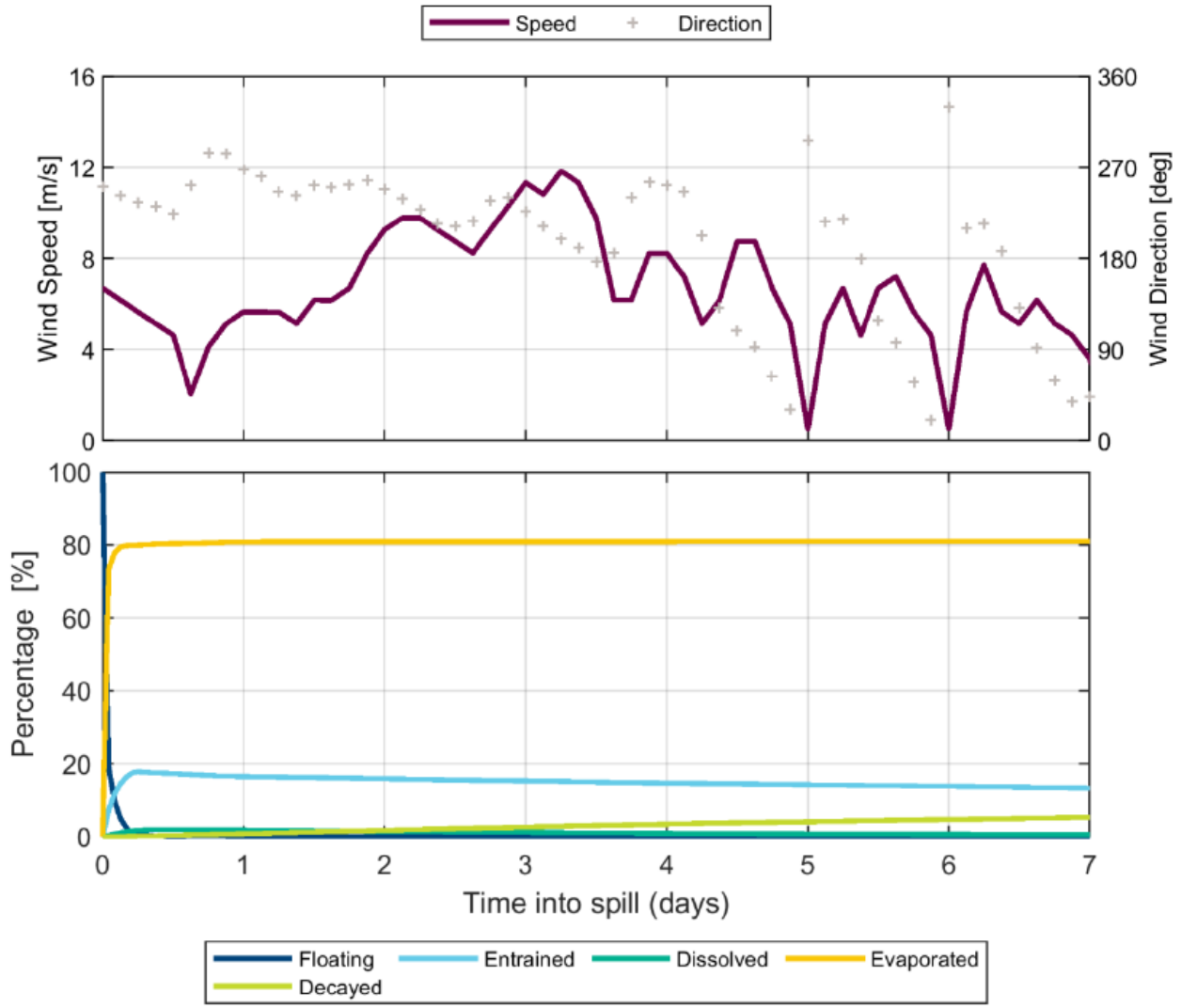

Figure 6-3: Proportional mass balance plot representing the weathering of Perseus (Searipple) condensate spilled onto the water surface as a one-off release (50 m³) and subject to variable wind at 27 °C water temperature and 25 °C air temperature

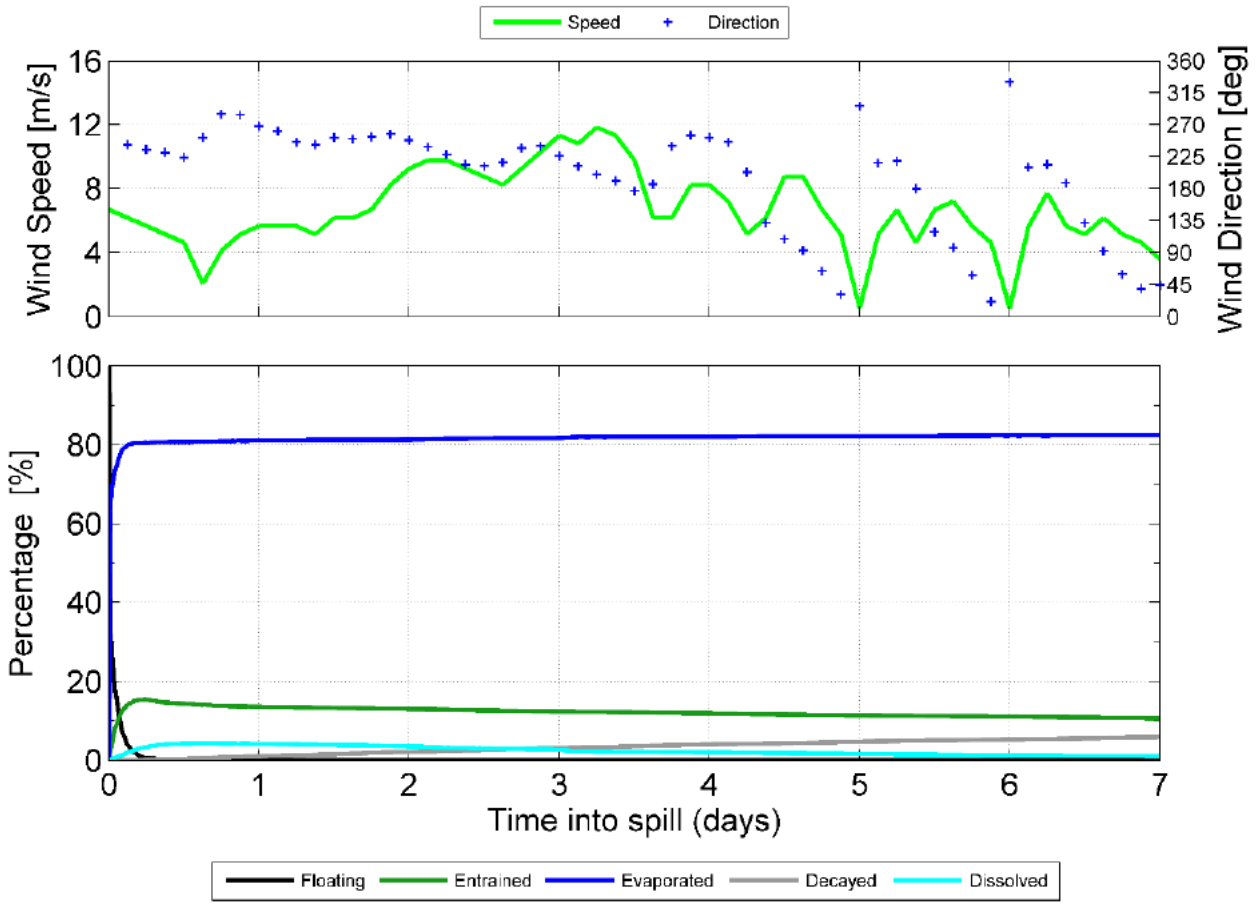

Figure 6-4: Proportional mass balance plot representing the weathering of GWA condensate spilled onto the water surface as a one-off release (50 m³) and subject to variable wind at 27 °C water temperature and 25 °C air temperature

Subsea plume dynamics

The well blowout subsea release scenarios that have been modelled forecasts the size of the hydrocarbon droplets that would be released from the well as determined by the OILMAP-Deep model. Table 6-15, Table 6-16, and Table 6-17 summarise the results of the OILMAP Deep modelling for Scenarios 1, 2, and 3 at AP3, PER-02, and TPA-03 respectively.

Table 6-15: Near-field blowout model parameters for loss of well containment at AP3

OILMAP	***Parameter***	***Value***
Inputs	Release depth (m BMSL)	79
	Oil density (g/cm³) (at 15 °C)	0.7334
	Oil viscosity (cP (at 40 °C)	0.2051
	Oil temperature (°C)	109
	Gas: oil ratio (scf/bbl)	4,000 (average) [22,558]
	Oil flow rate (bbl/hr) [m³/hr]	66 [415.3]
	Diameter of hole (m) [in]	0.157 [6.2]
Outputs	Plume diameter (m)	10.2
	Plume height (m ASB)	79 (at surface)
	Plume initial rise velocity (m/s)	26.6
	Plume terminal rise velocity (m/s)	14.2

Predicted oil droplet size distribution	20% droplets size (µm)	57.8
	20% droplets size (µm)	84.5
	20% droplets size (µm)	109.8
	20% droplets size (µm)	142.7
	20% droplets size (µm)	208.3

The results of the OILMAP simulation for Angel condensate from the AP3 Well predict that the discharge will initially generate a cone of rising gas that will entrain the oil droplets and ambient sea water to the sea surface. The mixed plume was initially forecast to jet towards the water surface with a vertical velocity of around 26.6 m/s, gradually slowing and increasing in plume diameter as more ambient water is entrained. The terminal velocity of rising water and oil at the point of surfacing was predicted to be approximately 14 m/s with a cone diameter of approximately 10 m.

Given the high discharge velocity and turbulence generated by the expanding gas plume, the release is predicted to generate relatively small droplet sizes ranging from approximately 14 µm to 208 µm. These droplets will be subject to mixing due to turbulence generated by the lateral displacement of the rising plume. The plume mixture is expected to reach the surface after approximately 10 seconds.

The ongoing nature of the release combined with the potential for the plume to breach the water surface may present other hazards, including conditions that may lead to high local concentrations of atmospheric volatiles. These issues should be considered when evaluating the practicality of response operations at or near the blowout site. The results suggest that beyond the immediate vicinity of the blowout most of the released hydrocarbons will be present in the upper layers of the ocean, with the potential for oil to form floating slicks under sufficiently calm local wind conditions.

Table 6-16: Near-field blowout model parameters for loss of well containment at PER-02

OILMAP	***Parameter***	***Value***
Inputs	Release depth (m BMSL)	127
	Oil density (g/cm³) (at 15 °C)	0.7562
	Oil viscosity (cP (at 40 °C)	0.9875
	Oil temperature (°C)	25
	Gas: oil ratio (scf/bbl)	1113 [6,250]
	Oil flow rate (bbl/hr) [m³/hr]	837 [133]
	Diameter of hole (m) [in]	0.914 [35.98]
Outputs	Plume diameter (m)	16.4
	Plume height (m ASB)	127 (surface)
	Plume initial rise velocity (m/s)	8.2
	Plume terminal rise velocity (m/s)	6.4
Predicted oil droplet size distribution	20% droplets size (µm)	5550
	20% droplets size (µm)	8104
	20% droplets size (µm)	10,534
	20% droplets size (µm)	13,692
	20% droplets size (µm)	19,993

The results of the OILMAP simulation for Perseus condensate from the PER-02 Well indicate that the release scenario will generate a cone of rising gas bubbles that will entrain the oil droplets and ambient sea water to the water surface. The mixed plume was initially forecast to rise towards the water surface with a vertical velocity of around 8.2 m/s, gradually slowing with an increasing plume diameter as more ambient water is entrained. The terminal velocity of rising water and condensate at the point of trapping was calculated at approximately 6.4 m/s, setting up a circular displacement plume surrounding a central plume diameter of approximately 16 m.

The average droplet size distribution of the entrained oil in the displacement plume was calculated to be relatively large (range from 5550 µm [median of the smallest 20%] to 19,993 µm [median of the largest 20%]) due to the relatively low rate of release relative to the hole size.

These droplets will be subject to dissolution at the trapping height and the lateral displacement of the rising plume. The relatively large size of the droplets indicates that droplets would tend to rise to the surface beyond the energetic

mixing zone under calm sea conditions, forming sheens and slicks. More energetic sea conditions would result in a high proportion remaining entrained in the wave mixed zone.

Table 6-17: Near-field blowout model parameters for loss of well containment at GDA05 (surrogate for TPA-03)

OILMAP	***Parameter***	***Value***
Inputs	Release depth (m BMSL)	125
	Oil density (g/cm³) (at 15 °C)	0.7449
	Oil viscosity (cP (at 40 °C)	1.61
	Oil temperature (°C)	46
	Gas: oil ratio (scf/bbl)*	1,400 [24,704]
	Oil flow rate (bbl/hr) [m³/hr]*	9 [57]
	Diameter of hole (m) [in]	0.314 [12.375]
Outputs	Plume diameter (m)	16
	Plume height (m ASB)	125 (at surface)
	Plume initial rise velocity (m/s)*	10
	Plume terminal rise velocity (m/s)*	7
Predicted oil droplet size distribution	20% droplets size (µm)*	395
	20% droplets size (µm)*	577
	20% droplets size (µm)*	750
	20% droplets size (µm)*	975
	20% droplets size (µm)*	1424

**Average of 11 weeks*

The results of the OILMAP simulation for GWA condensate from the GDA05 Well predict that the discharge will initially generate a cone of rising gas that will entrain the oil droplets and ambient sea water to the sea surface. The modelling predicted the plume mixture to reach the surface throughout the entire discharge duration. The mixed plume is initially forecast to jet towards the water surface with a vertical velocity of around 11 m/s, gradually slowing and increasing in plume diameter as more ambient water is entrained. The diameter of the central cone of rising water and oil at the point of surfacing is predicted to be approximately 16 m.

Given the discharge velocity and turbulence generated by the expanding gas plume, the release is predicted to generate large droplet sizes ranging from 353 µm to 1,583 µm. These droplets will be subject to mixing due to turbulence generated by the lateral displacement of the rising plume. The plume mixture is predicted to reach the surface approximately 25 seconds after the release.

The ongoing nature of the release combined with the potential for the plume to breach the water surface may present other hazards, including conditions that may lead to high local concentrations of atmospheric volatiles. These issues should be considered when evaluating the practicality of response operations at or near the blowout site. The results suggest that beyond the immediate vicinity of the blowout most of the released hydrocarbons will be present in the upper layers of the ocean, with the potential for oil to form floating slicks under sufficiently calm local wind conditions.

Consequence assessment

Environmental value(s) potentially impacted

Environment that may be affected

The socio-cultural and ecological EMBA for the Petroleum Activity is based on stochastic modelling of Scenarios 1 (AP3), 2 (PER-02), and 3 (TPA-03) and was and assessed over an annual period. The results of the modelling for the scenarios are outlined below, and the extents of the two EMBAs (socio-cultural and ecological) from the modelling have been outlined to quantify the movement and fate of spilled hydrocarbons that would result from accidental, uncontrolled releases; and to investigate the risk to sensitive receptors (emergent features, submerged features and shorelines) posed by the release.

The EMBAs cover a larger area than the area that would be affected during any single spill event and represents the total extent of all the locations where hydrocarbon thresholds could be exceeded from any of the modelling runs. It is important to note that the trajectory of a single spill would have a considerably smaller footprint.

Oil spill modelling was undertaken using a three-dimensional oil spill trajectory and weathering model, SIMAP (Spill Impact Model Application Package), which is designed to simulate the transport, spreading and weathering of specific oil types under the influence of changing meteorological and oceanographic forces. These fates have been outlined below.

Modelling results for Scenario 1 (AP3)

Socio-cultural EMBA

Surface hydrocarbons

Quantitative hydrocarbon spill modelling results for surface hydrocarbons are shown in Table 6-18. A socio-cultural EMBA for surface hydrocarbons which includes the threshold for visible surface hydrocarbons of equal to or greater than 1 g/m² has a maximum distance travelled by a spill trajectory of up to about 465 km south-west from the release site. The greatest probabilities of contact by surface hydrocarbons at concentrations equal to or greater than 1 g/m² are predicted at Glomar Shoal (23%), Ningaloo AMP (11%), Gascoyne AMP (11%), and Ningaloo Coast WH (11%). Contact at this threshold is also predicted at a range of other locations (Table 6-18).

Accumulated hydrocarbons

The greatest probabilities of contact by accumulated hydrocarbons at concentrations equal to or greater than 10 g/m² are predicted at Muiron Islands (46%), Southern Pilbara – Islands (39%), and Montebello Islands (26%) (Table 6-18). Contact at this threshold is also predicted for a range of other locations (Table 6-18).

Ecological EMBA

Surface hydrocarbons

An ecological EMBA for surface hydrocarbons which includes the threshold of a spill equal to or greater than 10 g/m² has a maximum distance travelled by a spill trajectory of up to about 382 km south-west from the release location. Receptors that are predicted to be contacted by surface hydrocarbons concentrations at or greater than 10 g/m² are Gascoyne AMP (2%) and the Muiron Islands (1%) (Table 6-18).

Accumulated hydrocarbons

The greatest probabilities of contact by accumulated hydrocarbons at concentrations equal to or greater than 100 g/m² are Muiron Islands (26%) and Southern Pilbara – Islands (14%) (Table 6-18). Contact at this threshold is also predicted at Montebello Islands (9%), Lowendal Island (5%), Bessieres Island (4%), Thevenard Island (4%), Imperieuse Reef (Rowley Shoals MP) (2%), Airlie Island (2%), Barrow Island (2%), Boodie Island (2%), Middle Island (2%), and Sunday Island (1%) (Table 6-18).

Entrained hydrocarbons

An ecological EMBA for entrained hydrocarbons which includes the threshold of a spill equal to or greater than 100 ppb has a maximum distance travelled by a spill trajectory of up to about 442 km south-west from the release location. Quantitative hydrocarbon spill modelling results for entrained hydrocarbons are shown in (Table 6-18). The greatest probabilities of contact by entrained hydrocarbons at concentrations equal to or greater than 100 ppb is at Montebello AMP (23%) (Table 6-18). Contact at this threshold is also predicted at Muiron Islands MMA (17%), Ningaloo Coast (16%), Muiron Islands (15%), Gascoyne AMP (14%) and Outtrim Patches (14%). Contact at this threshold is also predicted at a range of other locations with a probability of <10% (Table 6-18).

Dissolved aromatic hydrocarbons

An ecological EMBA for dissolved aromatic hydrocarbons which includes the threshold of a spill equal to or greater than 50 ppb has a maximum distance travelled by a spill trajectory of up to about 305 km south-west from the release location. The greatest probabilities of contact by dissolved aromatic hydrocarbons at concentrations equal to or greater than 50 ppb is at Glomar Shoal (30%), and Montebello AMP (18%) (Table 6-18). Contact at this threshold is also predicted at Rankin Bank (7%), Montebello Islands MP (1%), and Tryal Rocks (1%) (Table 6-18).

Modelling results for Scenario 2 (PER-02)

Socio-cultural EMBA

Surface hydrocarbons

Quantitative hydrocarbon spill modelling results for surface hydrocarbons are shown in Table 6-19. A socio-cultural EMBA for surface hydrocarbons which includes the threshold for visible surface hydrocarbons of equal to or greater than 1 g/m² has a maximum distance travelled by a spill trajectory of up to about 111 km south-west from the release site. The only receptor that is predicted to be contacted by surface hydrocarbons at concentrations equal to or greater than 1 g/m² is predicted at Rankin Bank (7%) (Table 6-19).

Accumulated hydrocarbons

Receptors that are predicted to be contacted by accumulated hydrocarbons at concentrations equal to or greater than 10 g/m² are predicted at Exmouth (1%), Muiron Islands (1%) and Ningaloo Coast WH (1%), (Table 6-19).

Ecological EMBA

Surface hydrocarbons

An ecological EMBA for surface hydrocarbons which includes the threshold of a spill equal to or greater than 10 g/m² has a maximum distance travelled by a spill trajectory of up to about 82 km west from the release location. Surface hydrocarbons at threshold concentrations equal to or greater than 10 g/m² were not predicted by the modelling to occur at any location and therefore no receptors were detected to be impacted by surface hydrocarbons (Table 6-19).

Accumulated hydrocarbons

Accumulated hydrocarbons at threshold concentrations equal to or greater than 100 g/m² were not predicted by the modelling to occur at any location and therefore no receptors were detected to be impacted by accumulated hydrocarbons (Table 6-19).

Entrained hydrocarbons

An ecological EMBA for entrained hydrocarbons which includes the threshold of a spill equal to or greater than 100 ppb has a maximum distance travelled by a spill trajectory of up to about 524 km south-west from the release location. The greatest probabilities of contact by entrained hydrocarbons at concentrations equal to or greater than 100 ppb are predicted at Rankin Bank (72%) and Montebello AMP (66%) (Table 6-19). Contact at this threshold is also predicted at a range or other receptors shown in Table 6-19.

Dissolved aromatic hydrocarbons

An ecological EMBA for dissolved aromatic hydrocarbons which includes the threshold of a spill equal to or greater than 50 ppb has a maximum distance travelled by a spill trajectory of up to about 486 km south-west from the release location. The greatest probabilities of contact by dissolved aromatic hydrocarbons at concentrations equal to or greater than 50 ppb are predicted at Rankin Bank (46%), and Montebello AMP (25%) (Table 6-19). Contact at this threshold is also predicted at a range of other receptors as shown in Table 6-19.

Modelling results for Scenario 3 (TPA-03)

Socio-cultural EMBA

Surface hydrocarbons

Quantitative hydrocarbon spill modelling results for surface hydrocarbons are shown in Table 6-20. A socio-cultural EMBA for surface hydrocarbons which includes the threshold for visible surface hydrocarbons of equal to or greater than 1 g/m² has a maximum distance travelled by a spill trajectory of up to about 67 km north-east and west from the release site. Surface hydrocarbons at concentrations equal to or greater than 1 g/m^2 are only predicted by the modelling to occur at the Montebello Marine Park (MP) and over the (submerged) Rankin Bank receptor with probabilities of 1% and 35%, respectively (Table 6-20).

Accumulated hydrocarbons

Peak Island and the Southern Pilbara – Islands receptors are predicted to be contacted by shoreline oil concentrations at or greater than 10 g/m^2 with probabilities of 5%. Additionally, Muiron Islands and the Muiron Islands Marine Management Area (MMA) are predicted to be contacted by shoreline oil concentrations at or greater than 10 g/m^2 with probabilities of 3% (Table 6-20).

Ecological EMBA

Surface hydrocarbons

An ecological EMBA for surface hydrocarbons which includes the threshold of a spill equal to or greater than 10 g/m² has a maximum distance travelled by a spill trajectory of up to about 30 km east from the release location. Peak Island and the Southern Pilbara Islands receptors are predicted to be contacted by shoreline oil concentrations at or greater than 10 g/m^2 with probabilities of 5%. Additionally, Muiron Islands and the Muiron Islands Marine Management Area (MMA) are predicted to be contacted by shoreline oil concentrations at or greater than 10 g/m^2 with probabilities of 3% (Table 6-20).

Accumulated hydrocarbons

Accumulated hydrocarbons at threshold concentrations equal to or greater than 100 g/m² were not predicted by the modelling to occur at any location and therefore no receptors were detected to be impacted by accumulated hydrocarbons (Table 6-20).

Entrained hydrocarbons

An ecological EMBA for entrained hydrocarbons which includes the threshold of a spill equal to or greater than 100 ppb has a maximum distance travelled by a spill trajectory of up to about 414 km south-west from the release location. Quantitative hydrocarbon spill modelling results for entrained hydrocarbons are shown in (Table 6-20).

The greatest probabilities of contact by entrained hydrocarbons at concentrations equal to or greater than 100 ppb are predicted at Montebello MP (95%), Muiron Islands MMA (34%), and Muiron Islands (31%) (Table 6-20). Contact at this threshold is also predicted at a range or other receptors shown in Table 6-20.

Dissolved aromatic hydrocarbons

An ecological EMBA for dissolved aromatic hydrocarbons which includes the threshold of a spill equal to or greater than 50 ppb has a maximum distance travelled by a spill trajectory of up to about 488 km south-west from the release location. The greatest probabilities of contact by dissolved aromatic hydrocarbons at concentrations equal to or greater than 50 ppb are predicted at (Rankin Bank (100%), Montebello MP (98%), and Tryal Rocks (21%). Contact at this threshold is also predicted at a range of other receptors as shown in Table 6-20.
Summary of potential impacts to environmental values
Table 6-18 and Table 6-19 present the full extent of the EMBA, i.e. the sensitive receptors and their locations that may be exposed to hydrocarbons (surface, accumulated, entrained and dissolved) at or above the set threshold concentrations in the unlikely event of a major hydrocarbon release from a loss of well containment during the Petroleum Activity. 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 presented in the following sections.

Table 6-18: Key receptor locations and sensitivities potentially contacted above impact thresholds by the AP3 loss of well containment scenario (Scenario 1) with summary hydrocarbon spill contact (table cell values correspond to probability of contact [%])

Environmental setting	Location/name	Environmental, Social, Cultural, Heritage and Economic Aspects presented as per the Environmental Risk Definitions in Woodside's Risk Management Procedure																													Probability of hydrocarbon contact (diesel) (%) note: the probability is based on stochastic modelling of 200 hypothetical worst-case spills under a variety of weather and metocean conditions					
		Physical		Biological																				Socio-economic and Cultural					Socio-cultural EMBA		Ecological 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 hydrocarbon (≥10 g/m²)	Surface hydrocarbon (≥100 ppb)	Entrained hydrocarbon (≥50 ppb)	Dissolved aromatic hydrocarbon (>100 g/m²)
		Open water (pristine)	Marine sediment (pristine)	Coral reef	Seagrass beds/macroalgae	Mangroves	Spawning/nursery areas	Open water – productivity/ upwelling	Non-biogenic coral 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 (including foraging, internesting areas and significant nesting beaches)	Sea snakes	Whale sharks	Sharks and rays	Sea birds and/or migratory shorebirds	Pelagic fish populations	Resident/demersal fish	Fisheries – commercial	Fisheries – traditional	Tourism and recreation	Protected areas/heritage – European and Indigenous/shipwrecks	Offshore oil & gas infrastructure (topside and subsea)					
Australian Marine Parks *	Montebello AMP	✓	✓	✓			✓	✓							✓	✓			✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		6	-	-	23	18	-
	Gascoyne AMP	✓	✓												✓	✓			✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	11	-	2	14	-	-
	Ningaloo AMP	✓	✓					✓		✓					✓	✓			✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	11	-	-	16	-	-
Coastlines	Exmouth	✓	✓	✓	✓	✓	✓					✓			✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		-	22	-	-	-	-
	Middle Pilbara - Islands and Shoreline			✓	✓	✓					✓	✓			✓	✓	✓		✓	✓		✓	✓		✓	✓		✓			-	2	-	-	-	-
	Northern Pilbara - Islands and Shoreline			✓	✓	✓					✓	✓			✓	✓	✓		✓	✓		✓	✓		✓	✓		✓			-	1	-	-	-	-

Environmental setting	Location/name	Environmental, Social, Cultural, Heritage and Economic Aspects presented as per the Environmental Risk Definitions in Woodside's Risk Management Procedure																											Probability of hydrocarbon contact (diesel) (%) note: the probability is based on stochastic modelling of 200 hypothetical worst-case spills under a variety of weather and metocean conditions					
		Physical		Biological																				Socio-economic and Cultural						Socio-cultural EMBA		Ecological EMBA			
		Water Quality	Sediment Quality	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 coral 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 (including foraging, internesting areas and significant nesting beaches)	Sea snakes	Whale sharks	Sharks and rays	Sea birds and/or migratory shorebirds	Pelagic fish populations	Resident/demersal fish	Fisheries – commercial	Fisheries – traditional	Tourism and recreation	Protected areas/heritage – European and Indigenous/shipwrecks	Offshore oil & gas infrastructure (topside and subsea)	Surface hydrocarbon (1-10 g/m²)	Accumulated hydrocarbons (10–100 g/m²)	Surface hydrocarbon (≥10 g/m²)	Entrained hydrocarbon (≥100 ppb)	Dissolved aromatic hydrocarbon (≥50 ppb)	Accumulated hydrocarbons (>100 g/m²)
Islands	Airlie Island	✓	✓		✓		✓		✓			✓		✓		✓	✓			✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	-	13	-	-	-	2
	Barrow Island	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	16	-	-	-	2
	Bedout Island	✓	✓	✓	✓		✓	✓		✓	✓	✓			✓	✓			✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	6	-	-	-	-
	Bessieres Island	✓	✓		✓		✓		✓			✓		✓		✓	✓			✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	20	-	-	-	4
	Boodie Island	✓	✓	✓	✓		✓	✓				✓		✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	16	-	-	-	2
	Bedwell Island	✓	✓	✓	✓		✓	✓		✓	✓	✓			✓	✓			✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	-	1	-	-	-	-
	Flat Island	✓	✓		✓		✓		✓			✓		✓		✓	✓			✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	1	-	-	-	-

Environmental setting		Environmental, Social, Cultural, Heritage and Economic Aspects presented as per the Environmental Risk Definitions in Woodside's Risk Management Procedure																												Probability of hydrocarbon contact (diesel) (%) note: the probability is based on stochastic modelling of 200 hypothetical worst-case spills under a variety of weather and metocean conditions					
		Physical		Biological																						Socio-economic and Cultural					Socio-cultural EMBA		Ecological EMBA			
	Location/name	Water Quality	Sediment Quality	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 coral 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 (including foraging, internesting areas and significant nesting beaches)	Sea snakes	Whale sharks	Sharks and rays	Sea birds and/or migratory shorebirds	Pelagic fish populations	Resident/demersal fish	Fisheries – commercial	Fisheries – traditional	Tourism and recreation	Protected areas/heritage – European and Indigenous/shipwrecks	Offshore oil & gas infrastructure (topside and subsea)	Surface hydrocarbon (1-10 g/m²)	Accumulated hydrocarbons (10–100 g/m²)	Surface hydrocarbon (≥10 g/m²)	Entrained hydrocarbon (≥100 ppb)	Dissolved aromatic hydrocarbon (≥50 ppb)	Accumulated hydrocarbons (>100 g/m²)
	Lowendal Island	✓	✓	✓	✓	✓						✓			✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			-	9	-	-	-	5
	Mary Anne Group	✓	✓		✓	✓	✓	✓			✓	✓			✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			-	1	-	-	-	-
	Middle Island	✓	✓	✓	✓		✓	✓				✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	16	-	-	-	2
	Montebello Islands	✓	✓	✓	✓	✓	✓	✓				✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		1	26	-	2	-	9
	Muiron Islands	✓	✓	✓	✓		✓	✓		✓		✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		3	46	1	15	-	26
	Passage Islands	✓	✓		✓		✓		✓			✓		✓		✓	✓		✓	✓		✓	✓	✓	✓	✓		✓	✓		-	2	-	-	-	-
	Peak Island	✓	✓		✓		✓		✓			✓		✓		✓	✓		✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		1	39	-	5	-	14

Environmental setting	Location/name	Environmental, Social, Cultural, Heritage and Economic Aspects presented as per the Environmental Risk Definitions in Woodside's Risk Management Procedure																													Probability of hydrocarbon contact (diesel) (%) note: the probability is based on stochastic modelling of 200 hypothetical worst-case spills under a variety of weather and metocean conditions					
		Physical		Biological																						Socio-economic and Cultural											Socio-cultural EMBA		Ecological EMBA			
		Water Quality	Sediment Quality	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 coral 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 (including foraging, internesting areas and significant nesting beaches)	Sea snakes	Whale sharks	Sharks and rays	Sea birds and/or migratory shorebirds	Pelagic fish populations	Resident/demersal fish	Fisheries – commercial	Fisheries – traditional	Tourism and recreation	Protected areas/heritage – European and Indigenous/shipwrecks	Offshore oil & gas infrastructure (topside and subsea)	Surface hydrocarbon (1-10 g/m²)	Accumulated hydrocarbons (10–100 g/m²)	Surface hydrocarbon (≥10 g/m²)	Entrained hydrocarbon (≥100 ppb)	Dissolved aromatic hydrocarbon (≥50 ppb)	Accumulated hydrocarbons (>100 g/m²)
	Serrurier Island	✓	✓		✓		✓		✓			✓		✓		✓	✓			✓	✓		✓	✓	✓	✓	✓		✓	✓		-	1	-		-	
	Southern Pilbara - Islands	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		2	39	-	6	-	14
	Sunday Island	✓	✓	✓	✓		✓	✓		✓		✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓			✓	✓		1	17	-	1	-	1
	Thevenard Island	✓	✓		✓		✓		✓			✓		✓		✓	✓			✓	✓		✓	✓	✓	✓	✓		✓	✓		-	17	-	-	-	4
Marine Parks	Barrow Island MMA*	✓	✓	✓	✓	✓	✓	✓				✓		✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	1	-	-	2	-	-
	Clerke Reef (Rowley Shoals MP)	✓	✓	✓	✓		✓	✓		✓	✓	✓			✓	✓				✓	✓		✓	✓	✓	✓	✓		✓	✓		-	1	-	-	-	-
	Imperieuse Reef (Rowley Shoals MP)	✓	✓	✓	✓		✓	✓		✓	✓	✓				✓				✓	✓		✓	✓	✓	✓	✓		✓	✓		-	7	-	-	-	2

Environmental setting	Location/name	Environmental, Social, Cultural, Heritage and Economic Aspects presented as per the Environmental Risk Definitions in Woodside's Risk Management Procedure																													Probability of hydrocarbon contact (diesel) (%) note: the probability is based on stochastic modelling of 200 hypothetical worst-case spills under a variety of weather and metocean conditions					
		Physical		Biological																								Socio-economic and Cultural					Socio-cultural EMBA		Ecological EMBA			
		Water Quality	Sediment Quality	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 coral 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 (including foraging, internesting areas and significant nesting beaches)	Sea snakes	Whale sharks	Sharks and rays	Sea birds and/or migratory shorebirds	Pelagic fish populations	Resident/demersal fish	Fisheries – commercial	Fisheries – traditional	Tourism and recreation	Protected areas/heritage – European and Indigenous/shipwrecks	Offshore oil & gas infrastructure (topside and subsea)	Surface hydrocarbon (1-10 g/m²)	Accumulated hydrocarbons (10–100 g/m²)	Surface hydrocarbon (≥10 g/m²)	Entrained hydrocarbon (≥100 ppb)	Dissolved aromatic hydrocarbon (≥50 ppb)	Accumulated hydrocarbons (>100 g/m²)
	Montebello Islands MP	✓	✓	✓	✓	✓	✓	✓				✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		2	26	-	2	1	9
	Muiron Islands MMA	✓	✓	✓	✓		✓	✓		✓		✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓			✓	✓		3	46	1	17	-	26
	Ningaloo Coast WH	✓	✓	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		11	22	-	16	-	-
	Ningaloo MP (State)	✓	✓	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		3	22	-	6	-	-
Reefs, Shoals and Banks	Glomar Shoal[45]	✓	✓	✓			✓	✓		✓						✓			✓	✓		✓		✓	✓	✓		✓			23	-	-	-	30	-

[45] *Probabilities and maximum concentrations calculated at depth of submerged feature.*

** Note: hydrocarbons cannot accumulate on open ocean, submerged receptors, or receptors not fully emergent.*

Environmental setting	Location/name	Environmental, Social, Cultural, Heritage and Economic Aspects presented as per the Environmental Risk Definitions in Woodside's Risk Management Procedure																													Probability of hydrocarbon contact (diesel) (%) note: the probability is based on stochastic modelling of 200 hypothetical worst-case spills under a variety of weather and metocean conditions					
		Physical		Biological																						Socio-economic and Cultural											Socio-cultural EMBA		Ecological EMBA			
		Water Quality	Sediment Quality	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 coral 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 (including foraging, internesting areas and significant nesting beaches)	Sea snakes	Whale sharks	Sharks and rays	Sea birds and/or migratory shorebirds	Pelagic fish populations	Resident/demersal fish	Fisheries – commercial	Fisheries – traditional	Tourism and recreation	Protected areas/heritage – European and Indigenous/shipwrecks	Offshore oil & gas infrastructure (topside and subsea)	Surface hydrocarbon (1-10 g/m²)	Accumulated hydrocarbons (10–100 g/m²)	Surface hydrocarbon (≥10 g/m²)	Entrained hydrocarbon (≥100 ppb)	Dissolved aromatic hydrocarbon (≥50 ppb)	Accumulated hydrocarbons (>100 g/m²)
	Montebello Shoals*	✓	✓	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		1	-	-	2	-	-
	Ningaloo Reef	✓	✓	✓	✓		✓	✓		✓					✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		-	-	-	1	-	-
	Outtrim Patches*	✓	✓	✓			✓	✓			✓				✓	✓			✓	✓	✓	✓		✓	✓						2	-	-	14	-	-
	Penguin Bank*	✓	✓		✓		✓		✓							✓	✓		✓	✓		✓	✓	✓	✓	✓		✓	✓	✓	2	-	-	2	-	-
	Rankin Bank[46]	✓	✓	✓			✓	✓		✓						✓	✓		✓	✓		✓		✓	✓	✓		✓			3	-	-	-	7	-
	Rosily Shoals*	✓	✓		✓		✓		✓							✓	✓		✓	✓		✓	✓	✓	✓	✓		✓	✓	✓	2	-	-	1	-	-

[46] *Probabilities and maximum concentrations calculated at depth of submerged feature.*

Environmental setting		Environmental, Social, Cultural, Heritage and Economic Aspects presented as per the Environmental Risk Definitions in Woodside's Risk Management Procedure																													Probability of hydrocarbon contact (diesel) (%) note: the probability is based on stochastic modelling of 200 hypothetical worst-case spills under a variety of weather and metocean conditions					
		Physical		Biological																											Socio-economic and Cultural					Socio-cultural EMBA		Ecological EMBA			
		Water Quality	Sediment Quality	Marine Primary Producers			Other Communities/Habitats								Protected Species										Other Species															
	Location/name	Open water (pristine)	Marine sediment (pristine)	Coral reef	Seagrass beds/macroalgae	Mangroves	Spawning/nursery areas	Open water – productivity/ upwelling	Non-biogenic coral 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 (including foraging, internesting areas and significant nesting beaches)	Sea snakes	Whale sharks	Sharks and rays	Sea birds and/or migratory shorebirds	Pelagic fish populations	Resident/demersal fish	Fisheries – commercial	Fisheries – traditional	Tourism and recreation	Protected areas/heritage – European and Indigenous/shipwrecks	Offshore oil & gas infrastructure (topside and subsea)	Surface hydrocarbon (1-10 g/m²)	Accumulated hydrocarbons (10–100 g/m²)	Surface hydrocarbon (≥10 g/m²)	Surface hydrocarbon (≥100 ppb)	Entrained hydrocarbon (≥50 ppb)	Dissolved aromatic hydrocarbon (≥50 ppb)	Accumulated hydrocarbons (>100 g/m²)
	Tryal Rocks	✓	✓	✓	✓	✓	✓	✓				✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	-	-	-	7	1	-

Table 6-19: Key receptor locations and sensitivities potentially contacted above impact thresholds by the PER-02 loss of well containment scenario (Scenario 2) with summary hydrocarbon spill contact (table cell values correspond to probability of contact [%])

Environmental setting	Location/name	Environmental, Social, Cultural, Heritage and Economic Aspects presented as per the Environmental Risk Definitions in Woodside's Risk Management Procedure																												Probability of hydrocarbon contact (diesel) (%) note: the probability is based on stochastic modelling of 200 hypothetical worst-case spills under a variety of weather and metocean conditions					
		Physical		Biological																				Socio-economic and Cultural					Socio-cultural EMBA		Ecological 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 hydrocarbon (≥10 g/m²)	Entrained hydrocarbon (≥100 ppb)	Dissolved aromatic hydrocarbon (≥50 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 coral 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 (including foraging, internesting areas and significant nesting beaches)	Sea snakes	Whale sharks	Sharks and rays	Sea birds and/or migratory shorebirds	Pelagic fish populations	Resident/demersal fish	Fisheries – commercial	Fisheries – traditional	Tourism and recreation	Protected areas/heritage – European and Indigenous/shipwrecks	Offshore oil & gas infrastructure (topside and subsea)					
Australian Marine Parks *	Montebello AMP	✓	✓	✓			✓	✓							✓	✓			✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		-	-	-	66	25	-
	Gascoyne AMP	✓	✓												✓	✓			✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	-	-	-	14	2	-
	Ningaloo AMP	✓	✓					✓		✓					✓	✓			✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	-	-	-	14	2	-
	Argo-Rowley Terrace AMP	✓	✓					✓							✓	✓			✓			✓	✓	✓		✓		✓	✓		-	-	-	6	2	-
Coastlines	Exmouth	✓	✓	✓	✓	✓	✓					✓			✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		-	1	-	2	-	-
	Barrow Island	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-	2	-	-
Islands	Bessieres Island	✓	✓		✓		✓		✓			✓		✓		✓	✓		✓	✓		✓	✓	✓	✓	✓		✓	✓	✓	-	-	-	7	1	-
	Cunningham Island	✓	✓	✓					✓							✓			✓	✓		✓	✓	✓	✓		✓	✓			-	-	-	3	-	-

Environmental setting	Location/name	Environmental, Social, Cultural, Heritage and Economic Aspects presented as per the Environmental Risk Definitions in Woodside's Risk Management Procedure																													Probability of hydrocarbon contact (diesel) (%) note: the probability is based on stochastic modelling of 200 hypothetical worst-case spills under a variety of weather and metocean conditions						
		Physical		Biological																						Socio-economic and Cultural					Socio-cultural EMBA		Ecological EMBA			
		Water Quality	Sediment Quality	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 coral 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 (including foraging, internesting areas and significant nesting beaches)	Sea snakes	Whale sharks	Sharks and rays	Sea birds and/or migratory shorebirds	Pelagic fish populations	Resident/demersal fish	Fisheries – commercial	Fisheries – traditional	Tourism and recreation	Protected areas/heritage – European and Indigenous/shipwrecks	Offshore oil & gas infrastructure (topside and subsea)	Surface hydrocarbon (1-10 g/m²)	Accumulated hydrocarbons (10–100 g/m²)	Surface hydrocarbon (≥10 g/m²)	Entrained hydrocarbon (≥100 ppb)	Dissolved aromatic hydrocarbon (≥50 ppb)	Accumulated hydrocarbons (>100 g/m²)
	Flat Island	✓	✓		✓		✓		✓			✓		✓		✓	✓		✓	✓		✓	✓	✓	✓	✓		✓	✓		-	-	-	6	-	-
	Muiron Islands	✓	✓	✓	✓		✓	✓		✓		✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓			✓	✓		-	1	-	18	-	-
	Peak Island	✓	✓		✓		✓		✓			✓		✓		✓	✓		✓	✓		✓	✓	✓	✓	✓		✓	✓		-	-	-	14	-	-
	Round Island	✓	✓		✓		✓		✓			✓		✓		✓	✓		✓	✓		✓	✓	✓	✓	✓		✓	✓		-	-	-	2	-	-
	Serrurier Island	✓	✓		✓		✓		✓			✓		✓		✓	✓		✓	✓		✓	✓	✓	✓	✓		✓	✓		-	-	-	8	-	-
	Southern Pilbara - Islands	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		-	-	-	14	2	-
	Sunday Island	✓	✓	✓	✓		✓	✓		✓		✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓			✓	✓		-	-	-	10	-	-
	Table Island	✓	✓		✓		✓		✓			✓		✓		✓	✓		✓	✓		✓	✓	✓	✓	✓		✓	✓		-	-	-	3	-	-
Marine Parks	Barrow Island MMA*	✓	✓	✓	✓	✓	✓	✓				✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	-	-	-	3	1	-
	Imperieuse Reef (Rowley Shoals MP)	✓	✓	✓	✓		✓	✓		✓	✓	✓				✓			✓	✓		✓	✓	✓	✓	✓		✓	✓		-	-	-	3	-	-
	Montebello Islands MP	✓	✓	✓	✓	✓	✓	✓				✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		-	-	-	1	-	-

Environmental setting	Location/name	Environmental, Social, Cultural, Heritage and Economic Aspects presented as per the Environmental Risk Definitions in Woodside's Risk Management Procedure																											Probability of hydrocarbon contact (diesel) (%) note: the probability is based on stochastic modelling of 200 hypothetical worst-case spills under a variety of weather and metocean conditions					
		Physical		Biological																					Socio-economic and Cultural					Socio-cultural EMBA		Ecological EMBA			
		Water Quality	Sediment Quality	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 coral 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 (including foraging, internesting areas and significant nesting beaches)	Sea snakes	Whale sharks	Sharks and rays	Sea birds and/or migratory shorebirds	Pelagic fish populations	Resident/demersal fish	Fisheries – commercial	Fisheries – traditional	Tourism and recreation	Protected areas/heritage – European and Indigenous/shipwrecks	Offshore oil & gas infrastructure (topside and subsea)	Surface hydrocarbon (1-10 g/m²)	Accumulated hydrocarbons (10–100 g/m²)	Surface hydrocarbon (≥10 g/m²)	Entrained hydrocarbon (≥100 ppb)	Dissolved aromatic hydrocarbon (≥50 ppb)	Accumulated hydrocarbons (>100 g/m²)
	Muiron Islands MMA	✓	✓	✓	✓		✓	✓		✓		✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓			✓	✓		-	1	-	18	-	-
	Ningaloo Coast WH	✓	✓	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		-	1	-	14	2	-
	Ningaloo MP (State)	✓	✓	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		-	1	-	10	1	-
National Park	Cape Range	✓	✓	✓	✓		✓	✓		✓					✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		-	-	-	2	-	-
Reefs, Shoals and Banks	Glomar Shoal[47]	✓	✓	✓			✓	✓		✓						✓			✓	✓		✓		✓	✓	✓		✓	✓		-	-	-	-	1	-
	Dailey Shoal	✓	✓	✓	✓		✓	✓		✓					✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		-	-	-	3	-	-
	Hood Reef	✓	✓	✓	✓		✓	✓		✓					✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		-	-	-	1	-	-
	Imperieuse Reef	✓	✓	✓	✓		✓	✓		✓	✓	✓				✓			✓	✓		✓	✓	✓	✓	✓		✓	✓		-	-	-	3	-	-
	Ningaloo Reef	✓	✓	✓	✓		✓	✓		✓					✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		-	-	-	2	-	-

[47] *Probabilities and maximum concentrations calculated at depth of submerged feature.*

** Note: hydrocarbons cannot accumulate on open ocean, submerged receptors, or receptors not fully emergent.*

Environmental setting	Location/name	Environmental, Social, Cultural, Heritage and Economic Aspects presented as per the Environmental Risk Definitions in Woodside's Risk Management Procedure																												Probability of hydrocarbon contact (diesel) (%) note: the probability is based on stochastic modelling of 200 hypothetical worst-case spills under a variety of weather and metocean conditions					
		Physical		Biological																					Socio-economic and Cultural					Socio-cultural EMBA		Ecological EMBA			
		Water Quality	Sediment Quality	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 coral 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 (including foraging, internesting areas and significant nesting beaches)	Sea snakes	Whale sharks	Sharks and rays	Sea birds and/or migratory shorebirds	Pelagic fish populations	Resident/demersal fish	Fisheries – commercial	Fisheries – traditional	Tourism and recreation	Protected areas/heritage – European and Indigenous/shipwrecks	Offshore oil & gas infrastructure (topside and subsea)	Surface hydrocarbon (1-10 g/m²)	Accumulated hydrocarbons (10–100 g/m²)	Surface hydrocarbon (≥10 g/m²)	Entrained hydrocarbon (≥100 ppb)	Dissolved aromatic hydrocarbon (≥50 ppb)	Accumulated hydrocarbons (>100 g/m²)
	Otway Reef	✓	✓	✓	✓		✓	✓		✓					✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		-	-	-	3	-	-
	Outtrim Patches*	✓	✓	✓			✓	✓			✓				✓	✓			✓	✓	✓	✓		✓	✓	✓					-	-	-	12	-	-
	Penguin Bank*	✓	✓		✓		✓		✓							✓	✓		✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-	4	-	-
	Poivre Reef	✓	✓	✓	✓		✓	✓							✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	-	-	-	3	-	-
	Rankin Bank[48]	✓	✓	✓			✓	✓		✓						✓	✓		✓	✓		✓		✓	✓	✓	✓				7	-	-	72	46	-
	Rosily Shoals*	✓	✓		✓		✓		✓							✓	✓		✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-	3	1	-
	Trap Reef	✓	✓		✓		✓		✓			✓		✓		✓	✓		✓	✓		✓	✓	✓	✓	✓	✓		✓	✓		-	-	-	1	-	-
	Tryal Rocks	✓	✓	✓	✓	✓	✓	✓				✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	-	-	-	8	2	-

[48] *Probabilities and maximum concentrations calculated at depth of submerged feature.*

Table 6-20: Key receptor locations and sensitivities potentially contacted above impact thresholds by the TPA-03 loss of well containment scenario (Scenario 3) with summary hydrocarbon spill contact (table cell values correspond to probability of contact [%])

Environmental setting	Location/name	Environmental, Social, Cultural, Heritage and Economic Aspects presented as per the Environmental Risk Definitions in Woodside's Risk Management Procedure																													Probability of hydrocarbon contact (diesel) (%) note: the probability is based on stochastic modelling of 200 hypothetical worst-case spills under a variety of weather and metocean conditions					
		Physical		Biological																					Socio-economic and Cultural					Socio-cultural EMBA		Ecological EMBA			
		Water Quality	Sediment Quality	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 coral 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 (including foraging, internesting areas and significant nesting beaches)	Sea snakes	Whale sharks	Sharks and rays	Sea birds and/or migratory shorebirds	Pelagic fish populations	Resident/demersal fish	Fisheries – commercial	Fisheries – traditional	Tourism and recreation	Protected areas/heritage – European and Indigenous/shipwrecks	Offshore oil & gas infrastructure (topside and subsea)	Surface hydrocarbon (1-10 g/m²)	Accumulated hydrocarbons (10–100 g/m²)	Surface hydrocarbon (≥10 g/m²)	Entrained hydrocarbon (≥100 ppb)	Dissolved aromatic hydrocarbon (≥50 ppb)	Accumulated hydrocarbons (>100 g/m²)
Australian Marine Parks *	Montebello AMP	✓	✓	✓			✓	✓							✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		1	-	-	95	98	-
	Gascoyne AMP	✓	✓												✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	-	-	-	17	2	-
	Ningaloo AMP	✓	✓					✓		✓					✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	-	-	-	20	4	-
	Argo-Rowley Terrace AMP	✓	✓					✓							✓	✓			✓			✓	✓	✓		✓		✓	✓		-	-	-	8	-	-
Coastlines	Exmouth	✓	✓	✓	✓	✓	✓					✓			✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		-	-	-	10	-	-
Islands	Barrow Island	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-	2	3	-
	Bessieres Island	✓	✓		✓		✓		✓			✓		✓		✓	✓		✓	✓		✓	✓	✓	✓	✓		✓	✓	✓	-	-	-	1	-	-
	Flat Island	✓	✓		✓		✓		✓			✓		✓		✓	✓		✓	✓		✓	✓	✓	✓	✓		✓	✓		-	-	-	1	-	-

Environmental setting	Location/name	Environmental, Social, Cultural, Heritage and Economic Aspects presented as per the Environmental Risk Definitions in Woodside's Risk Management Procedure																													Probability of hydrocarbon contact (diesel) (%) note: the probability is based on stochastic modelling of 200 hypothetical worst-case spills under a variety of weather and metocean conditions						
		Physical		Biological																							Socio-economic and Cultural					Socio-cultural EMBA		Ecological EMBA			
		Water Quality	Sediment Quality	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 coral 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 (including foraging, internesting areas and significant nesting beaches)	Sea snakes	Whale sharks	Sharks and rays	Sea birds and/or migratory shorebirds	Pelagic fish populations	Resident/demersal fish	Fisheries – commercial	Fisheries – traditional	Tourism and recreation	Protected areas/heritage – European and Indigenous/shipwrecks	Offshore oil & gas infrastructure (topside and subsea)	Surface hydrocarbon (1-10 g/m²)	Accumulated hydrocarbons (10–100 g/m²)	Surface hydrocarbon (≥10 g/m²)	Entrained hydrocarbon (≥100 ppb)	Dissolved aromatic hydrocarbon (≥50 ppb)	Accumulated hydrocarbons (>100 g/m²)
	Montebello Islands	✓	✓	✓	✓	✓	✓	✓				✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		-	-	-	5	1	-
	Muiron Islands	✓	✓	✓	✓		✓	✓		✓		✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓			✓	✓		-	3	-	31	5	-
	Peak Island	✓	✓		✓		✓		✓			✓		✓		✓	✓		✓	✓		✓	✓	✓	✓	✓		✓	✓		-	5	-	18	-	-
	Southern Pilbara - Islands	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		-	5	-	19	1	-
	Sunday Island	✓	✓	✓	✓		✓	✓		✓		✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓			✓	✓		-	-	-	7	-	-
	Thevenard Island	✓	✓		✓		✓		✓			✓		✓		✓	✓		✓	✓		✓	✓	✓	✓	✓		✓	✓		-	-	-	2	-	-
Marine Parks	Barrow Island MMA*	✓	✓	✓	✓	✓	✓	✓				✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	-	-	-	8	8	-
	Montebello Islands MP	✓	✓	✓	✓	✓	✓	✓				✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		-	-	-	10	10	-
	Muiron Islands MMA	✓	✓	✓	✓		✓	✓		✓		✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓			✓	✓		-	3	-	34	8	-
	Ningaloo Coast WH	✓	✓	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		-	-	-	20	4	-
	Ningaloo MP (State)	✓	✓	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		-	-	-	19	2	-

Environmental setting	Location/name	Environmental, Social, Cultural, Heritage and Economic Aspects presented as per the Environmental Risk Definitions in Woodside's Risk Management Procedure																												Probability of hydrocarbon contact (diesel) (%) note: the probability is based on stochastic modelling of 200 hypothetical worst-case spills under a variety of weather and metocean conditions					
		Physical		Biological																						Socio-economic and Cultural						Socio-cultural EMBA		Ecological EMBA			
		Water Quality	Sediment Quality	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 coral 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 (including foraging, internesting areas and significant nesting beaches)	Sea snakes	Whale sharks	Sharks and rays	Sea birds and/or migratory shorebirds	Pelagic fish populations	Resident/demersal fish	Fisheries – commercial	Fisheries – traditional	Tourism and recreation	Protected areas/heritage – European and Indigenous/shipwrecks	Offshore oil & gas infrastructure (topside and subsea)	Surface hydrocarbon (1-10 g/m²)	Accumulated hydrocarbons (10–100 g/m²)	Surface hydrocarbon (≥10 g/m²)	Entrained hydrocarbon (≥100 ppb)	Dissolved aromatic hydrocarbon (≥50 ppb)	Accumulated hydrocarbons (>100 g/m²)
National Park	Cape Range	✓	✓	✓	✓		✓	✓		✓					✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		-	-	-	7	-	-
Reefs, Shoals and Banks	Glomar Shoal[49]	✓	✓	✓			✓	✓		✓						✓			✓	✓		✓		✓	✓	✓		✓			-	-	-	-	1	-
	Dailey Shoal	✓	✓	✓	✓		✓	✓		✓					✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		-	-	-	1	-	-
	Montebello Shoals*	✓	✓	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		-	-	-	2	1	-
	Ningaloo Reef	✓	✓	✓	✓		✓	✓		✓					✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		-	-	-	13	2	-
	Outtrim Patches*	✓	✓	✓			✓	✓			✓				✓	✓			✓	✓	✓	✓		✓	✓						-	-	-	26	3	-
	Penguin Bank*	✓	✓		✓		✓		✓							✓	✓		✓	✓		✓	✓	✓	✓	✓		✓	✓	✓	-	-	-	3	-	-
	Poivre Reef	✓	✓	✓	✓		✓	✓							✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	-	-	-	3	-	-
	Rankin Bank[47]	✓	✓	✓			✓	✓		✓						✓	✓		✓	✓		✓		✓	✓	✓		✓			35	-	-	7	100	-

[49] *Probabilities and maximum concentrations calculated at depth of submerged feature.*

** Note: hydrocarbons cannot accumulate on open ocean, submerged receptors, or receptors not fully emergent.*

Environmental setting	Location/name	Environmental, Social, Cultural, Heritage and Economic Aspects presented as per the Environmental Risk Definitions in Woodside's Risk Management Procedure																												Probability of hydrocarbon contact (diesel) (%) note: the probability is based on stochastic modelling of 200 hypothetical worst-case spills under a variety of weather and metocean conditions					
		Physical		Biological																					Socio-economic and Cultural					Socio-cultural EMBA		Ecological EMBA			
		Water Quality	Sediment Quality	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 coral 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 (including foraging, internesting areas and significant nesting beaches)	Sea snakes	Whale sharks	Sharks and rays	Sea birds and/or migratory shorebirds	Pelagic fish populations	Resident/demersal fish	Fisheries – commercial	Fisheries – traditional	Tourism and recreation	Protected areas/heritage – European and Indigenous/shipwrecks	Offshore oil & gas infrastructure (topside and subsea)	Surface hydrocarbon (1-10 g/m²)	Accumulated hydrocarbons (10–100 g/m²)	Surface hydrocarbon (≥10 g/m²)	Entrained hydrocarbon (≥100 ppb)	Dissolved aromatic hydrocarbon (≥50 ppb)	Accumulated hydrocarbons (>100 g/m²)
	Rosily Shoals*	✓	✓		✓		✓		✓							✓	✓		✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	-	-	-	1	1	-
	Trap Reef	✓	✓		✓		✓		✓			✓		✓		✓	✓		✓	✓		✓	✓	✓	✓	✓	✓	✓		-	-	-	2	-	-
	Tryal Rocks	✓	✓	✓	✓	✓	✓	✓				✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-	24	21	-

Summary of potential impacts to protected species	
Setting	***Receptor group***
Offshore	***Cetaceans*** A range of cetaceans were identified as potentially occurring within the Operational Areas and wider EMBA (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 cetacean species. Migratory routes and BIAs of cetaceans considered to be MNES may be affected, including humpback whales resting and migration BIAs, pygmy blue whales migration and foraging BIAs, and southern right whales migration and reproduction BIAs (refer to Table 4-10). Cetaceans that have direct physical contact with surface, entrained, or dissolved aromatic hydrocarbons may suffer surface fouling, ingestion of hydrocarbons (from prey, water and sediments), aspiration of oily water or droplets, and inhalation of toxic vapours (Deepwater Horizon Natural Resource Damage Assessment Trustees [DHNRDT] 2016). This may result in the irritation of sensitive membranes such as the eyes, mouth, digestive and respiratory tracts, and organs. Other potential impacts include impairment of the immune system, neurological damage (Helm et al. 2015), reproductive failure, other adverse health effects (e.g. lung disease, poor body condition), and mortality (DHNRDT 2016). Physical contact with hydrocarbons is likely to have biological consequences for these species. Given cetaceans maintain thick skin and blubber, external exposure to hydrocarbons may result in irritation to skin and eyes. Hydrocarbons may also be ingested, particularly by baleen whales (e.g. pygmy blue whales and humpback whales), which feed by filtering large volumes of water. Geraci (1988) has identified behavioural disturbance through avoidance of spilled hydrocarbons in several species of cetacean, suggesting that cetaceans have the ability to detect surface slicks. However, observations during spills have recorded larger whales (both mysticetes and odontocetes) and smaller delphinids travelling 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). 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 (DHNRDT 2016), and long-term population level impacts to killer whales were linked to the Exxon Valdez tanker spill (Matkin et al. 2008). Cetacean populations that are resident within the EMBA may be susceptible to impacts from spilled hydrocarbons if they interact with an area affected by a spill. Such species are more likely to occupy coastal waters (refer to the Mainland and Islands section below for additional information). Suitable habitat for oceanic toothed whales (e.g. sperm whales) and dolphins is broadly distributed throughout the region and as such, impacts are unlikely to affect an entire population. Other species identified in Section 4.6.3 may also have possible transient interactions with the EMBA (refer to Table 6-18 and Table 6-19 for lists of receptor locations for cetaceans). Pygmy blue whales, southern right whales, and humpback whales are known to migrate seasonally through the EMBA; however, the migration BIAs in the region for these whales do not overlap with the Operational Areas. A major spill in May to November would coincide with humpback whale migration through the waters off the Pilbara and North West Cape (Figure 4-8). A major spill in April–August or October would coincide with pygmy blue whale migration (Figure 4-7). A major spill in April–October would coincide with southern right whale migration along Australian coastlines extending up to the Exmouth Gulf breeding BIA (Figure 4-9). Pygmy blue, southern right, and humpback whales are all baleen whales, so are most likely to be significantly impacted by toxic effects when feeding. However, feeding during migrations is low level and opportunistic, with most feeding for all species occurring in the Southern Ocean. 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 ingestion of hydrocarbons is low. Pygmy blue whale and humpback whale migrations are protracted through time and space (i.e. the whole 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. The humpback whale calving BIA in Camden Sound is not predicted to be contacted by hydrocarbons above threshold concentrations. Entrained hydrocarbons above threshold levels are not predicted to extend into Exmouth Gulf, which is a resting BIA for humpback whales during their southern migration.

Summary of potential impacts to protected species	
Setting	**Receptor group**
	Therefore, a worst-case hydrocarbon spill scenario has the potential to result in major, long-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. Potential impacts to inshore cetaceans and other marine mammals are discussed in the Mainland and Islands (nearshore) impacts discussion below.
	Marine turtles Adult sea turtles exhibit no avoidance behaviour when they encounter hydrocarbon spills (NOAA 2010). Therefore, contact with surface slicks or entrained hydrocarbon can result in hydrocarbons adhering to body surfaces (Gagnon and Rawson 2010) causing irritation of mucous membranes in the nose, throat and eyes, leading to inflammation and infection (NOAA 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 includes an increase in the production of white blood cells, and even a short exposure to hydrocarbons may affect the functioning of the salt gland (Lutcavage et al. 1995). Hydrocarbons in surface waters may also impact turtles when they surface to breathe as they may 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 (NOAA 2010). Contact with entrained hydrocarbons can result in hydrocarbons adhering to body surfaces, causing irritation of mucous membranes in the nose, throat and eyes and leading to inflammation and infection (Gagnon and Rawson 2010). No BIAs or habitats critical to the survival of turtles overlap Operational Areas A and B as the Operational Areas are unlikely to represent an important habitat for marine turtles due to the absence of potential nesting or foraging habitat (i.e. no emergent islands, reef habitat or shallow shoals) and the water is deep (~80 m to 128 m). There is no overlap with Operational Area C and habitats critical to the survival of turtles, however, there is one internesting buffer (Montebello Island – Hermite Island, NW Island, Trimouille Island) for flatback turtles that overlaps Operational Area C. There are significant nesting and foraging sites along the mainland coast and islands of the region, including Dampier Archipelago and the Montebello Islands, and a number of BIAs overlap the EMBA (Section 4.6.2 and Figure 4-5). In particular the internesting BIAs and habitat critical to the survival of a species for green, loggerhead and hawksbill turtles extend for ~20 km from known nesting locations, and for ~60 km for flatback turtles. However, oil from an ongoing loss of containment could be present during nesting season depending on the timing of a spill. In summary, a worst-case hydrocarbon spill scenario has the potential to result in major long-term impacts to offshore foraging marine turtles, with consequence severity dependent on the actual timing, duration and extent of a spill in relation to species' migratory movements and distributions. Potential impacts to nesting marine turtles are discussed in the Mainland and Islands (nearshore) impacts discussion below.
	Sea snakes Impacts to sea snakes from direct contact with hydrocarbons are likely to result in similar physical effects to those recorded for marine turtles. They may include potential damage to the dermis and irritation to mucus membranes of the eyes, nose and throat (International Tanker Owners Pollution Federation [ITOPF] 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; see Submerged Shoals below). It is acknowledged that sea snakes may be present in the Operational Areas and are present in the wider EMBA. Their abundance is not expected to be high in the deepwater and offshore environment. Therefore, a worst-case hydrocarbon spill scenario has the potential to result in major long-term impacts to offshore sea snakes, with consequence severity dependent on the duration and extent of a spill in relation to the distribution of sea snakes. Potential impacts to inshore and

Summary of potential impacts to protected species	
Setting	**Receptor group**
	offshore reef associated sea snakes are discussed in the Submerged Shoals and Banks and Mainland and Islands (nearshore) impacts discussion below.
	Sharks, sawfish and rays Hydrocarbon contact may affect whale sharks through ingestion of entrained or dissolved hydrocarbons, particularly if feeding. Whale sharks may transit offshore open waters when migrating to and from Ningaloo Reef, where they aggregate for feeding from March to July (see Mainland and Islands (nearshore waters) below). Whale sharks may carry out opportunistic feeding in offshore waters and the Operational Areas. The Operational Areas and EMBA overlaps the whale shark foraging BIA identified in 4.6.1, within which whale sharks are seasonally present between April and October (Section 1.1.1). Impacts to sharks and rays may occur through direct contact with hydrocarbons, or through contamination of the tissues and internal organs, either through direct contact or through 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 via coating of the gills inhibiting gas exchange. Therefore, a worst-case hydrocarbon spill scenario has the potential to result in major long-term impacts to offshore shark, sawfish and ray species, with consequence severity dependent on the actual timing, duration and extent of a spill in relation to species' migratory movements and distributions. Potential impacts to inshore and offshore reef associated sharks, sawfish and rays are discussed in the Submerged Shoals and Banks and Mainland and Islands (nearshore) impacts discussion below.
	Seabirds and/or migratory shorebirds Offshore waters are potential foraging grounds for seabirds associated with the coastal roosting and nesting habitat (e.g. Ningaloo, Muiron Islands and the Barrow/Montebello/Lowendal Island Group). There are confirmed foraging grounds off Ningaloo and the Barrow/Montebello/Lowendal Island Group. Foraging and breeding BIAs for a number of seabirds and migratory shorebirds overlap with the EMBA (Section 1.1.1): • wedge-tailed shearwater (peak use August–April) • brown booby • fairy tern • lesser crested tern • lesser frigatebird • little ern • roseate tern • white-tailed tropicbird. Seabirds and migratory birds are particularly vulnerable to contact with floating hydrocarbons, which may mat feathers. This may lead to hypothermia from loss of insulation, and to ingestion of hydrocarbons when preening to remove hydrocarbons; both impacts may result in mortality (Hassan and Javed 2011). Seabirds generally do not exhibit avoidance behaviour to floating hydrocarbons. Physical contact of seabirds with surface slicks is by several exposure pathways – primarily immersion, ingestion, and inhalation. Such contact with hydrocarbons may result in (AMSA 2013, International Petroleum Industry Environmental Conservation Association [IPIECA] 2004): • plumage fouling and hypothermia (loss of thermoregulation) • decreased buoyancy and consequent increased potential to drown • inability to fly or feed • anaemia • pneumonia • irritation of eyes, skin, nasal cavities and mouths. Longer-term exposures may potentially impact seabird populations through loss of reproductive success, malformation of eggs or chicks (AMSA 2013), or mortality of individuals from oiling of feathers or the ingestion of hydrocarbons.

Summary of potential impacts to protected species	
Setting	***Receptor group***
	A hydrocarbon spill may result in surface slicks disrupting a significant portion of the foraging habitat for seabirds, including foraging BIAs, which are generally associated with breeding habitats. Seabird distributions are typically concentrated around islands, so hydrocarbons near nesting/roosting areas may result in increased numbers of seabirds being impacted, with many species of seabirds, such as the wedge-tailed shearwater and the various species of tern, foraging relatively close to breeding islands/colonies. Therefore, a worst-case hydrocarbon spill scenario has the potential to result in major long-term impacts to offshore seabirds and migratory shorebirds, with consequence severity dependent on the actual timing, duration and extent of a spill in relation to species' migratory movements and distributions. Potential impacts to coastal and offshore island associated birds are discussed in the Mainland and Islands (nearshore) impacts discussion below.
Submerged shoals and banks	***Marine turtles*** There is the potential for marine turtles to be present at submerged shoals such as Glomar Shoal, Dailey Shoal, Hood Reef, Imperieuse Reef, Otway Reef, Montebello Shoals, Ningaloo Reef, Outtrim Patches, Penguin Bank, Poivre Reef, Rosily Shoals, Trap Reef, and Tryal Rocks which have potential to be contacted by entrained hydrocarbons above the threshold concentration. These reefs, shoals and banks may, at times, be foraging habitat for marine turtles, given the coral and filter feeding biota associated with this area. Therefore, a worst-case hydrocarbon spill scenario has the potential to result in major long-term impacts to foraging marine turtles, with consequence severity dependent on the actual timing, duration and extent of a spill in relation to species' migratory movements and distributions. Potential impacts to nesting and internesting marine turtles are discussed in the Mainland and Islands (nearshore) impacts discussion below.
	Sea snakes There is the potential for sea snakes to be present at submerged shoals in the EMBA as described above for marine turtles. The potential impacts of exposure are as discussed previously in Offshore – Sea snakes. Sea snake species in Australia generally show strong habitat preferences (Heatwole and Cogger 1993); species that have preferred habitats associated with submerged shoals may be disproportionately affected by a hydrocarbon spill affecting such habitat. Therefore, a worst-case hydrocarbon spill scenario has the potential to result in major long-term impacts to offshore reef associated sea snakes, with consequence severity dependent on the duration and extent of a spill in relation to the distribution of sea snakes. Potential impacts to inshore sea snakes are discussed in the Mainland and Islands (nearshore) impacts discussion below.
	Sharks, sawfish and rays 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 model results indicate receptors as shown in Table 6-18 and Table 6-19 to be predicted to be contacted by entrained hydrocarbons above threshold concentrations (≥100 ppb). Shark and ray species that have associations with submerged shoals may be more susceptible to a reduction in habitat quality resulting from a hydrocarbon spill. Therefore, a worst-case hydrocarbon spill scenario has the potential to result in major long-term impacts to offshore reef associated shark, sawfish and ray species, with consequence severity dependent on the actual timing, duration and extent of a spill in relation to species' migratory movements and distributions. Potential impacts to inshore associated sharks, sawfish and rays are discussed in the Mainland and Islands (nearshore) impacts discussion below.
Mainland and islands (nearshore waters)	***All species*** The information provided on protected species in this section is in addition to that provided in the preceding Offshore and Submerged Banks and Shoals sections above. Refer to these preceding sections for additional discussion of protected species.
	Cetaceans and dugongs In addition to a number of whale species that may occur in nearshore waters (refer to Section 4.6.3 for the full list of EPBC listed cetacean species identified by the PMST with potential to occur within the EMBA), coastal populations of small cetaceans and dugongs are

Summary of potential impacts to protected species	
Setting	**Receptor group**
	known to reside or frequent nearshore waters (see Table 6-18 and Table 6-19) which may be potentially impacted by entrained hydrocarbons exceeding threshold concentrations in the event of a loss of well containment. The Exmouth Gulf is a known humpback whale aggregation area on the annual southern migration (September to December); therefore, humpbacks moving into the Gulf may be exposed to entrained hydrocarbons above thresholds levels. However, entrained hydrocarbons concentrations above the threshold are not expected beyond the entrance to Exmouth Gulf from either modelling scenario. No hydrocarbon contact at or above threshold concentrations is expected for Camden Sound, an important calving area for humpback whales. The potential impacts of exposure are as discussed previously in Offshore – Cetaceans. However, 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. Nearshore dolphin species (e.g. spotted bottlenose dolphins) may exhibit higher site fidelity than oceanic species, although Geraci (1988) observed relatively little impacts beyond behavioural disturbance. Additional potential environment impacts may also include the potential for dugongs to ingest hydrocarbons when feeding on oiled seagrass stands, or indirect impacts to dugongs due to loss of this food source due to dieback in worst-affected areas. Therefore, a worst-case hydrocarbon spill scenario has the potential to result in major long-term impacts to inshore cetacean species and dugongs, with consequence severity dependent on the actual timing, duration and extent of a spill in relation to species' migratory movements and distributions.
	Marine turtles Several marine turtle species use nearshore waters and shorelines for foraging and breeding (including internesting), with significant nesting beaches along the mainland coast and islands in potentially impacted locations. A number of BIAs have been identified within the EMBA for marine turtles, including nesting, internesting and foraging areas as discussed previously in Offshore – Marine Turtles. There are distinct breeding seasons, as detailed in Section 1.1.1. The nearshore waters of these turtle habitat areas may be exposed to entrained hydrocarbons exceeding the threshold concentration (see Table 6-18 and Table 6-19). Accumulated hydrocarbons above the threshold concentration of 100 g/m² are also predicted at a number of shoreline locations for Scenario 1 (AP3 well location), including: • Muiron Islands • Montebello/Barrow/Lowendal Islands Group (including known nesting habitats on Boodie, Double and Middle Islands) • Pilbara Islands South Island Group. Shoreline oil from an ongoing loss of containment could be present at these receptors during nesting/hatching season depending on the timing of a spill. The potential impacts of exposure are as discussed previously in Offshore – Marine Turtles. In the nearshore environment, turtles can ingest hydrocarbons when feeding (e.g. on oiled seagrass stands/macroalgae) 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 turtles during the breeding season in nearshore waters and on nesting beaches. Contact with gravid adult females or hatchlings may occur on nesting beaches (accumulated hydrocarbons) or in nearshore waters (entrained hydrocarbons) where hydrocarbons are predicted to make shoreline contact. If accumulated hydrocarbons or entrained hydrocarbons reach the shoreline or internesting coastal waters, there is the potential for impacts to turtles using the affected area. Animals that lay eggs have been shown to pass metabolised oil related compounds into their offspring which has the potential to be toxic to the developing embryos. Similarly, adult female turtles can pass metabolised oil and related products to their eggs, thereby potentially exposing developing embryos and impairing the development and survival of embryos (DWH Natural Resource Damage Assessment Trustees, 2016). During the breeding season, turtle aggregations near nesting beaches within the EMBA are most vulnerable due to greater turtle densities and potential impacts may occur at the population level. Potential impacts on marine turtles may be major and long-term in the unlikely event of a loss of well control. However, based on the assessment above and given the volatile and non-persistent nature of the hydrocarbons and low levels of shoreline accumulation, the extent of impacts is not

Summary of potential impacts to protected species	
Setting	**Receptor group**
	expected to result in a threat to the overall viability of marine turtle populations in the wider region. A worst-case hydrocarbon spill scenario has the potential to result in major long-term impacts to foraging marine turtles, with consequence severity dependent on the actual timing, duration and extent of a spill in relation to species' migratory movements and distributions.
	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). 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, sawfish and rays Whale sharks and manta rays are known to frequent the Ningaloo Reef system and the Muiron Islands (forming feeding aggregations in late summer/autumn). Whale sharks and manta rays generally transit along the nearshore coastline 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 subsurface ram-feeding and active surface feeding (Taylor 2007). Passive feeding involves 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). Individuals that are present in worst- affected spill areas would have the potential to ingest toxic amounts of entrained or dissolved aromatic hydrocarbons into their body. Large amounts of ingested hydrocarbons may affect endocrine and immune systems in the longer term. The presence of hydrocarbons may displace whale sharks from the area where they normally feed and rest, and potentially disrupt migration and aggregations to these areas in subsequent seasons. Whale sharks may also be affected indirectly by surface, entrained or dissolved aromatic hydrocarbons through the contamination of their prey. The preferred food of whale sharks are fish eggs and phytoplankton, 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 the spill event occurred during the spawning season, this important food supply (in worst 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 resident shark and ray (e.g. sawfish species identified in Section 4.6.1) populations to be impacted directly from hydrocarbon contact or indirectly through contaminated prey or loss of habitat. Table 6-18 and Table 6-19 indicate the receptor locations predicted to be contacted by entrained hydrocarbons above the threshold concentration where impacts to the benthic communities of nearshore and subtidal communities could occur, potentially resulting in habitat loss. Therefore, the consequences to resident shark and ray populations (if present) from loss of habitat, may result in a disruption to a significant portion of the population; however, it is not expected to impact the overall viability of the population. Therefore, a worst-case hydrocarbon spill scenario has the potential to result in major long-term impacts to inshore associated shark, sawfish and ray species, with consequence severity dependent on the actual timing, duration and extent of a spill in relation to species' migratory movements and distributions.
	Seabirds and/or migratory shorebirds In the event of a major spill, 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, dissolved, and accumulated hydrocarbons. This could result in lethal or sublethal effects. Although breeding oceanic seabird species can travel long distances to forage in offshore waters, most breeding seabirds tend to forage in waters near their breeding colony. This

Summary of potential impacts to protected species	
Setting	***Receptor group***
	results in relatively higher seabird densities in these areas during the breeding season, making these areas particularly sensitive in the event of a spill. Pathways of biological exposure that can result in impact may occur through ingesting contaminated fish (nearshore waters) or invertebrates (intertidal foraging grounds such as beaches, mudflats and reefs). Ingestion can also lead to internal injury to sensitive membranes and organs (IPIECA 2004). Whether the toxicity of ingested hydrocarbons is lethal or sublethal 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. Important areas for foraging seabirds and migratory shorebirds are identified in Section 1.1.1. Migratory shorebirds may be exposed to stranded hydrocarbon when foraging or resting in intertidal habitats, however, direct oiling is typically restricted to a relatively small portion of birds, and such oiling is typically restricted to the birds' feet. Modelling predicts that shoreline accumulation above the ecological impact threshold may occur from spill scenario 1 (AP3 well location) at a small number of receptor locations (with a maximum probability of 26% (Muiron Islands); the potential for impacts to migratory shorebirds by accumulated hydrocarbons on shorelines is considered to be low. Important areas for foraging seabirds and migratory shorebirds are identified in Section 1.1.1. Refer to Table 6-18 and Table 6-19 for locations within the predicted extent of the EMBA that are identified as habitat for seabirds/migratory shorebirds. Suitable habitat or seabirds and shorebirds are broadly distributed along the mainland and nearshore island coasts within the EMBA. Of note are important nesting and resting areas, including: • Muiron Islands • Montebello/Barrow/Lowendal Islands Group (including known nesting habitats on Boodie, Double and Middle Islands) • Pilbara Islands South Island Group. Therefore, a worst-case hydrocarbon spill scenario has the potential to result in major long-term impacts to nearshore associated seabirds and migratory shorebirds, with consequence severity dependent on the actual timing, duration and extent of a spill in relation to species' migratory movements, breeding seasons and distributions.
Summary of potential impacts to other species	
Setting	***Receptor group***
All settings	***Pelagic fish populations*** Fish mortalities are rarely observed to occur as a result of hydrocarbon spills (ITOPF 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 affected areas. Fish that have been exposed to dissolved aromatic hydrocarbons are capable of eliminating the toxicants once placed in clean water, so individuals exposed to a spill are likely to recover (King et al. 1996). Where fish mortalities have been recorded, 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, sublethal impacts to adult and juvenile fish may be possible, given long-term exposure (days to weeks) to polycyclic aromatic hydrocarbon (PAH) concentrations (Hjermann et al. 2007), which are typically the most toxic components of hydrocarbons. Light molecular weight aromatic hydrocarbons (i.e. one- and two-ring molecules) are generally soluble in water, which increases bioavailability to gill-breathing organisms such as fish. 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 help eliminate ingested oil from the fish (Cohen et al. 2005).

Summary of potential impacts to protected species	
Setting	***Receptor group***
	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 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 in 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. Pelagic and demersal fish species are associated with the Ancient Coastline at 125 m Depth Contour KEF which overlaps all Operational Areas and the Glomar Shoals KEF which overlaps Operational Area B. Additional KEFs that may host relatively diverse or abundant fish assemblages compared to relatively featureless continental shelf habitats occur within the wider EMBA: • Continental Slope Demersal Fish Communities KEF (62 km south-west of Operational Area A, 112 km south-west of Operational Area B, and 40 km north-west of Operational Area C), which has a highly diverse fish assemblage with a high degree of endemism (DAWE, 2021) • Exmouth Plateau KEF (173 km south-west of Operational Area A, 224 km south-west of Operational Area B, and 153 km north-west of Operational Area C), which is an important area of biodiversity (DAWE, 2021) • Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula KEF (260 km south-west of Operational Area A, 292 km south-west of Operational Area B, and 234 km south-west of Operational Area C), which has been shown to host demersal fish (BMT Oceanica 2016) • Commonwealth Waters adjacent to Ningaloo Reef KEF (306 km south-west of Operational Area A, 339 km south-west of Operational Area B, and 269 km south-west of Operational Area C), which has high biological productivity and hosts a yearly aggregation of whale sharks (DAWE, 2021) • Mermaid Reef and Commonwealth waters surrounding Rowley Shoals KEF (343 km south-west of Operational Area A, 298 km south-west of Operational Area B, and 276 km north-east of Operational Area C). Rankin Bank is also on the continental shelf and within the EMBA, approximately 56 km south-west from Operational Area A, approximately 104 km south-west from Operational Area B at the closest point, and approximately 28 km north-west from Operational Area C. 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, supporting demersal and pelagic fish populations (AIMS 2014a). Mortality and sublethal effects may impact populations located close to a well blowout and within the EMBA for entrained/dissolved aromatic hydrocarbons. Additionally, if prey (infauna and epifauna) surrounding the well location and within the EMBA is contaminated, this can result in the absorption of toxic components of the hydrocarbons (PAHs), potentially impacting fish populations that feed on these. Therefore, a worst-case hydrocarbon spill scenario has the potential to result in major long-term impacts to pelagic fish species, with consequence severity dependent on the actual timing, duration and extent of a spill in relation to species' migratory movements and distributions.
Summary of potential impacts to other habitats and communities	
Setting	***Receptor group***

Summary of potential impacts to protected species	
Setting	***Receptor group***
Offshore	***Benthic fauna communities*** In the event of a major release at the seabed, the stochastic spill model predicted hydrocarbon droplets would be entrained, rapidly transporting them to the sea surface. As a result, the low sensitivity benthic communities associated with the unconsolidated, soft sediment habitat and any epifauna (filter feeders) associated with KEFs within the wider EMBA are not expected to have widespread exposure to released hydrocarbons (Ancient Coastline at the 125 m depth contour KEF, Glomar Shoals KEF, Continental Slope Demersal Fish Communities KEF, Canyons KEF, Exmouth Plateau KEF, Commonwealth Waters adjacent to Ningaloo Reef KEF and Mermaid Reef and Commonwealth waters surrounding Rowley Shoals KEF) (Section 4.5). Therefore, a worst-case hydrocarbon spill scenario has the potential to result in minor, short-term impacts to seabed and associated epifauna and infauna within the EMBA, with impacts predicted to be greatest for habitats closest to the potential release location.
	Open water – productivity/upwelling Primary production by plankton (triggered by sporadic upwelling events in the offshore waters) is an important component of the primary marine food web. Planktonic communities are generally mixed, including phytoplankton (cyanobacteria and other microalgae), secondary consuming zooplankton (e.g. copepods), and the eggs and larvae of fish and invertebrates (meroplankton). 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 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 surface, 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 (ITOPF 2011a). Therefore, a worst-case hydrocarbon spill scenario has the potential to result in minor, short-term impacts to plankton populations within the EMBA, with impacts predicted to be greatest for habitats closest to the potential release location.
	Filter feeders Entrained hydrocarbons above the 100 ppb ecological thresholds will be limited to the top 20 m of the water column beyond the immediate source. Entrained hydrocarbons are therefore not expected to impact filter feeder habitats in deep offshore waters including filter feed communities associated with KEFs including the Ancient Coastline at 125 m Depth Contour KEF, Glomar Shoals KEF, Continental Slope Demersal Fish Communities KEF, Canyons KEF, Exmouth Plateau KEF, Commonwealth Waters adjacent to Ningaloo Reef KEF and Mermaid Reef and Commonwealth waters surrounding Rowley Shoals KEF. Refer to 'mainland and islands (nearshore waters) for a description of potential impacts to filter feeders in shallower waters.
Mainland and islands (nearshore waters)	***Open water – productivity/upwelling*** Nearshore waters and adjacent offshore waters surrounding the offshore islands (e.g. Montebello/ Barrow/Lowendal Islands Group) and to the west of the Ningaloo Reef system are known locations of seasonal upwelling events and productivity. The seasonal productivity events are critical to krill production, which supports megafauna aggregations such as whale sharks and manta rays in the region. This has the potential to result in lethal and sublethal impacts to a certain portion of plankton in affected areas, depending on concentration and duration of exposure and the inherent toxicity of the hydrocarbon. However, recovery would occur (see Offshore description above). Therefore, a worst-case hydrocarbon spill scenario has the potential to result in minor, short-term impacts to plankton populations within the EMBA.
	Spawning/nursery areas Fish (and other commercially targeted taxa) in their early life stages (eggs, larvae and juveniles) are at their most vulnerable to lethal and sublethal impacts from exposure to hydrocarbons, particularly if a spill coincides with spawning seasons or reaches nursery areas close to the shore (e.g. seagrass and mangroves) (ITOPF 2011a). Fish spawning (including for commercially targeted species such as snapper and mackerel) occurs in nearshore waters at certain times of

Summary of potential impacts to protected species	
Setting	**Receptor group**
	the year, and nearshore waters are also inhabited by higher numbers of juvenile fishes than offshore waters. Modelling indicated that, in the event of a major spill, there is potential for entrained hydrocarbons to occur in the surface water layers above threshold concentrations in nearshore waters, including Montebello AMP, Muiron Islands MMA, Gascoyne AMP, Outtrim Patches, Rankin Bank, Montebello MP, Muiron Islands MMA, Montebello/ Muiron/Barrow Islands, Peak Islands, Pilbara Southern Islands Groups, Sunday Island, Ningaloo Coast WH, and Ningaloo MP (State) (see Table 6-18 and Table 6-19 Table 6-19for full list of receptors impacted). This has the potential to result in lethal and sublethal impacts to a portion of fish larvae in areas contaminated above impact thresholds, depending on concentration and duration of exposure and the inherent toxicity of the hydrocarbon. Although there is the potential for spawning/nursery habitat to be impacted (e.g. mangroves and seagrass beds, discussed above), losses of fish larvae in worst-affected areas are unlikely to be of major consequence to fish stocks compared with significantly larger losses through natural predation, and the likelihood that most nearshore areas would be exposed is low (i.e. not all areas in the region would be affected). This is supported by a study in the Gulf of Mexico, which used juvenile abundance data from shallow-water seagrass meadows as indices of the acute, population-level responses of young fishes to the Deepwater Horizon spill. Results indicated that there was no change to the juvenile cohorts following the Deepwater Horizon spill. Additionally, there were no significant post-spill shifts in community composition and structure, nor were there changes in biodiversity measures (Fodrie and Heck 2011). Therefore, a worst-case hydrocarbon spill scenario has the potential to result in major long-term impacts to spawning fish and/or nursery areas within the EMBA, with consequence severity dependent on the actual timing, duration and extent of a spill in relation to key spawning periods and locations.
	Non-biogenic reefs The reef communities fringing the Pilbara region (e.g. Pilbara islands) may be exposed to entrained hydrocarbons (at or above the threshold concentration), and consequently exhibit lethal or sublethal impacts resulting in partial or total mortality of keystone sessile benthos, particularly hard corals; thus, potential community structural changes to these shallow, nearshore benthic communities may occur. If these reefs are exposed to entrained hydrocarbons, impacts are expected to result in localised long- term effects. Therefore, a worst-case hydrocarbon spill scenario has the potential to result in minor, short-term impacts to non-biogenic reefs within the EMBA.
	Filter feeders Hydrocarbon exposure to shallow nearshore filter feeding communities (<20 m) may occur. Exposure to entrained aromatic hydrocarbons has the potential to result in lethal or sublethal toxic effects. Sublethal impacts, including mucus production and polyp retraction, have been recorded for gorgonians exposed to hydrocarbon (White et al. 2012). Any impacts may result in localised long-term effects to community structure and habitat. Nearshore filter feeders that are present in shallower water <20 m may potentially be impacted by entrained hydrocarbon through lethal/sublethal effects, although given the distance from source hydrocarbons are expected to be less toxic due to the weathering process. Such impacts may result in localised, long-term effects to community structure and habitat. Therefore, a worst-case hydrocarbon spill scenario has the potential to result in minor, short-term impacts to filter feeders within the EMBA.
Key ecological features	***Key ecological features*** KEFs potentially impacted by the hydrocarbon spill from a loss of well containment event are detailed in Section 4.7. Although these KEFs are primarily defined by seabed geomorphological features, they can indicate a potential for increased biological productivity and, therefore, ecological significance. The consequences of a hydrocarbon spill from a loss of well containment event are predicted to result in minor impacts to values of the KEFs affected (for the values of each KEF, see Section 4.7). Impacts to benthic habitats are not predicted given the maximum depth of entrained hydrocarbons above 100 ppb is predicted to be 20 m beyond the immediate source. Potential

Summary of potential impacts to protected species	
Setting	***Receptor group***
	impacts to associated pelagic communities may occur as described above and below. The KEFs within the EMBA have relatively broad-scale distributions and are unlikely to be significantly impacted. Therefore, a worst-case hydrocarbon spill scenario has the potential to result in minor, short-term impacts to the ecological values of KEFs within the EMBA, with impacts predicted to be greatest for habitats closest to the potential release location.
Summary of potential impacts to water quality	
Setting	***Receptor group***
All settings	***Open water – water quality*** Water quality would be affected due to hydrocarbon contamination above impact thresholds. These are defined by the EMBA descriptions for each of the entrained and dissolved hydrocarbon fates and their predicted extent. Therefore, a worst-case hydrocarbon spill scenario has the potential to result in minor, short-term impacts to water quality within the EMBA, with impacts predicted to be greatest for areas closest to the potential release location.
Summary of potential impacts to marine sediment quality	
Setting	***Receptor group***
Offshore	***Marine sediment quality*** Studies of hydrocarbon concentrations in deep-sea sediments in the vicinity of a catastrophic well blowout indicated hydrocarbon from the blowouts can be incorporated into 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 hydrocarbon would form droplets that would be transported into the water column to the surface (i.e. transported away from the seabed). As a result, the extent of potential impacts to the seabed area at and surrounding the release site would be largely 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, as hydrocarbons in sediments typically undergo slower weathering and degradation (Diercks et al. 2010, Liu et al. 2012). There is the potential for floating and entrained hydrocarbons to sink following extensive weathering and adsorption of sediment particles, which may result in the deposition of hydrocarbons to the seabed in areas distant from the release location. Such hydrocarbons are expected to be less toxic due to the weathering process. Therefore, a worst-case hydrocarbon spill scenario has the potential to result in slight, short-term impacts to offshore sediment quality within the EMBA, with impacts predicted to be greatest for areas closest to the potential release location.
Mainland and Islands (nearshore waters)	***Marine sediment quality*** Entrained hydrocarbons (at or above the defined threshold) are predicted to potentially contact shallow, nearshore waters of identified islands and mainland coastlines. Hydrocarbons may occur (at or above the ecological impact thresholds) at the Muiron Islands MMA, Montebello AMP, Muiron Islands, Gascoyne AMP, Outtrim Patches, and the Ningaloo Coast based on modelling of Scenario 1 (AP3 well location), Rankin Bank and Montebello AMP on modelling of Scenario 2 (PER-02 well location), and Montebello MP, Muiron Islands MMA, and Muiron Islands on modelling of Scenario 3 (TPA-03 well location) (refer to Table 6-18 to Table 6-20 for full list of receptors). Such hydrocarbon contact may lead to reduced marine sediment quality through adherence to sediment. However, given the nature of the hydrocarbon and degree of weathering that is expected prior to contact with nearshore seabed habitats, contamination of sediments is expected to be limited and short term. Therefore, a worst-case hydrocarbon spill scenario has the potential to result in minor, short-term impacts to sediment quality within the EMBA.
Summary of potential impacts to air quality	
A hydrocarbon release during a loss of well containment has the potential to result in short-term reduction in air quality. There is potential for human health effects on workers in the immediate vicinity of atmospheric emissions. The	

Summary of potential impacts to protected species	
Setting	***Receptor group***
ambient concentrations of VOCs released from diffuse sources is difficult to accurately quantify, although their behaviour and fate is predictable in open offshore environments, as VOC emissions disperse rapidly by meteorological factors such as wind and temperature. VOC emissions from a hydrocarbon release in such environments are rapidly degraded in the atmosphere by reaction with photochemically produced hydroxyl radicals. Given the remote likelihood of occurrence of a loss of well containment, the temporary nature of any VOC emissions (from either gas surfacing or weathering of liquid hydrocarbons from a loss of well containment), the predicted behaviour and fate of VOCs in open offshore environments, and the significant distance from the Operational Areas to the nearest sensitive airshed (town of Dampier ~123 km south of closest Operational Area (Operational Area A)), a worst-case hydrocarbon spill scenario has the potential to result in minor, short-term impacts to air quality within the EMBA, with impacts predicted to be greatest for areas closest to the potential release location.	
Summary of potential impacts to protected areas	
The quantitative spill risk assessment results indicate that the open-water environment protected within a number of Commonwealth AMPs, State Marine Parks, World Heritage Areas and other protected places (refer to Table 6-18 to Table 6-20) may be affected by released hydrocarbons in the event of a loss of well containment. In the Remote likelihood of a major spill occurring, entrained hydrocarbons may contact the identified key receptor locations of islands and mainland coastlines and shoreline accumulation may occur above the socio- cultural and ecological thresholds at limited locations, resulting in the actual or perceived contamination of protected areas as identified for the EMBA. Impact on the protected areas is discussed in the sections above for ecological values and sensitivities, and below for socioeconomic values. Additionally, such hydrocarbon contact may alter stakeholder understanding and/or perception of the protected marine environment, given these represent areas are largely unaffected by anthropogenic influences and contain biologically diverse environments.	
Summary of potential impacts to socio-economic values	
Setting	***Receptor group***
Offshore	***Fisheries – commercial*** A hydrocarbon release during a loss of well containment event has the potential to result in direct impacts to target species of Commonwealth and State fisheries within the defined EMBA (refer Section 4.9.2). Lethal and sublethal effects may impact localised populations of targeted species 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 its efficacy depends on the magnitude of the hydrocarbon contamination. Fish have a high capacity to metabolise these hydrocarbons, while crustaceans (such as prawns) have a reduced ability (Yender et al. 2002). Seafood safety is a major concern associated with spill incidents. Therefore, actual or potential seafood contamination can affect commercial and recreational fishing and can impact seafood markets long after any actual risk to seafood from a spill has subsided (Yender et al. 2002). A major spill would result in the establishment of an exclusion zone around the spill-affected area. There would be a temporary prohibition on fishing activities for a period of time, and subsequent potential for economic impacts to affected commercial fishing operators. Therefore, a worst-case hydrocarbon spill scenario has the potential to result in major, long-term impacts to commercial fisheries within the EMBA, particularly for pelagic fisheries and fisheries with most of their effort focused within the EMBA (e.g. Pilbara Demersal Scalefish Managed Fishery, Northern Demersal Scalefish Managed Fishery and Mackerel Managed Fishery). Potential impacts to inshore fisheries are discussed in the Mainland and Islands (nearshore) impacts discussion below, and the impact assessment relating to spawning is discussed above.
	Tourism and recreation Recreational fishers predominantly target large 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 peak activity between April and October

Summary of potential impacts to protected species	
Setting	**Receptor group**
	(Smallwood et al. 2011) for the Exmouth region. Limited recreational fishing takes place in the offshore waters in or around the Operational Areas. Impacts on species that are recreationally fished are described above under Summary of Potential Impacts to Other Species. A major loss of hydrocarbons from the Petroleum Activity may lead to exclusion of marine nature-based tourist activities, resulting in a loss of revenue for operators. Tourism is a major industry for the region and visitor numbers would likely reduce if a hydrocarbon spill were to occur, based on the perception of hydrocarbon spills and associated impacts. Therefore, a worst-case hydrocarbon spill scenario has the potential to result in moderate, medium- term impacts to tourism and recreation within the EMBA.
	Offshore oil and gas infrastructure A hydrocarbon release during a loss of well containment event has the potential to result in disruptions to production at existing petroleum facilities (platforms and FPSOs), as well as activities such as drilling and seismic exploration. For example, facility water intakes for cooling and fire hydrants could be shut off if contacted by floating hydrocarbons, which could in turn lead to the temporary cessation of production activities. Spill exclusion zones established to manage the spill could also prohibit access for activity support vessels as well as offtake tankers approaching facilities off the North West Cape. The impact on ongoing operations of regional production facilities would be determined by the nature and scale of the spill and metocean conditions. 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 production facilities are: • Angel (Woodside): 47 km east from Operational Area A, overlaps Operational Area B, and 76 km north-east from Operational Area C • Goodwyn Alpha (Woodside): 19 km south-west from Operational Area A, 66 km south-west from Operational Area B, and 9 km north-east from Operational Area C • Modec Venture 11 (MODEC): 55 km north-east from Operational Area A, 19 km north from Operational Area B, and 89 km north-east from Operational Area C • North Rankin Complex (Woodside): 3 km south-east from Operational Area A, 43 km south-west from Operational Area B, and 28 km north-east from Operational Area C • Reindeer (Apache Energy): 55 km south-east from Operational Area A, 58 km south-west from Operational Area B, and 48 km south-east from Operational Area C Operation of these facilities is likely to be affected in the event of a well blowout spill. Therefore, a worst-case hydrocarbon spill scenario has the potential to result in slight, short-term impacts to oil and gas industry within the EMBA.
Submerged shoals	***Tourism and recreation*** A hydrocarbon release during a loss of well containment event has the potential to result in a temporary prohibition on charter boat recreational fishing/diving and any other marine nature-based tourism trips to Rankin Bank. Therefore, a worst-case hydrocarbon spill scenario has the potential to result in minor, short-term impacts to tourism and recreational activities within the EMBA.
Mainland and islands (nearshore waters)	***Fisheries – commercial*** **Nearshore fisheries** In the event of a loss of well containment, there is the possibility that target species in some areas used by a number of state fisheries could be affected (refer to Section 4.9.2 for fisheries within the wider EMBA). Targeted fish, prawn, mollusc and lobster species could experience sublethal stress, or in some instances mortality, depending on the concentration and duration of hydrocarbon exposure and its inherent toxicity. **Prawn managed fisheries** In the event of a major spill, the modelling indicated the entrained and dissolved EMBA may extend to nearshore waters, including the actively fished areas of the designated Exmouth Gulf Prawn Managed Fishery and Nickol Bay Prawn Managed Fishery. Prawn habitat usage differs between species in the post-larval, juvenile and adult stages (Dall et al. 1990) and direct impacts to benthic habitat due to a major spill have the potential to impact prawn stocks. For example, juvenile banana prawns are found almost exclusively in mangrove-

Summary of potential impacts to protected species	
Setting	***Receptor group***
	lined creeks (Rönnbäck et al. 2002), whereas juvenile tiger prawns are most abundant in areas of seagrass (Masel and Smallwood 2000). Adult prawns also inhabit coastline areas but tend to move to deeper waters to spawn. In the event of a major spill, a range of subtidal habitats that support juvenile prawns may be exposed to hydrocarbons above impact thresholds, including: • Montebello Islands • Barrow Island • Lowendal Islands • Pilbara Southern Island Group • Ningaloo Coast. Localised loss of juvenile prawns in the worst spill-affected areas is possible. Whether lethal or sublethal effects occur will depend on duration of exposure, hydrocarbon concentration and weathering stage of the hydrocarbon, and its inherent toxicity. Furthermore, seafood consumption safety concerns and a temporary prohibition on fishing activities may lead to subsequent potential for economic impacts to affected commercial fishing operators. Therefore, a worst-case hydrocarbon spill scenario has the potential to result in major, long-term impacts to commercial fisheries within the EMBA.
	Tourism and recreation In the event of a major spill, the nearshore waters of offshore islands and reefs as well as the Ningaloo coast could be reached by entrained and dissolved hydrocarbons depending on prevailing wind and current conditions. There is also a low probability of shoreline accumulation above the socio-cultural and ecological threshold at limited locations for Scenario 1 and 2. As these locations offer a number of amenities such as fishing, swimming and using beaches and surrounds, they have a recreational value for local residents and visitors. If a well blowout event resulted in hydrocarbon contact, there could be restricted access to beaches for a period of days to weeks, until natural weathering, tides, currents or oil spill response (e.g. shoreline clean-up if safe to do so) removes the hydrocarbons. In the event of a well blowout, tourists and recreational users may also avoid areas due to perceived impacts, including after the oil spill has dispersed. There is the potential for stakeholder perception that this environment will be contaminated over a large 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 perceptions regarding the spill (Oxford Economics 2010). Therefore, a worst-case hydrocarbon spill scenario has the potential to result in moderate, medium-term impacts to tourism and recreational activities within the EMBA.
All settings	***Cultural values and heritage*** Through consultation and review of available literature (Section 4.9.1), Woodside understands that Sea Country, including marine ecosystems and species, archaeological heritage and heritage sites, marine parks, as well as intangible cultural heritage may be impacted in the event of a hydrocarbon release from a vessel collision. Cultural features and heritage values that have the potential to be impacted include: **Marine ecosystems and species** Marine ecosystems may hold both cultural and environmental value to Traditional Custodians (see Section 4.9.1), with cultural and environmental values intrinsically linked (DCCEEW 2023, MAC 2021 as cited in Woodside 2023b). It necessarily follows that an impact to marine ecosystems has the potential to impact cultural features where the impact is detectable within Sea Country – the seascape which Traditional Custodians view, interact with or hold knowledge of. The EMBA is known to include habitat for culturally important species such as whales, whale sharks, turtles, dugongs, plankton, and seagrass (Section 4.9). In the event of a worst-case release of hydrocarbons, individual fauna may be directly impacted or impacted through temporary degradation of their habitats, however, no population level impacts as expected.

Summary of potential impacts to protected species	
Setting	***Receptor group***
	Impacts are not expected to occur to ecologically 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 these species are expected to be maintained. **Heritage Sites** The EMBA overlaps Historic Underwater Heritage sites (Table 4-21), the Ningaloo Coast World Heritage, National and Commonwealth Heritage Places, the Barrow Island and the Montebello-Barrow Islands Marine Conservation Reserves National Heritage Place, and the Learmonth Air Weapons Range Facility Commonwealth Heritage Place (Table 4-22). The EMBA does not overlap any Registered Aboriginal Sites (Section 4.9.1). There are a number of historic shipwrecks identified in the vicinity of the Operational Areas (Table 4-21). The closest known wrecks are those of the McDermott Derrick Barge No. 20, and the McCormack, near the Montebello Islands and about 66 km south-west from Operational Area A, 91 km south-west from Operational Area B, and 38 km south-east from Operational Area C, at the closest point. The spill modelling results do not predict surface slicks will contact any identified wrecks. However, shipwrecks occurring in the subtidal zone may be exposed to entrained/dissolved hydrocarbons, and 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 large fish species moving away, and/or resident fish species and sessile benthos such as hard corals exhibiting sublethal and lethal impacts (which may range from physiological issues to mortality). **Marine Parks** The EMBA overlaps five AMPs under North-West Marine Parks Network Management Plan 2018 and six State Marine Parks. Management Plans for these parks recognise cultural values of Indigenous groups (Section 1.1). Due to the low maximum concentrations predicted to reach any marine park, it is not anticipated that their values will be compromised. Entrained hydrocarbons above the threshold concentration are predicted to occur (at or above the ecological impact thresholds) at the Muiron Islands MMA, Montebello AMP, Muiron Islands, Gascoyne AMP, Outtrim Patches, and the Ningaloo Coast based on modelling of Scenario 1 (AP3 well location), Rankin Bank and Montebello AMP on modelling of Scenario 2 (PER-02 well location), and Montebello MP, Muiron Islands MMA, and Muiron Islands on modelling of Scenario 3 (TPA-03 well location) (refer to Table 6-18 to Table 6-20 for full list of receptors). There is a low probability of shoreline accumulation above the socio-cultural and ecological threshold at limited locations for Scenario 1 and 2, and shoreline accumulation was not detected for Scenario 3. However, artefacts, scatter and rock shelters are on land above the high water mark on Barrow and Montebello islands; therefore, no contact is predicted for these areas. **Intangible cultural heritage** Impacts may occur to intangible cultural values such as songlines; creation/dreaming sites, sacred sites, ancestral beings; cultural obligations to care for Country; knowledge of Country/customary law and transfer of knowledge; connection to Country; Access to Country; kinship systems and totemic species, resource collection. 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). Inter-generational transmission of cultural knowledge (including songlines) relating to marine reptiles may be impacted where changes 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). In the unlikely event of a hydrocarbon release, intangible cultural heritage values may be impacted. Within the wider EMBA are several designated heritage places (Section 4.9.1). These places are also covered by other designations such as World Heritage Area. Potential impacts are discussed in the sections above.
Summary of potential impacts to environmental values	
In the highly unlikely event of a major hydrocarbon spill due to a loss of well integrity, the EMBA includes the areas listed in Table 6-18 to Table 6-20, including AMPs as well as other sensitive marine environments and associated receptors of Muiron Islands MMA, Montebello AMP, Muiron Islands, Gascoyne AMP, Outtrim Patches, the Ningaloo	

Summary of potential impacts to protected species	
Setting	***Receptor group***
Coast, Rankin Bank, Montebello MP, Glomar Shoal, Ningaloo AMP, Southern Pilbara – Islands, Montebello/Barrow/Lowendal Islands Group, Bessieres Island, Bessieres Island, Thevenard Island, Imperieuse Reef, Rowley Shoals MP, Airlie Island, Boodie Island, Middle Island, Sunday Island, Outtrim Patches, Tryal Rocks, and Exmouth. In summary, long-term impacts may occur at sensitive nearshore and shoreline habitats as a result of a major spill of hydrocarbon from permanent plugging activities within the Operational Areas. The overall environmental consequence is defined as 'B – Major, long-term impact (ten to 50 years) on highly valued ecosystem, species, habitat, physical or biological attributes'.	

Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[50]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
Legislation, codes and standards				
Project-specific Mooring Design Analysis.	F: Yes. CS: Standard practice. Required by Woodside standards.	Ensure adequate MODU station holding capacity to prevent loss of station keeping. This will reduce the likelihood of a blowout resulting in release of hydrocarbons to the marine environment.	Benefits outweigh cost/sacrifice.	Yes **C 2.4**
OPGGS (Resource Management and Administration) Regulations 2011: accepted WOMP which describes the well integrity outcomes, control measures and performance criteria used to demonstrate how the risk of loss of well integrity is managed to ALARP including the well design and barriers to be used to prevent a loss of well integrity, which aligns with industry guidance and good practice.	F: Yes. CS: Minimal cost. Standard practice.	Compliance with an accepted WOMP will ensure a number of barriers are in place and verified, reducing the likelihood of a loss of well integrity event occurring. Although the consequence of a blowout would not be reduced, the reduction in likelihood reduces the overall risk.	Benefits outweigh cost/sacrifice.	Yes **C 10.1**
In the event of a spill, emergency response activities implemented in accordance with the OPEP (per Table 7-8).	F: Yes. CS: Costs associated with implementing response strategies, vary dependant on nature and scale of spill event. Standard practice.	This control would not reduce the likelihood, but response activities may reduce the consequence.	Benefits outweigh cost/sacrifice.	Yes **C10.2**

[50] *Qualitative measure.*

Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[50]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
Arrangements supporting the activities in the OPEP (per Table 7-8) will be tested to ensure the OPEP can be implemented as planned.	F: Yes. CS: Moderate costs associated with exercises. Standard practice.	Testing the OPEP activities would not reduce the likelihood, but response activities may reduce the consequence.	Benefits outweigh cost/sacrifice.	Yes **C 10.3**
Good practice				
Subsea BOP installed, and function tested during permanent plugging operations. The BOP shall meet the Woodside Well Control Procedure, Woodside Engineering Standard – Rig Equipment and shall be subject to API Standard 53 BOP Risk Assessment.	F: Yes. CS: Standard practice. Required by Woodside standards.	Testing of the BOP will reduce the likelihood of a blowout resulting in release of hydrocarbons to the marine environment. In the event of a blowout, this control would not reduce the consequence, although the reduction in likelihood reduces the overall risk ranking.	Benefits outweigh cost/sacrifice.	Yes **C 10.4**
Subsea Well Control Package (WCP) installed, and function tested during well intervention activities. The WCP shall meet the Woodside Well Control Procedure, Woodside Engineering Standard Riserless Well Intervention Equipment and Services and shall be subject to NORSOK D-010 Risk Assessment.	F: Yes. CS: Standard practice. Required by Woodside standards.	Testing of the WCP will reduce the likelihood of a loss of well control resulting in release of hydrocarbons to the marine environment. In the event of a loss of well control, this control would not reduce the consequence, although the reduction in likelihood reduces the overall risk ranking.	Benefits outweigh cost/sacrifice.	Yes **C 10.5**
Mitigation: Oil spill response	Refer to Appendix G.			
Professional judgement – Eliminate				
Do not plug and abandon the wells.	F: No. CS: Inability to permanently abandon the well.	All risk would be eliminated.	Disproportionate. The wells require intervention to achieve the status of permanently abandoned.	No
Do not intervene with well	F: No CS: Intervention is required to maintain production to end of field life for Tidepole field.	All risk would be eliminated.	Disproportionate. Given the extremely low likelihood of a loss of well control due to the systematic	No

Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[50]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
			implementation of Woodside's policies, standards, procedures, and processes relating to well intervention activities, the cost/ sacrifice outweighs the benefit gained.	
Professional judgement – Substitute				
No additional controls identified.				
Professional judgement – Engineered solution				
No additional controls identified.				
Risk-based analysis				
A quantitative spill risk assessment was performed (refer Section 6.7.1).				
ALARP statement: On the basis of the assessment outcomes, use of the relevant tools appropriate to the decision type (i.e. Decision Type B; Section 2.2.4.2) and Woodside's criteria for demonstrating ALARP (Section 2.3.1), Woodside considers the adopted controls appropriate to manage potential risks associated with an unlikely, unplanned hydrocarbon release as a result of a loss of well integrity. As no reasonably practicable additional/alternative controls were identified that would further reduce the impacts without disproportionate sacrifice, the risks are considered ALARP.				

Demonstration of acceptability	
Acceptability criteria and assessment	***Statement of acceptability***
Principles of ESD The impact assessment has considered the relevant principles of ESD: • Decision-making processes should effectively integrate both long-term and short-term economic, environmental, social and equitable considerations. • The principle of inter-generational equity-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 conservation of biological diversity and ecological integrity should be a fundamental consideration in decision-making. ***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) • Engineering Standards - Well Barriers • Well Acceptance Criteria Procedure • Drilling and Completions - Well Control Procedure • Woodside Engineering Standard - Rig Equipment • Source Control Emergency Response Planning Guideline (SCERP Guidelines)	The predicted level of risk to loss of well integrity to ecosystems, species, habitat or physical or biological attributes from an accidental hydrocarbon release 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

Demonstration of acceptability	
Acceptability criteria and assessment	***Statement of acceptability***
• Oil spill preparedness and response strategies are considered applicable to the nature and scale of the risk and associated impacts of the response are reduced to ALARP (Appendix G). ***External context*** During stakeholder consultation with relevant persons, including DoT and AMSA (Marine Pollution), DoT requested to be consulted on oil spill risks with a potential to impact State Waters (Section 5). Woodside provided a copy of the Oil Pollution First Strike Plan to DoT. No additional questions or concerns relating to a hydrocarbon spill resulting from a loss of well integrity were raised during stakeholder engagement. ***Other requirements*** Impact assessment has been informed by risk-based analysis, including hydrocarbon spill modelling. The proposed control measures are consistent with industry legislation, codes and standards, good practice and professional judgement including: • API Standard 53 for subsea BOP function testing • APPEA Memorandum of Understanding: Mutual Assistance for relief well drilling is in place. Woodside develops an activity SCERP, including the Relief Well Plan, which is signed off by the Drilling Engineering Manager and maintains a list of rigs that are currently operating in Australia (refer also to Appendix G). • OPGGS (Resource Management and Administration) Regulations 2011 to have an accepted WOMP and application to permanently plug for abandonment of the wells • NOPSEMA will be notified of reportable and recordable incidents, if required, in accordance with Section 7.10.2. A mutual aid MoU for relief well drilling is in place and the Drilling Engineering Manager maintains a list of rigs that are currently operating in WA. The EMBA overlaps a number of BIAs for threatened and migratory species, as well as a number of State and Commonwealth MPAs and the Ningaloo Coast WHA. As demonstrated in Section 6.8, the residual risk of accidental hydrocarbon release from loss of well integrity is not inconsistent with the relevant objectives and actions of any applicable recovery plans or threat abatement plans. Regard has been given to relevant conservation advice and wildlife conservation plans during the assessment of potential impacts. The Petroleum Activity is not considered to be inconsistent with the overall recovery objectives and actions of these recovery plans and conservation advice (Section 6.8).	standards have been adopted • the Petroleum Activity will be managed in a manner that is not inconsistent with management objectives for relevant World Heritage Properties, AMPs, recovery plans and conservation plans/advice • the predicted level of impact has been reduced to ALARP. To manage an accidental hydrocarbon release as a result of a loss of well integrity 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 loss of well 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 EPO has been met.

EPOs, EPS and MC			
EPO	***Controls***	***PS***	***MC***
EPO 14 No release of hydrocarbons to the marine environment due to loss of well integrity.	**C 2.4** See Section 6.6.2.	**PS 2.4** See Section 6.6.2.	**MC 2.4.1** See Section 6.6.2.
	C 10.1 OPGGS (Resource Management and Administration) Regulations 2011: accepted WOMP which describes the well integrity outcomes, control measures and performance criteria used to demonstrate how the risk of loss of well integrity is managed to ALARP including the well design and barriers to be used to prevent a loss of well integrity, which aligns with industry guidance and good practice.	**PS 10.1** An accepted WOMP is implemented, and well integrity notification and reporting are undertaken in accordance with the Regulations (as applicable).	**MC 10.1.1** Acceptance letter from NOPSEMA demonstrates acceptance of the WOMP. Records demonstrate applicable NOPSEMA notification and reporting.
	C 10.2 In the event of a spill emergency response activities implemented in accordance with the OPEP (per Table 7-8).	**PS 10.2** In the event of a spill the OPEP (per Table 7-8) requirements are implemented.	**MC 10.2.1** Completed incident documentation.
	C 10.3 Arrangements supporting the activities in the OPEP (per Table 7-8) will be tested to ensure the OPEP can be implemented as planned.	**PS 10.3.1** Exercises/tests will be conducted in alignment with the frequency identified in Table 7-10: Testing of response capability.	**MC 10.3.1** Testing of arrangement records confirm that emergency response capability has been maintained.
		PS 10.3.2 Woodside's procedure demonstrates a minimum level of trained personnel, for core roles in the OPEP (per Table 7-8), are maintained.	**MC 10.3.2** Emergency Management dashboard confirms that minimum level of personnel trained for core OPEP roles are available.
	C 10.4 Subsea BOP installed and function tested during permanent plugging operations.	**PS 10.4** Subsea BOP specification, installation and function testing compliant with internal Woodside Standards and international requirements (API standard 53) as agreed by Woodside and MODU contractor.	**MC 10.4.1** Records demonstrate that BOP and BOP control system specifications and function testing were in accordance with minimum standards for the expected permanent plugging conditions as agreed by Woodside and MODU contractor.
	C 10.5	**PS 10.5** Subsea WCP specification, installation and function	**MC 10.5.1** Records demonstrate that WCP specifications and

EPOs, EPS and MC			
EPO	***Controls***	***PS***	***MC***
	Subsea WCP installed and function tested during well intervention operations.	testing compliant with internal Woodside Standards and international requirements (NORSOK D-010) as agreed by Woodside and MODU contractor.	function testing were in accordance with minimum standards for the expected well intervention conditions as agreed by Woodside and MODU contractor.
For oil spill response outcomes, standards and MC refer to Appendix G.			

6.7.3 Unplanned hydrocarbon release: vessel collision

Context		
Project vessels – Section 3.5	Physical environment – Section 4.4 Habitats and biological communities – Section 4.5 Protected species – Section 4.6 Socio-economic environment – Section 4.9	Stakeholder consultation – Section 5

Risk evaluation summary

Source of risk	***Environmental value 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
Loss of hydrocarbons to marine environment due to a vessel collision (e.g. support vessels or other marine users)		X		X	X	X	A	D	1	M	LCS GP PJ	Broadly Acceptable	EPO 15

Description of source of risk

Background

The temporary presence of the MODU and project vessels in the Operational Areas during the petroleum activity will result in a navigational hazard for other marine users (such as commercial shipping) within the immediate area (as discussed in Section 6.7.1). This navigational hazard could result in a third-party vessel colliding with the MODU or a project vessel, resulting in a release of hydrocarbons.

A moored MODU typically has a total marine diesel capacity of approximately 966 to 1400 m³ (up to 3640 m³ for DP MODU) that is distributed through a number of isolated tanks. Spill scenarios involving the MODU are not considered credible for a hydrocarbon release given the collision points, vessel speeds and locations of the fuel tanks. MODU fuel tanks are typically located on the inner sides of MODU pontoons and can be over 10 m below the waterline.

A typical project vessel is likely to have multiple isolated marine diesel tanks distributed throughout the hull of the vessel. The marine diesel storage capacity of a typical offshore or general support vessel can be in the order of 1000 m³ (total) that is distributed through multiple isolated tanks typically located mid-ships, and can range in typical size from 22 to 250 m³ each. It is also possible that an MPSV or LCV may be required to remove wellheads at the end of the campaign. A worst-case loss of containment of these types of vessels is expected to be no greater than 500 m³, considering the volumes of the following vessels: Skandi Hercules (325 m³) and Seven Pegasus (361 m³).

In the unlikely event of a vessel collision involving a project vessel during the petroleum activity, the vessel will have the capability to pump marine diesel from a ruptured tank to a tank with spare volume in order to reduce the potential volume of fuel released to the environment.

Industry experience

Registered vessels or foreign flag vessels in Australian waters are required to report events to the Australian Transport Safety Bureau (ATSB), AMSA or Australian Search and Rescue (AusSAR).

From a review of the ATSB marine safety and investigation reports, one vessel collision occurred in 2011/12 that resulted in a spill of 25–30 L of oil into the marine environment as a result of a collision between a tug and support vessel off Barrow Island. Two other vessel collisions occurred in 2010, one in the port of Dampier, where a support vessel collided with a barge being towed. Minor damage was reported and no significant injury to personnel or

pollution occurred. The second 2010 vessel collision involved a vessel under pilot control in port connecting with a vessel alongside a wharf, causing it to sink. No reported pollution resulted from the sunken vessel. These incidents demonstrate the likelihood of only minor volumes of hydrocarbons being released during the highly unlikely event of a vessel collision occurring.

From 2010 to 2011, the ATSB's annual publication defines the individual safety action factors identified in marine accidents and incidents: 42% related to navigation action (2011). Of those, 15% related to poor communication and 42% related to poor monitoring, checking and documentation (ATSB, 2011). The majority of these related to the grounding instances.

Credible scenario

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:

- The identified causes of 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 environmental risk analysis and evaluation identified and assessed a range of potential scenarios that could result in a loss of vessel structural integrity, resulting in damage to fuel storage tank(s) and a loss of marine diesel to the marine environment (Table 6-21). The scenarios considered damage to single and multiple fuel storage tanks in a project vessel and MODU due to dropped objects and various combinations of vessel to vessel and vessel to MODU collisions. In summary:

- It is not a credible scenario that the total storage volume of the MODU would be lost, as fuel is stored in more than one tank.
- It is not a credible scenario that a storage tank on the MODU would be damaged due to the location of the tanks within the hull, behind the bilge tanks, below the waterline.
- It is not a credible scenario that a collision between the support vessel and MODU would damage any storage tanks, due to the location of the tanks on both vessel types and secondary containment.
- It is highly unlikely that the full volume of the largest storage tank on a support vessel would be lost.

The last scenario considered was a collision between a project vessel with a third-party vessel (i.e. commercial shipping, other petroleum related vessels and commercial fishing vessels). This was assessed as being credible but highly unlikely, given the standard vessel operations and equipment in place to prevent collision at sea and the construction and placement of storage tanks. The worst-case volume for a loss of containment from a project vessel is 500 m^3 as described above. Given the offshore location of the Operational Areas, vessel grounding is not considered a credible risk.

Quantitative hydrocarbon risk assessment

Modelling of a short-term (instantaneous) uncontrolled surface release of 500 m^3 of marine diesel due to a vessel collision at the AP3 wellhead location was available for Woodside's NWS Joint Venture Decommissioning, conducted in 2022 (RPS, 2022). The release location used for the spill modelling lies within the Operational Areas and is located directly adjacent to the Glomar Shoal. The AP3 location marine diesel modelling is considered a conservative surrogate scenario for equivalent vessel collision scenarios occurring at all other locations within the Operational Areas. The AP3 scenario is considered representative considering it is of an equivalent volume, located closest to sensitive receptors (Glomar Shoal) and is likely subject to similar metocean conditions due to the open-water offshore locations and proximity of the Operational Areas A summary of release characteristics for the modelled scenario is provided in Table 6-21.

The modelling assessed the extent of a marine diesel spill volume of 500 m^3 for all seasons, using an historic sample of wind and current data for the region. For each scenario, a total of 200 replicate simulations were run over an annual period. Tabulated probabilities were assessed to a minimum level of 0.5%. The modelling was conducted by RPS using a three-dimensional hydrocarbon spill trajectory and weathering model (SIMAP, Spill Impact Mapping and Analysis Program) which is designed to simulate the transport, spreading and weathering of specific oil types under the influence of changing meteorological and oceanographic forces.

Hydrocarbon weathering characteristics

The mass balance forecast for the constant-wind case for marine diesel (Figure 6-5) shows that approximately 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 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 6-6), where the winds are of greater strength, entrainment of marine diesel into the water column is indicated to be significant. Approximately 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 will

tend to remain entrained beneath the surface under conditions that generate wind waves (approximately >6 m/s). The hydrocarbon characteristics of marine diesel are described in Section 6.7.1.2 and Table 6-21.

Given the environmental conditions experienced in the Operational Areas, marine diesel is expected to undergo rapid spreading and this, together with evaporative loss, is likely to result in a rapid dissipation of the spill. Marine diesel distillates tend not to form emulsions at the temperatures found in the region.

Table 6-21: Characteristics of marine diesel

Hydrocarbon type	Initial density (g/cm³) at 25 ºC	Viscosity (cP @ 25 ºC)	Component BP (ºC)	Volatiles % <180	Semi volatiles % 180 to 265	Low volatility (%) 265 to 380	Residual (%) >380
				Non-Persistent			Persistent
Marine diesel	0.829	4.0	% of total	6	34.6	54.4	5

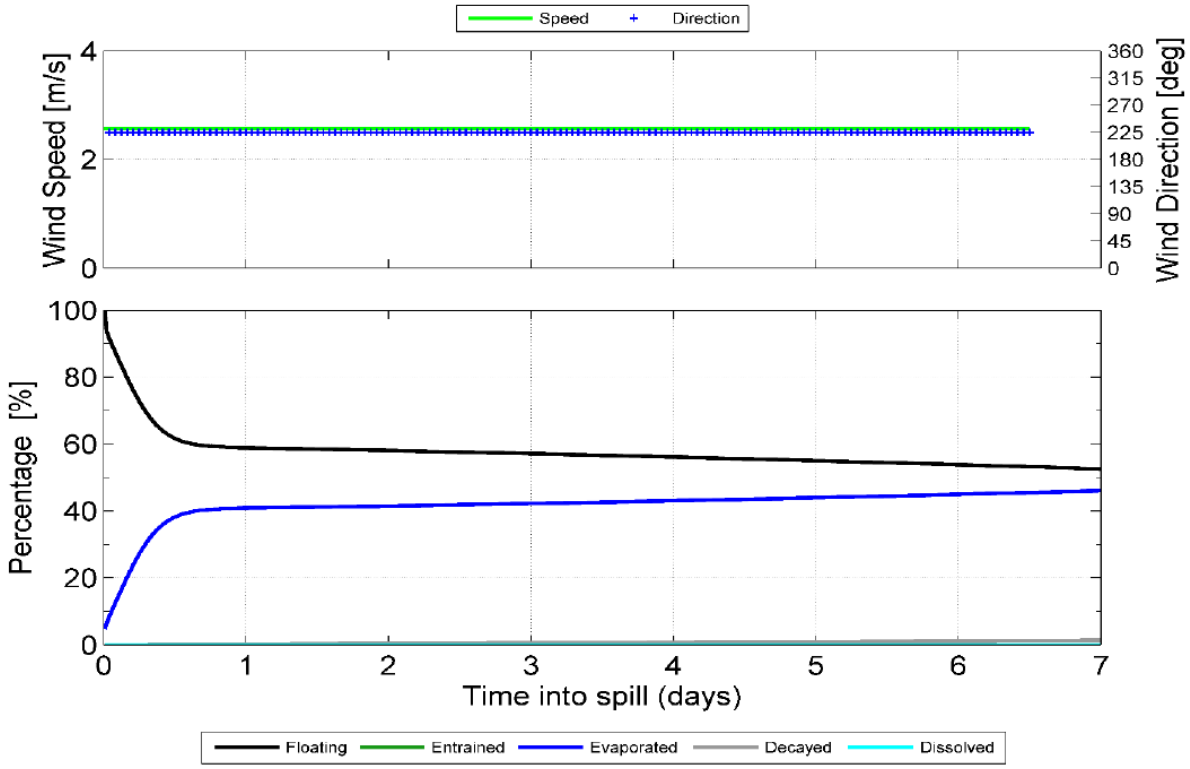

Figure 6-5: Proportional mass balance plot representing the weathering of marine diesel spilled onto the water surface as a one-off release (50 m³) and subject to a constant 5 kn (2.6 m/s) wind at 27 °C water temperature and 25 °C air temperature.

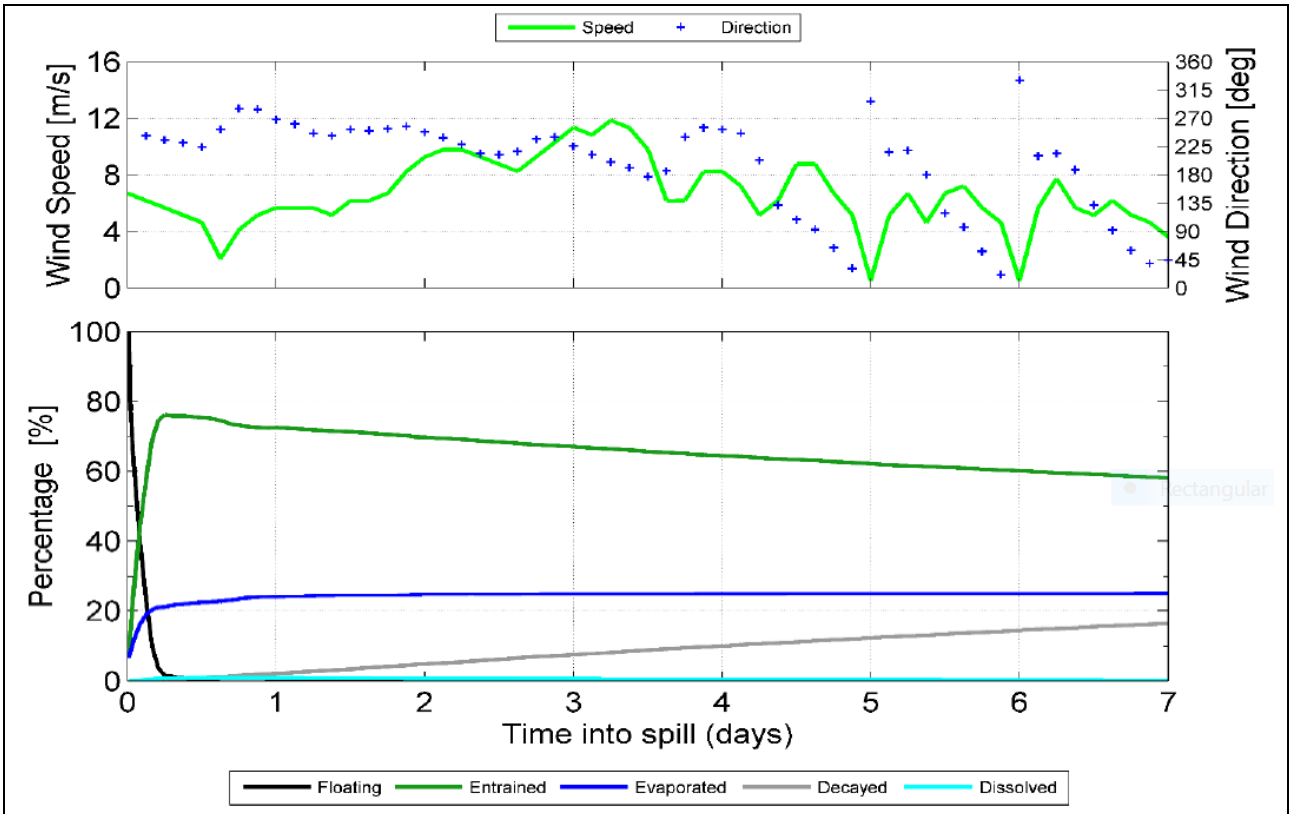

Figure 6-6: Proportional mass balance plot representing weathering of marine diesel spilled onto the water surface as a one-off release (50 m³) and subject to variable wind at 27 °C water temperature and 25 °C air temperature

Source: (RPS, 2022)

Consequence assessment

Environmental value(s) potentially impacted

Environment that may be affected

The socio-cultural and ecological EMBA for the Petroleum Activity is based on stochastic modelling of a short-term (instantaneous) uncontrolled surface release of 500 m³ of marine diesel due to a vessel collision at the AP3 wellhead location (closest wellhead to Glomar Shoals) and was assessed over an annual period. The results of the modelling for the scenario are outlined below, and the extents of the two EMBAs from the modelling have been outlined to quantify the movement and fate of spilled hydrocarbons that would result from accidental, uncontrolled releases; and to investigate the risk to sensitive receptors (emergent features, submerged features and shorelines) posed by the release.

The EMBAs cover a larger area than the area that would be affected during any single spill event and represents the total extent of all the locations where hydrocarbon thresholds could be exceeded from any of the modelling runs. It is important to note that the trajectory of a single spill would have a considerably smaller footprint.

Oil spill modelling was undertaken using a three-dimensional oil spill trajectory and weathering model, SIMAP (Spill Impact Model Application Package), which is designed to simulate the transport, spreading and weathering of specific oil types under the influence of changing meteorological and oceanographic forces. These fates have been outlined below.

Modelling results

Socio-cultural EMBA

Surface hydrocarbons

Quantitative hydrocarbon spill modelling results for surface hydrocarbons are shown in Table 6-22. If this scenario occurred, a surface hydrocarbon slick would form down current of the release location, with the trajectory dependent on prevailing wind and current conditions at the time. A socio-cultural EMBA for surface hydrocarbons which includes the threshold for visible surface hydrocarbons of equal to or greater than 1 g/m² may extend up to about 77 km west from the release site. No receptors are predicted to be contacted at or above the 1 g/m² threshold.

Accumulated hydrocarbons

No receptors are predicted to be contacted by shoreline oil concentrations of equal to or greater than 10 g/m² (Table 6-22).

Ecological EMBA

Surface hydrocarbons

The modelling indicates that the ecological EMBA would be confined to open water, with surface hydrocarbons extending up to about 45 km south-west from the release location of equal to or greater than the 10 g/m² impact threshold (Table 6-22). No receptors are predicted to be contacted at or above the 10 g/m² threshold.

Accumulated hydrocarbons

Accumulated hydrocarbons above threshold concentrations (≥100 g/m²) were not predicted by the modelling to occur at any location and therefore no receptors were detected to be impacted by accumulated hydrocarbons (Table 6-22).

Entrained hydrocarbons

Quantitative hydrocarbon spill modelling results for entrained hydrocarbons are shown in Table 6-22. The modelling indicates that locations exposed to entrained hydrocarbons at concentrations equal to or greater than the 100 ppb threshold is predicted to be found up to 355 km south-west from the spill site. The Montebello AMP is predicted to have a 3% probability of entrained hydrocarbon contact (Table 6-22). The maximum entrained oil concentration forecast is 466 ppb (RPS, 2022). No other receptors are predicted to be contacted at or above the 100 ppb threshold.

Dissolved aromatic hydrocarbons

Dissolved aromatic hydrocarbon concentrations equal to or greater than the 50 ppb threshold are predicted to be found up to around 161 west km from the spill site. The receptors predicted to be impacted by this spill are the Montebello AMP and Glomar Shoal, with a probability of 0.5% (Table 6-22). The maximum dissolved aromatic hydrocarbon concentration forecast for any receptor is predicted to be 77 ppb at Glomar Shoal (RPS, 2022).

Table 6-22: Probability of hydrocarbon spill contact above impact thresholds within the EMBA with key receptor locations and sensitivities for a 500 m³ instantaneous release of marine diesel

Environmental setting	Location/name	Environmental, Social, Cultural, Heritage and Economic Aspects presented as per the Environmental Risk Definitions in Woodside's Risk Management Procedure																									Probability of hydrocarbon contact (diesel) (%) Note: the probability is based on stochastic modelling of 200 hypothetical worst-case spills under a variety of weather and metocean conditions					
		Physical		Biological																			Socio-economic and cultural					Socio-cultural EMBA		Ecological EMBA			
		Water quality	*Sediment quality*	*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 coral 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 (including foraging and internesting areas and significant nesting beaches)	Sea snakes	Whale sharks	Sharks and rays	Sea birds and/or migratory shorebirds	Pelagic fish populations	Resident/demersal fish	Fisheries – commercial	Fisheries – traditional	Tourism and recreation	Protected areas/heritage – European and Indigenous/shipwrecks	Offshore oil & gas infrastructure (topside and subsea)	Surface hydrocarbon (1-10 g/m²)	Accumulated hydrocarbons (10–100 g/m²)	Surface hydrocarbon (≥10 g/m²)	Entrained hydrocarbon (≥100 ppb)	Dissolved aromatic hydrocarbon (≥50 ppb)	Accumulated hydrocarbons (>100 g/m²)
Australian Marine Parks*	Montebello AMP	✓	✓	✓			✓	✓							✓	✓			✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		-	-	-	3	0.5	-
Submerged shoals*	Glomar Shoal[51]	✓	✓	✓			✓	✓		✓					✓	✓			✓	✓	✓	✓	✓	✓	✓	✓		✓		✓	-	-	-	-	0.5	-

[51] *Probabilities and maximum concentrations calculated at depth of submerged feature.*

** Note: hydrocarbons cannot accumulate on open ocean, submerged receptors, or receptors not fully emergent.*

Summary of potential impacts to protected species, other habitats and communities, water quality and socio-economic values

Modelling of a 500 m³ release of marine diesel spill due to vessel collision predicts that no receptors will be contacted by accumulated oil concentrations equal to or greater than 100 g/m² for the ecological EMBA, and no receptors will be contacted by accumulated oil concentrations equal to or greater than 10 g/m² for the socio-cultural EMBA. No receptors will be contacted by surface oil concentrations equal to or greater than 10 g/m² for the ecological EMBA, and no receptors will be contacted by surface oil concentrations equal to or greater than 1 g/m² for the socio-cultural EMBA.

Entrained hydrocarbons equal to or greater than 100 ppb are predicted to have a very low probability of contact with the outer boundaries of the Montebello AMP (3% probability of contact). Dissolved aromatic hydrocarbons equal to or greater than 50 ppb are predicted to have a very low probability of contact with the outer boundaries of the Montebello AMP (0.5% probability of contact) and Glomar Shoal (0.5% probability of contact).

The potential impacts of spilled hydrocarbons to species (protected and otherwise), marine primary producers, other habitats and communities, water quality, marine sediment quality, air quality, protected areas and socio-economic values are described in Section 6.7.2. The loss of well containment EMBA is larger spatially than the vessel collision EMBA; therefore, the potential impacts of entrained hydrocarbons provided in Section 6.7.2, and the scale of impact described, provides a conservative assessment for potential impacts of a 500 m³ release of marine diesel. Impacts specific to a spill of marine diesel are summarised below. It is noted that the toxic components in marine diesel include alkylated naphthalenes which can be rapidly accumulated by marine biota including invertebrates such as marine oysters, clams, shrimp, as well as a range of vertebrates, such as finfish. Marine diesel also contains additives that contribute to its toxicity.

Given the localised area of the potential EMBA and the rapid dispersion, dilution and weathering of a marine diesel spill, it is expected that any potential impacts will be low magnitude and temporary in nature.

Protected species

As identified in Section 4.6.3, protected species including migrating pygmy blue whales and humpback whales may be encountered within the Operational Areas, and therefore could be impacted in close proximity to the marine diesel spill location, where the volatile, water soluble and most toxic components of the diesel may be present. However, the window for exposure to hydrocarbons with the potential for any toxicity effects in these waters would be limited to a few days following the spill. Potential impacts may include behavioural impacts (e.g. avoidance of impacted areas), sub-lethal biological effects (e.g. skin irritation, irritation from ingestion or inhalation, reproductive failure) and, in rare circumstances, organ or neurological damage leading to death. Given the absence of critical habitats or aggregation areas, cetaceans in the area are expected to be transient, and impacts are expected to be limited to individuals or small groups of animals. Impact on the overall population viability of cetaceans are not predicted.

Overlap of the EMBA with habitat critical to the survival of flatback turtles for internesting and BIAs is identified in Section 4.6.3, particularly the internesting BIAs for flatback turtles which extend for ~80 km from known nesting locations. However, it is noted that the BIA and habitat critical to the survival of flatback turtles are considered very conservative as they are based on the maximum range of internesting females and many turtles are more likely to remain near their nesting beaches. No BIAs or habitats critical to the survival of turtles overlap Operational Areas A and B as the Operational Areas are unlikely to represent an important habitat for marine turtles due to the absence of potential nesting or foraging habitat (i.e. no emergent islands, reef habitat or shallow shoals) and the water is deep (~80 m to 128 m). There is one internesting buffer (Montebello Island – Hermite Island, NW Island, Trimouille Island) for flatback turtles that overlaps Operational Area C. In the event of a worst-case vessel spill of MDO, there is a potential that surface and entrained hydrocarbons exceeding impact threshold concentrations (10 g/m² and 100 ppb respectively) will be present in offshore waters extending up to 45 km and 355 km respectively, from the release site. Toxicity of hydrocarbons will be significantly reduced by weathering at over such distances, with the volatile and water soluble (often the most toxic) components expected to have dissipated beyond the vicinity of the spill site. Dissolved aromatic hydrocarbons at concentrations equal to or greater than the 50 ppb threshold are predicted to be limited to the vicinity of the spill site. Low concentrations are only capable of causing sublethal impacts to the most sensitive marine organisms and no lethal or sub-lethal impacts to marine turtles are expected in the BIAs. The potential for lethal and sub-lethal impacts to marine turtles is limited to small numbers of transient individuals that may be present in offshore waters near the release location.

Seabirds may also be exposed to marine diesel on the sea surface or upper water column, if resting or foraging in waters near to the spill. Impacts may include mortality due to oiling of feathers or the ingestion of hydrocarbons. However, due to the limited spatial extent of a marine diesel spill and limited window for exposure, population level impacts are not expected.

Other protected species that may occasionally transit through the area and may potentially be exposed to a marine diesel spill, include shark and ray species such as whale sharks and manta rays. The EMBA overlaps two whale shark foraging BIAs along both the North West Shelf and the Ningaloo coast. Should sharks or rays be present in offshore waters near the Operational Areas during the spill, direct impacts may occur if foraging within surface slicks or in the upper 20 to 30 m of the water column containing entrained hydrocarbons and dissolved aromatics. Contamination of their food supply and the subsequent ingestion of this prey may also result in long term impacts as a result of

bioaccumulation. Impacts are again predicted to be limited to a small number of animals given the low numbers of animals that may transit through the area during the short period when spilled hydrocarbons are present.

Given the limited number of animals that may be impacted and the rapid dispersion of marine diesel, it is considered that any potential impacts will be minor.

Other habitats, species and communities

Within the EMBA for a marine diesel spill resulting from a vessel collision, there is the potential for plankton communities to potentially be impacted where entrained or dissolved hydrocarbon threshold concentrations are exceeded. A range of lethal and sublethal impacts may occur to plankton exposed to entrained or dissolved hydrocarbons within the EMBA. Communities are expected to recover quickly (weeks/months) due to high population turnover (ITOPF, 2011a). It is therefore considered that any potential impacts would be low magnitude and temporary in nature.

Pelagic fish populations in the open water offshore environment of the EMBA are highly mobile and have the ability to move away from a marine diesel spill. The spill-affected area would be confined to the surface layer and upper 20 to 30 m of the water column. It is therefore unlikely that fish populations would be exposed to widespread hydrocarbon contamination. Pelagic fish populations are distributed over a wide geographical area so impacts on populations or species level are considered to be negligible. Combined with these factors and the rapid dispersion of marine diesel, it is considered that any potential impacts will be minor.

Other communities (e.g. demersal fish, benthic infauna and epifauna) and key sensitivities (e.g. KEFs identified in Section 4.7) occur within the EMBA, however they will not be directly exposed or impacted by a marine diesel spill as hydrocarbons are confined to the upper layers of the water column.

Water quality

It is likely that water quality will be reduced at the release location of the spill; however, such impacts to water quality would be temporary and localised in nature due to the rapid dispersion and weathering of marine diesel. The potential impact is therefore expected to be low.

Protected areas

Entrained and dissolved hydrocarbons at or exceeding impact thresholds have a low probability of contacting the outer boundaries of the Montebello AMP. The Glomar Shoal also has a low probability of being affected by dissolved hydrocarbons. Surface and entrained hydrocarbons are mostly only predicted within the deep open waters of these protected areas, with minimal overlap and no contact to seabed habitats or to shorelines above the ecological impact threshold values. Potential impacts to water quality and the natural values (e.g. mobile protected species) in these areas would be temporary and localised in nature due to the rapid dispersion and weathering of the marine diesel, as described above.

Cultural values and heritage

Through consultation and review of available literature (Section 4.9.1), Woodside understands that Sea Country, including marine ecosystems and species, archaeological heritage and heritage sites, marine parks, as well as intangible cultural heritage may be impacted in the event of a hydrocarbon release from a vessel collision. Cultural features and heritage values that have the potential to be impacted include:

- Marine ecosystems and species: Marine ecosystems may hold both cultural and environmental value to Traditional Custodians (see Section 4.9.1), with cultural and environmental values intrinsically linked (DCCEEW 2023a, MAC 2021 as cited in Woodside 2023d). It necessarily follows that an impact to marine ecosystems has the potential to impact cultural features where the impact is detectable within Sea Country—the seascape which Traditional Custodians view, interact with or hold knowledge of. The EMBA is known to include habitat for culturally important species such as whales, whale sharks, turtles, dugongs, plankton, and seagrass (Section 4.9.1.5). In the event of a worst-case release of MDO individual fauna may be directly impacted or impacted through temporary degradation of their habitats, however, no population level impacts are expected. Impacts are not expected to occur to ecologically significant proportions of the populations of the species, nor 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 these species are expected to be maintained.
- Heritage Sites: The EMBA does not overlaps any Registered Aboriginal Heritage Sites (Section 4.9.1.4.1). Any oil that reaches the shoreline has potential to impact on registered sites and indigenous heritage places along the coastline. In the unlikely event of a hydrocarbon release, shoreline accumulation may affect sensitive artefacts or areas, which could damage their heritage value. However, due to the low maximum concentrations predicted to reach any marine park, it is expected their values will be maintained.
- Marine Parks: The EMBA overlaps five AMPs under the North-West Marine Parks Network Management Plan 2018 and six State Marine Parks. Management Plans for these parks recognise cultural values of Indigenous groups (Section 4.9.1.3). Due to the low maximum concentrations predicted to reach any marine park, it is expected their values will be maintained.
- Intangible cultural heritage: Impacts may occur to intangible cultural values such as songlines; creation/dreaming sites, sacred sites, ancestral beings; cultural obligations to care for Country; knowledge of Country/customary law

and transfer of knowledge; connection to Country; Access to Country; kinship systems and totemic species, resource collection. 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). Inter-generational transmission of cultural knowledge (including songlines) relating to marine reptiles may be impacted where changes 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). In the unlikely event of a hydrocarbon release, intangible cultural heritage values may be impacted.

A search of the Australian National Shipwreck Database (Section 4.9.1.7), which records all known Maritime Cultural Heritage (shipwrecks, aircraft, relics and other underwater cultural heritage) in Australian waters, indicated there are several underwater Cultural Heritage sites within the EMBA (refer Table 4-21). Shipwrecks will be exposed to entrained and dissolved hydrocarbons, and 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 all or some of:

- large fish species moving away
- resident fish species and sessile benthos such as hard corals exhibiting sub-lethal and lethal impacts (which may range from physiological issues to mortality).

The Ningaloo Coast World Heritage Place (incl the National and Commonwealth Heritage Places) and the Learmonth Air Weapons Range Facility are located on the very edge of the EMBA (251 km SW and 354 km SW of TPA-03 Operational Area respectively). Given this large distance, it is extremely unlikely a hydrocarbon spill would significantly affect the values of the Ningaloo Coast. The Barrow Island and the Montebello-Barrow Islands Marine Conservation Reserves National Heritage Place is located 67 km SW of the TPA-03 Operational area has a low probability of contact with hydrocarbons and therefore would not significantly affect the natural values of this feature.

Socio-economic

A marine diesel spill is considered unlikely to cause significant direct impacts on the target species fished by Commonwealth and State fisheries (see Section 4.9.2) which overlap with the EMBA. The fisheries that operate within the EMBA predominantly target demersal fish species (demersal finfish and crustaceans) that inhabit waters in the range of >60–200 m depth, or pelagic species which are highly mobile. Therefore, a marine diesel spill is expected to only result in negligible impacts, considering that hydrocarbons are confined to the upper layers of the water column. Visible surface hydrocarbons at or exceeding 1 g/m² may also occur up to 77 km from the release site, which may result in fouling of fishing gear and a perception of impacts to fish stocks by fisheries stakeholders and the public. There is the potential that a fishing exclusion zone would be applied in the area of the spill, which would put a temporary ban on fishing activities and therefore potentially lead to subsequent economic impacts on commercial fishing operators if they were planning to fish within the area of the spill. Such measures would likely be in place for less than a week and would not result in widespread or long-term impacts to fishing activities.

Summary of potential impacts to environmental values

In the unlikely event of an unplanned hydrocarbon release to the marine environment due to vessel collision, combined with the adopted controls, it is considered that any potential impact to water quality would be minor, localised and temporary in nature in comparison to background levels and/or international standards, with localised and temporary impacts to habitats, populations and shipping/fishing concerns.

The highest environmental consequence identified for the assessment of an unplanned hydrocarbon release to the marine environment due to vessel collision, as classified in Table 2-2, is defined as D, which equates to minor, short-term impact (1–2 years) on species, habitat (but not affecting ecosystems), physical or biological attributes.

Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[52]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
Legislation, codes and standards				
Contract vessels compliant with Marine	F: Yes. CS: Minimal cost. Standard practice.	Marine Orders 21, 27 and 30 are required under Australian	Controls based on legislative	Yes **C 1.7**

[52] *Qualitative measure.*

Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[52]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
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.		regulations; implementation is standard practice for commercial vessels as applicable to vessel size, type and class.	requirements – must be adopted.	
In the event of a spill, emergency response activities implemented in accordance with the OPEP (per Table 7-8).	F: Yes. CS: Costs associated with implementing response strategies, vary dependant on nature and scale of spill event. Standard practice.	This control would not reduce the likelihood, but response activities may reduce the consequence.	Benefits outweigh cost/sacrifice.	Yes **C 10.3**
Arrangements supporting the activities in the OPEP (per Table 7-8) will be tested to ensure the OPEP can be implemented as planned.	F: Yes. CS: Moderate costs associated with exercises. Standard practice.	Testing the OPEP activities would not reduce the likelihood, but response activities may reduce the consequence.	Benefits outweigh cost/sacrifice.	Yes **C 10.4**
Establishment of a 500 m safety exclusion zone around MODU /infrastructure removal vessel and communicated to marine users.	F: Yes. CS: Minimal cost. Standard practice.	Legislative requirements to be followed reduce the likelihood of a collision with a third-party vessel.	Controls based on legislative requirements – must be adopted.	Yes **C 11.1**
Good practice				
Support vessel on standby as required during the Petroleum Activity to assist in third-party vessel interactions. When a support vessel is designated for standby it will undertake actions to prevent unplanned interactions, such as: • Maintain a 24-hour radio watch on designated radio channel(s).	F: Yes. CS: Minimal cost – support vessels available routinely in Operational Areas during Petroleum Activity. Standard practice.	Provides a reduction in likelihood of a collision with a third-party vessel.	Benefits outweigh cost/sacrifice.	Yes **C 11.2**

Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[52]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
• Perform continuous surveillance and warn the MODU of any approaching vessels reaching 500 m petroleum safety zone. Surveillance shall be conducted by a combination of: – visual lookout – radar watch – other electronic systems available including AIS – monitoring any additional/agreed radio communications channels – all other means available. • While complying with Convention on the International Regulations for Preventing Collisions at Sea, 1972 (COLREGS), approach any vessel attempting to transit through the 500 m zone and contact vessel by all available means. • Monitor and advise the MODU if: – MODU navigation signals are defective – visibility becomes restricted. • Advise if any buoys in the area are not holding position or are not working as expected.				

Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[52]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
AHO notified of activities and movements no less than four working weeks prior to scheduled activity commencement.	F: Yes. CS: Minimal cost. Standard practice.	Notification to AHO will enable them to generate navigation warnings (Maritime Safety Information Notifications (MSIN) and Notice to Mariners (NTM) (including AUSCOAST warnings where relevant)).	Benefits outweigh cost/sacrifice. Control is standard practice.	Yes **C 1.1**
Notify relevant government departments, fishing industry representative bodies and licence holders of activities three months prior to commencement and upon completion of activities.	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. Control is standard practice.	Yes **C 1.3**
Notify AMSA JRCC of activities where vessels will be in the field >3 weeks, 24 to 48 hrs before activities.	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 a collision with a third-party vessel occurring.	Benefits outweigh cost/sacrifice. Control is standard practice.	Yes **C 1.4**
Notify AHO and AMSA JRCC of any extended delay in the timing of the Petroleum Activity.	F: Yes CS: Minimal cost. Standard practice.	Communicating the Petroleum Activity to other marine users ensures they are informed and aware, thereby reducing the likelihood of interfering with other marine users.	Benefits outweigh cost/sacrifice. Control is standard practice.	Yes **C 1.5**
Mitigation: Oil spill response.	Refer to Appendix G.			
Professional judgement – Eliminate				
Eliminate use of vessels.	F: No. The use of vessels is required to conduct the Petroleum Activity. CS: Not considered – control not feasible.	Not considered – control not feasible.	Not considered – control not feasible.	No
Professional judgement – Substitute				
No additional controls identified.				
Professional judgement – Engineered solution				
No additional controls identified.				

Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[52]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
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 2.2.4.2) and Woodside's criteria for demonstrating ALARP (Section 2.3.1), Woodside considers the adopted controls appropriate to manage potential risks associated with an unplanned loss of hydrocarbon as a result of vessel collision. As no reasonably practicable additional/alternative controls were identified that would further reduce the impacts without disproportionate sacrifice, the risks are considered ALARP.				

Demonstration of acceptability
Acceptability statement: The risk assessment has determined that, given the adopted controls, an unlikely accidental hydrocarbon release as a result of a vessel collision represents a moderate current risk rating and may result in minor, short-term impact (1-2 years) on species, habitat (but not affecting ecosystems function), physical or biological attributes and communities. BIAs within the Operational Areas include flatback turtle internesting buffer, whale shark foraging, and wedge-tailed shearwater breeding. Relevant recovery plans and conservation advice have been considered during the impact assessment, and the Petroleum Activity is not considered to be inconsistent with the overall recovery objectives and actions of these recovery plans and conservation advice. On the basis of the assessment outcomes, use of the relevant tools appropriate to the decision type (i.e. Decision Type A; Section 2.2.4.2) and Woodside's criteria for demonstrating acceptability (Section 2.3.2), 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			
EPO	***Controls***	***PS***	***MC***
EPO 15 No release of hydrocarbons to the marine environment due to a vessel collision associated with the Petroleum Activities Program.	**C 1.1** See Section 6.6.1.	**PS 1.1** See Section 6.6.1.	**MC 1.1.1** See Section 6.6.1.
	C 1.3 See Section 6.6.1.	**PS 1.3** See Section 6.6.1.	**MC 1.3.1** See Section 6.6.1.
	C 1.4 See Section 6.6.1.	**PS 1.4** See Section 6.6.1.	**MC 1.4.1** See Section 6.6.1.
	C 1.5 See Section 6.6.1.	**PS 1.5** See Section 6.6.1.	**MC 1.5.1** See Section 6.6.1.
	C 1.7 See Section 6.6.1.	**PS 1.7** See Section 6.6.1.	**MC 1.7.1** See Section 6.6.1.
	C 10.3 See Section 6.7.2.	**PS 10.3** See Section 6.7.2.	**MC 10.3.1** See Section 6.7.2.
	C 10.4 See Section 6.7.2.	**PS 10.4** See Section 6.7.2.	**MC 10.4.1** See Section 6.7.2.
	C 11.1 Establishment of a 500 m safety exclusion zone around MODU/ infrastructure removal vessel and communicated to marine users.	**PS 11.1** No adverse interactions between vessels and MODU.	**MC 11.1.1** Records demonstrate breaches by unauthorised vessels within the petroleum safety zone are recorded.
			MC 11.1.2

EPOs, EPS and MC			
EPO	***Controls***	***PS***	***MC***
			Consultation records demonstrate that AHO has been notified before commencing the activity to allow generation of navigation warnings (MSIN and NTM (including AUSCOAST warnings where relevant)), which communicate safety exclusion zones to marine users.
	C 11.2 Support vessel on standby as required during the Petroleum Activity to assist in third-party vessel interactions. When a support vessel is designated for standby it will undertake actions to prevent unplanned interactions, such as: • Maintain a 24-hour radio watch on designated radio channel(s). • Perform continuous surveillance and warn the MODU of any approaching vessels reaching the 500 m petroleum safety zone. Surveillance shall be conducted by a combination of: – visual lookout – radar watch – other electronic systems available including AIS – monitoring any additional/ agreed radio communications channels – all other means available. • While complying with COLREGS, approach any vessel attempting to transit through the 500 m zone and contact vessel by all available means.	**PS 11.2** Define role of support vessels in maintaining petroleum safety zone, preventing unplanned third-party vessel interactions, monitoring the effectiveness of navigation controls (e.g. signals), and warning third party vessels of navigation hazards.	**MC 11.2.1** Records of non-conformance against controls maintained.

EPOs, EPS and MC			
EPO	***Controls***	***PS***	***MC***
	• Monitor and advise the MODU if: – MODU navigation signals are defective – visibility becomes restricted. • Advise if any buoys in the area are not holding position or are not working as expected.		
Detailed preparedness and response performance outcomes, standards and measurement criteria for the Petroleum Activity are presented in Appendix G.			

6.7.4 Unplanned hydrocarbon or chemical release: hydrocarbon release during bunkering/refuelling

Context		
Permanent plugging activities – Section 3.11	Physical environment – Section 4.4 Protected species – Section 4.6	Stakeholder consultation – Section 5

Risk evaluation summary

Source of risk	***Environmental value 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
Loss of hydrocarbons (diesel/jet fuel) to marine environment from bunkering/refuelling		X			X		A	E	2	M	LCS GP PJ	Broadly Acceptable	EPO 16

Description of source of risk

Bunkering of marine diesel between the support vessel(s) and the MODU may occur in the Operational Areas. Additionally, refuelling of helicopters using aviation jet fuel may occur onboard the MODU. Other fuel transfers that may occur within the Operational Areas include refuelling of cranes or other equipment as required. There is no planned bunkering of support vessels.

Three 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 200 L, based on the likely volume of a bulk transfer hose (assuming a failure of the dry break coupling and complete loss of hose volume).
- Partial or total failure of a bulk transfer hose or fittings during bunkering, combined with a failure in procedure to shut off fuel pumps, for a period of up to five minutes, could result in about 24 m^3 marine diesel loss to the deck and/or into the marine environment.
- Partial or total failure of a bulk transfer hose or fittings during helicopter refuelling could spill aviation jet fuel to the helicopter deck and/or into the marine environment. All helicopter refuelling activities are closely supervised and leaks on the helideck are considered to be easily detectable. In the event of a leak, transfer would cease immediately. The credible volume of such a release during helicopter refuelling would be in the order of <100 L.

Given the limited volume of the potential release and offshore location no modelling has been undertaken as it is significantly less than 500 m^3 marine diesel scenario presented in Section 6.7.3. Given the physical and chemical similarities, and the relatively small credible spill volumes, marine diesel is considered to be a suitable substitute for aviation jet fuel for the purposes of this environmental risk assessment. Aviation jet fuel would behave similarly to diesel and have similar impacts and, considering small size of spill volumes likely to be contained on the helideck, this has not been modelled.

Likelihood

The likelihood of 2 'Unlikely' corresponds to 'Has occurred many times in the industry but not at Woodside'.

A search of the Woodside spill records indicates that, while there have been smaller releases (less than 30 L) associated with bunkering, there have been no recorded partial or total failures of bulk transfer hose or fittings during bunkering, combined with a failure in procedure to shut off fuel pumps for a period of up to five minutes, resulting in the worst-case credible scenario of an 24 m^3 loss of diesel.

ITOPF Limited (IOTPF) (2018) data reports that for tanker operations during 1970 to 2017, 7% of small (more than seven tonnes) spills occurred during bunkering and 2% of medium (seven to 700 tonnes) spills. While this data is from

the oil tanker industry, it has been used as an indicator of the potential for spills associated with bunkering activities. A risk assessment by AMSA of oil spills in Australian ports and waters (Det Norske Veritas, 2011) identifies transfer spills as a risk.

Hydrocarbon characteristics

Refer to Section 6.7.1 for a description of the characteristics of marine diesel, including detail on the predicted fate and weathering of a spill to the marine environment.

Consequence assessment

Environmental value(s) potentially impacted

A spill at the surface as a result of bunkering activities is likely to be localised with limited potential contact with sensitive receptor locations. Based on the modelling presented in Section 6.7.3 for a larger spill of diesel (500 m^3) any release of diesel during bunkering activities is predicted be restricted to open offshore waters.

Therefore, it is considered that there is no potential for contact with sensitive receptor locations above surface (10 g/m^2), entrained (100 ppb) or dissolved (50 ppb) threshold concentrations from a 24 m^3 spill of marine diesel within the Operational Areas.

Summary of potential impacts to environmental values

The potential biological and ecological impacts associated with much larger hydrocarbon spills are presented in Section 6.7.2 and Section 6.7.3; further detail on impacts specific to a spill of marine diesel from a bunkering loss are provided below.

The biological consequences of such a small volume spill on identified open water sensitive receptors relate to the potential for slight, short-term impacts to megafauna, plankton and fish populations (surface and water column biota) that are within the spill-affected area. No impacts to commercial fisheries are expected. Refer to Section 6.7.2 and Section 6.7.3 for the detailed potential impacts of unplanned hydrocarbon release to the marine environment from a much larger hydrocarbon spill. However, the extent of the EMBA associated with a marine diesel spill from loss during bunkering will be much reduced in terms of spatial and temporal scales; hence, potential impacts from bunkering are considered slight.

Demonstration of ALARP

Control considered	*Control feasibility (F) and cost/sacrifice (CS)*[53]	*Benefit in impact/risk reduction*	*Proportionality*	*Control adopted*
Legislation, codes and standards				
Marine Order 91 (Marine pollution prevention – oil) 2014, requires Ship Oil Pollution Emergency Plan (SOPEP)/Spill Monitoring Programme Execution Plan (SMPEP) (as appropriate to vessel class).	F: Yes. CS: Minimal cost. Standard practice.	By ensuring a SOPEP/SMPEP is in place for the vessel, the likelihood of a spill entering the marine environment is reduced. Although no significant reduction in consequence could result, the overall risk is reduced.	Controls based on legislative requirements – must be adopted.	Yes **C 12.1**
Good practice				
Bunkering equipment controls: • All hoses that have a potential environmental risk following damage or failure shall be linked to the	F: Yes. CS: Minimal cost. Standard practice.	Reduces the likelihood of a spill occurring. Although no significant reduction in consequence could result, the overall risk is reduced.	Benefits outweigh cost/sacrifice.	Yes **C 12.2**

[53] *Qualitative measure.*

Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[53]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
MODU's preventative maintenance system. • All bulk transfer hoses shall be tested for integrity before use (tested in accordance with Original Equipment Manufacturer recommendations) and re-certified annually as a minimum. • There shall be dry-break couplings and flotation on fuel hoses. • There shall be an adequate number of appropriately stocked, located and maintained spill kits.				
Contractor procedures include requirements to be implemented during bunkering/refuelling operations, including: • A completed PTW and/or Job Safety Assessment (JSA) shall be implemented for the hydrocarbon bunkering/refuelling operation. • Visual monitoring of gauges, hoses, fittings and the sea surface during the operation. • Hose checks prior to commencement. • Bunkering/refuelling will commence in daylight hours. If the transfer is to continue into darkness, the JSA risk assessment must consider lighting and the ability to determine	F: Yes. CS: Minimal cost. Standard practice.	Reduces the likelihood of a spill occurring. Although no significant reduction in consequence could result, the overall risk is reduced.	Benefits outweigh cost/sacrifice.	Yes **C 12.3**

Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[53]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
if a spill has occurred. • Hydrocarbons shall not be transferred in marginal weather conditions.				
Mitigation: Oil spill response.	Refer to Appendix G.			
Professional judgement – Eliminate				
No refuelling of helicopter on MODU.	F: No. Given the distance of the Operational Areas from the airports suitable for helicopter operations, and the endurance of available helicopters, eliminating helicopter refuelling is not feasible. Helicopter flights cannot be eliminated and may be required in emergency situations. CS: Not assessed, control cannot feasibly be implemented.	Not considered – control not feasible.	Not considered – control not feasible.	No
The MODU/brought into port to refuel.	F: No. Does not eliminate the fuel transfer risk. It is not operationally practical to transit MODU back to port for refuelling, based on the frequency of the refuelling requirements and distance from the nearest port (Dampier approximately 123 km south of Operational Area B). CS: Significant due to schedule delay and vessel transit costs and day rates.	Eliminates the risk in the Operational Areas. However, moves risk to another location. Therefore, no overall benefit.	Disproportionate. The cost/sacrifice outweighs the benefit.	No
Professional judgement – Substitute				
No additional controls identified.				
Professional judgement – Engineered solution				
No additional controls identified.				

Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[53]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
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 2.2.4.2) and Woodside's criteria for demonstrating ALARP (Section 2.3.1), Woodside considers the adopted controls appropriate to manage potential risks associated with a bunkering spill. As no reasonably practicable additional/alternative controls were identified that would further reduce the impacts without disproportionate sacrifice, the risks are considered ALARP.				

Demonstration of acceptability
Acceptability statement: The risk assessment has determined that, given the adopted controls, loss of hydrocarbons to the marine environment during bunkering represents an unlikely moderate risk rating may result in slight, short-term impacts (<1 year) on species, habitat (but not affecting ecosystems function) or biological attributes. Relevant management plans and species recovery plans and conservation advice have been considered during the impact assessment and given the adopted controls, the Petroleum Activity is not considered to be inconsistent with the overall objectives and actions of these plans. On the basis of the assessment outcomes, use of the relevant tools appropriate to the decision type (i.e. Decision Type A; Section 2.2.4.2) and Woodside's criteria for demonstrating acceptability (Section 2.3.2), 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			
EPO	***Controls***	***PS***	***MC***
EPO 16 No release of hydrocarbons or chemicals to the marine environment from MODU and vessels during bunkering activities	**C 12.1** Marine Order 91 (Marine pollution prevention – oil) 2014, requires SOPEP/SMPEP (as appropriate to vessel class).	**PS 12.1** Appropriate initial responses prearranged and exercised for response to a hydrocarbon spill, as appropriate to vessel class.	**MC 12.1.1** Marine Assurance inspection records demonstrate compliance with Marine Order 91.
	C 12.2 Bunkering equipment controls: All hoses that have a potential environmental risk following damage or failure shall be placed on the MODU's preventative maintenance system. All bulk transfer hoses shall be tested for integrity before use (tested in accordance with Original Equipment Manufacturer recommendations) and re-certified annually as a minimum. There shall be dry- break couplings and flotation on fuel hoses. There shall be an adequate number of appropriately stocked, located and maintained spill kits.	**PS 12.2.1** Equipment identified as having integrity damage is replaced prior to failure.	**MC 12.2.1** Records confirm presence of dry break of couplings and flotation on fuel hoses.
		PS 12.2.2 Bunkering equipment controls employed during bunkering.	**MC 12.2.2** Records confirm presence of dry break of couplings and flotation on fuel hoses.
		PS 12.2.3 Spill kits available in the event of a spill during bunkering.	**MC 12.2.3** Records confirm presence of spill kits.
	C 12.3 Contractor procedures include requirements to be implemented during bunkering/refuelling operations, including: • Implement a completed PTW and/or JSA for the hydrocarbon bunkering/refuelling operation. • Visually monitor gauges, hoses, fittings and the sea surface during the operation. • Check hoses prior to commencement. • Commence bunkering/ refuelling in daylight hours. If the transfer is to continue into darkness, the JSA risk	**PS 12.3** Comply with Contractor procedures for managing bunkering/helicopter operations.	**MC 12.3.1** Records demonstrate bunkering/refuelling performed in accordance with contractor bunkering procedures.

EPOs, EPS and MC			
EPO	***Controls***	***PS***	***MC***
	assessment must consider lighting and the ability to determine if a spill has occurred. • Do not transfer hydrocarbons in marginal weather conditions.		
Detailed oil spill preparedness and response performance outcomes, standards and MC for the Petroleum Activity are presented in Appendix G.			

6.7.5 Unplanned discharges: drilling and well fluids

Context		
Project vessels – Section 3.5	Physical environment – Section 4.4 Habitats and biological communities – Section 4.5 Protected species – Section 4.6	Stakeholder consultation – Section 5

Risk evaluation summary

Source of risk	***Environmental value 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 WBM or NWBM to marine environment due to failure of slip joint packers, bulk transfer hose/fitting, emergency disconnect system or from routine MODU operations	X	X		X	X		A	E	2	M	LCS GP PJ	Broadly Acceptable	EPO 17

Description of source of risk

Drilling fluids – transfers

A support vessel will bulk transfer WBM and brine to the MODU, if and when required. Failure of a transfer hose or fittings during a transfer or backload, as a result of an integrity or fatigue issue, could result in a spill of mud or base oil to either the bunded deck or into the marine environment.

The most likely spill volume of mud is likely to be less than 0.2 m³, 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 m³ of mud being discharged. This scenario represents a complete failure of the bulk transfer hose combined with a failure to follow procedures, requiring transfer activities to be monitored, coupled with a failure to immediately shut off pumps (e.g. mud pumped through a failed transfer hose for a period of about five minutes).

Drilling fluids – slip joint packer failure

The slip joint packer enables compensation for the dynamic movement of the MODU (heave) in relation to the static location of the BOP. A partial or total failure of the slip joint packer could result in a loss of mud to the marine environment. The likely causes of this failure include a loss of pressure in the pneumatic (primary) system combined with loss of pressure in the back-up (hydraulic) system.

Catastrophic sequential failure of both slip joint packers (pneumatic and hydraulic) would trigger the alarm and result in a loss of the volume of fluid above the slip joint (conservatively 1.5 m³), plus the volume of fluid lost in the one minute (maximum) taken to shut down the pumps. At a flow rate of 3.8 m³ per minute, this volume would equate to an additional 3.8 m³. In total, it is expected that this catastrophic failure would result in a loss of 5.3 m³.

Failure of either of the slip joint packers at a rate not large enough to trigger the alarms could result in an undetected loss of 20 bbl (3 m³) maximum, assuming a loss rate of 10 bbl/hr and that MODU personnel would likely walk past the moon pool at least every two hours.

Loss of a drilling chemical container or drum during transfer from the supply vessel to the MODU may occur due to crane operator error or machinery failure. The maximum container that could be lost is an intermediate Bulk Container (IBC) which can hold 1 m³ of chemicals. In the event that an IBC or drum is lost to the marine environment and cannot be recovered the contents will discharge, either immediately or over a period depending on the damage to the drum or container.

B-Annulus NWBM

The removal of B-Annulus NWBM is required to achieve full decommissioning of the wells. Predicted weathering of base oil, based on typical conditions in the region, indicates that about 50% by mass is predicted to evaporate over the first day or two (refer to Table 6-23). At this time, most of the remainder could be entrained into the water column. In calm conditions, entrained hydrocarbons are likely to resurface with up to 100% able to evaporate over time.

Table 6-23: Characteristics of a common non-water-based mud base oil

Oil type	*Initial density (kg/m³)*	*Viscosity (cP @ 20 °C)*	*Volatiles (%) <180*	*Semi volatiles (%) 180–265*	*Low volatility (%) 265–380*	*Residual (%) >380*	*Aromatic (%) of whole oil <380 °C BP*
			Non-Persistent		*Persistent*		
Base oil (e.g. Saraline 185V)*	0.7760	2.0 @ 40 °C	8.5	41.1	50.4	0	0

** Saraline 185V has been provided as a reference point only.*

Consequence assessment

Environmental value(s) potentially impacted

NWBM is made up of a number of components detailed in Section 3.15, including base oil, which generally has a high-volatile to semi-volatile fraction. If released to the marine environment at surface, the base oil generally evaporates within the first 48 hours, with the remaining fraction weathering at a slower rate. The worst-case scenario for NWBM being discharged at the surface results from a slip joint packer failure at surface. As a result of volatility of NWBM, combined with the approximate credible volume of 5.3 m³, and based on Woodside's experience of modelling base oil, it is considered there would be an extremely small footprint area associated with any release. Any surface oil would be confined to open waters, with a minor surface slick that would not reach any sensitive receptors. Therefore, impacts on water quality would be minor and temporary in nature.

The material safety datasheet for Saraline 185V indicates it is readily biodegradable, non-toxic in the water column and has low sediment toxicity (Shell, 2014). Marine fauna may be affected if they come in direct contact with a release (i.e. by traversing near the surface of the immediate spill area), but due to the small footprint of such a spill, it is anticipated that any impacts would be slight and temporary in nature.

NWBM may also be discharged to the seabed surrounding the well site during an emergency disconnect sequence (EDS) event. The footprint associated with releasing NWBM from the activation of the EDS would be small and limited to deeper water seabed surrounding the well site (the release point). The environmental consequence of such a release would include a highly localised area at the discharge location. It is expected the weight of NWBM would result in most of the release settling to the seabed and/or remaining at depth within the water column. Impacts to the underlying infauna may occur but are considered unlikely and, if lethal impacts are observed, they would be limited in extent and recolonisation would occur over time. Elevated hydrocarbon and metal concentrations in the localised area of deposition would also occur, with reduction over time. It is likely that any impacts to water and sediment quality and low-sensitivity deeper water benthos would be slight, short-term, and a full recovery expected.

WBM is made up of the components detailed in Section 3.15, including a variety of chemicals with low toxicity, incorporated into the selected drilling fluid system to meet specific technical requirements. If released to the marine environment at the surface, there would be an extremely small impact footprint area. Any release would be confined to the open waters of the Operational Areas that would not reach any sensitive receptors. Components of the WBM would settle in the water column and be subject to dilution. Given the low toxicity of WBM, any impacts on water quality from unplanned discharges would be slight and short-term.

Demonstration of ALARP

Control considered	*Control feasibility (F) and cost/sacrifice (CS)*[54]	*Benefit in impact/risk reduction*	*Proportionality*	*Control adopted*
Legislation, codes and standards				

54 Qualitative measure.

Marine Order 91 – Marine pollution prevention – oil (as appropriate to vessel class).	F: Yes. CS: Minimal cost. Standard practice.	Legislative requirements to be followed reduce the likelihood of an unplanned release. The consequence is unchanged.	Controls based on legislative requirements – must be adopted.	Yes **C 12.1**
Where there is potential for loss of primary containment of oil and chemicals on the project vessels, deck drainage must be collected via a deck drainage water management system.	F: Yes. CS: Minimal cost. Standard practice.	Reduces the likelihood of contaminated deck drainage water being discharged to the marine environment. No change in consequence would occur.	Benefits outweigh cost/sacrifice.	Yes **C 6.3**
Marine riser's telescopic joint to be: • comprised of a minimum of two packers (one hydraulic and one pneumatic) • pressure tested in accordance with manufacturer's recommendations.	F: Yes. CS: Minimal cost. Standard practice.	Reduces the likelihood of equipment failure leading to an unplanned release of drilling fluids. Although the consequence of an unplanned release would be reduced, the reduction in likelihood reduces the overall risk providing an overall environmental benefit.	Benefits outweigh cost/sacrifice.	Yes **C 13.1**
Good practice				
Fluids, flocculant and additives intended or likely to be discharged to the marine environment will have an environmental assessment completed before use.	F: Yes. CS: Minimal cost. Standard practice.	Reduces the consequence of impacts resulting from discharges to the marine environment by ensuring chemicals have been assessed for environmental acceptability. Planned discharges are required for safely executing activities; therefore, no reduction in likelihood can occur.	Benefits outweigh cost/sacrifice.	Yes **C 7.1**
Six-monthly chemical reviews will be performed on all previously approved chemicals to confirm potential chemical impacts are reduced to ALARP.	F: Yes. CS: Minimal cost. Standard practice.	Reviews will ensure chemicals selected for drilling and completions fluids remain ALARP.	Benefits outweigh cost/sacrifice.	Yes **C 7.2**
Contractor procedure for managing drilling fluids transfers onto, around and off the MODU, which requires: • emergency shutdown systems for stopping losses	F: Yes. CS: Minimal cost. Standard practice for Woodside to review contractor systems prior to performing activity.	Reduces the likelihood of an unplanned release occurring. Although no change in consequence would occur, the reduction in likelihood decreases the overall risk,	Benefits outweigh cost/sacrifice.	Yes **C 13.2**

of containment (e.g. burst hoses) • transfer hoses to have flotation devised to allow detection of a leak • the valve line-up to be checked prior to commencing mud transfers • constant monitoring of the transfer process • direct radio communications • completed PTW and JSA showing contractor procedures are implemented • recording and verification of volumes moved to identify any losses • mud pit dump valves will be locked closed when not in use for mud transfers and operated under a PTW.		providing environmental benefit.		
Check the functionality of: • additional SCE (augers and cuttings dryers) • mud tanks • mud tank room • transfer hoses.	F: Yes. CS: Minimal cost. Standard practice.	Reduces the likelihood of an event occurring and reduces the potential consequences (by limiting volume released).	Benefits outweigh cost/sacrifice.	Yes **C 13.3**
Professional judgement – Eliminate				
No additional controls identified.				
Professional judgement – Substitute				
Only use WBM.	F: Not feasible. Removal of NWBM from the B-annuli is required to achieve permanent abandonment of the wells. CS: Not considered – control not feasible.	Not considered – control not feasible.	Not considered – control not feasible.	No
Professional judgement – Engineered solution				
Use a MODU that may have a larger tank storage capacity for WBM. As such, there	F: Not feasible. The use of a MODU with greater storage	Not considered – control not feasible.	Not considered – control not feasible.	No

would be fewer bulk transfer movements.	capacity cannot be confirmed. CS: Significant cost and schedule delay would occur if the MODU was limited to greater storage capacity.			

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 2.2.4.2) and Woodside's criteria for demonstrating ALARP (Section 2.3.1), Woodside considers the adopted controls appropriate to manage potential risks associated with accidental discharge of drilling fluids. As no reasonably practicable additional/alternative controls were identified that would further reduce the impacts without disproportionate sacrifice, the risks are considered ALARP.

Demonstration of acceptability

Acceptability statement:

The risk assessment has determined that, given the adopted controls, an unplanned discharge of drilling fluids represents a moderate current risk rating and may result in slight, short-term impacts (>1 year) on species, habitat (but not affecting ecosystems function) or biological attributes. BIAs within the Operational Areas include whale shark foraging, flatback turtle internesting buffer, and wedge-tailed shearwater breeding. However, these species are not expected to be impacted.

On the basis of the assessment outcomes, use of the relevant tools appropriate to the decision type (i.e. Decision Type A; Section 2.2.4.2) and Woodside's criteria for demonstrating acceptability (Section 2.3.2), 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

EPO	***Controls***	***PS***	***MC***
EPO 17 No release of WBM, NWBM or base oil to the marine environment from MODU.	**C 6.3** See Section 6.6.6.	**PS 6.3** See Section 6.6.6.	**MC 6.3.1** See Section 6.6.6.
	C 7.1 See Section 6.6.7.	**PS 7.1** See Section 6.6.7.	**MC 7.1.1** See Section 6.6.7.
	C 7.2 See Section 6.6.7.	**PS 7.2** See Section 6.6.7.	**MC 7.2.1** See Section 6.6.7.
	C 12.1 See Section 6.7.4.	**PS 12.1** See Section 6.7.4.	**MC 12.1.1** See Section 6.7.4.
	C 13.1 Marine riser's telescopic joint to be: • comprised of a minimum of two packers (one hydraulic and one pneumatic) • pressure tested in accordance with manufacturer's recommendations.	**PS 13.1** MODU's joint packer designed and maintained to reduce hydrocarbons discharged to the environment.	**MC 13.1.1** Records demonstrate that MODU's joint packer is compliant.
	C 13.2 Contractor procedure for managing drilling fluids transfers onto, around and off the MODU, which requires:	**PS 13.2** Compliance with contractor procedures to limit accidental loss to the marine environment.	**MC 13.2.1** Records demonstrate drilling fluid transfers are performed in accordance with the applicable contractor procedures.

	• emergency shutdown systems for stopping losses of containment (e.g. burst hoses) • transfer hoses to have flotation devised to allow detection of a leak • the valve line-up to be checked before commencing mud transfers • constant monitoring of the transfer process • direct radio communications completed PTW and JSA showing contractor procedures are implemented • recording and verification of volumes moved to identify any losses • mud pit dump valves to be locked closed when not in use for mud transfers and operated under a PTW.		
	C 13.3 Check the functionality of: • SCE (augers and cuttings dryer) • mud tanks • mud tank room • transfer hoses.	**PS 13.3** Functionality checks on mud handling equipment prevents unacceptable use or discharge of WBM.	**MC 13.3.1** Records demonstrate the presence and functionality of the specified equipment.

6.7.6 Unplanned discharges: hydrocarbon and chemical spills from vessel and subsea activities

Context		
Project fluids – Section 3.15 Project vessels – Section 3.5	Physical environment – Section 4.4 Habitats and biological communities – Section 4.5 Protected species – Section 4.6	Stakeholder consultation – Section 5

Risk evaluation summary

Source of risk	***Environmental value 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 hydrocarbons/ chemicals from MODU and project vessels deck activities and equipment (e.g. cranes) and from subsea ROV hydraulic leaks within the Operational Areas		X		X	X		A	F	2	L	LCS GP PJ	Broadly Acceptable	EPO 18, 19

Description of source of risk

Vessel, MODU and ROV operations

Deck spills can result from spills from stored hydrocarbons/chemicals or equipment. Project vessels typically store hydrocarbon/chemicals in various volumes (20 L, 205 L; up to approximately 4000–6000 L). Storage areas are typically set up with effective primary and secondary bunding to contain any deck spills. Releases from equipment are predominantly from the failure of hydraulic hoses, which can either be located within bunded areas or outside of bunded or deck areas (e.g. over water on cranes). Helicopter refuelling may also take place within the Operational Areas, on the helipad of the MODU and project vessels.

Chemicals that will be used and may be accidentally released include:

- non-process chemicals (maintenance and cleaning chemicals)
- non-process hydrocarbons - i.e. hydraulic fluids used in machinery (including cranes, winches, ROVs), small volumes of fuel.

Non-process chemicals

Non-process chemicals, such as wash chemicals, cleaning chemicals, maintenance and solvents, are generally held onboard in low quantities (typically <50 L containers) and are located within chemical cabinets or bunded storage areas on the project vessels and MODU. Non-process chemical spills may result from human error or damage to a chemical container during handling. Spills are generally captured by the drain system and routed to a holding tank for treatment or disposal onshore. In the event that a spill is not contained on deck or within a bunded area, there would be a release to the marine environment of up to 50 L.

Non-process hydrocarbons

Woodside's operational experience demonstrates that spills are most likely to originate from hydraulic hoses and have been less than 100 L, with an average volume <10 L.

Non-process hydrocarbons (hydraulic fluids) are used in hydraulic-powered machinery, such as winches, cranes and ROVs, and are hydrocarbon-based with added chemical component additives. Unplanned discharges are predominantly due to failure of hydraulic hoses or minor leaks from process components, or spills during periodic refuelling of hydraulic hoses. Spills or leaks from hydraulic hoses are usually very small volumes (~1 L) and are typically contained within a bunded or drained area under the equipment mounted on deck. These small on-deck spills are unlikely to reach the marine environment. A burst hydraulic hose on an extended crane could potentially result in

hydraulic fluid being sprayed in a fine jet out over the water. However, this would only result in a small volume (~25 L) being released, due to the small capacity of hydraulic hoses.

Subsea spills can result from a loss of containment of fluids from subsea equipment including the BOP, WOCS/WORS, or ROVs. A review of these spills to the marine environment in the past 12 months showed subsea spills did not exceed approximately 26 L in Woodside's Drilling function.

The ROV hydraulic fluid is supplied through hoses containing approximately 20 L of fluid. Hydraulic lines to the ROV arms and other tooling may become caught resulting in minor leaks to the marine environment. Small volume hydraulic leaks may occur from equipment operating via hydraulic controls subsea (subsea control fluid). These include the diamond wire cutter, bolt tensioning equipment, ROV tooling etc.

Hydraulic fluids are medium oils of light to moderate viscosity. They have a relatively rapid spreading rate and will dissipate quickly, particularly in high sea states. Lubricating oils may also be held onboard, typically stored with the non process chemicals and held in low quantities. These hydrocarbons are more viscous, so in the event of an unplanned discharge, the spreading rate of a slick of these oils would be slightly slower.

Woodside's operational experience demonstrates that spills are most likely to originate from hydraulic hoses and have been less than 100 L, with an average volume <10 L.

Wireline activities

Minor leaks during wireline activities (i.e. P&A activities) with a live well are described to include leaks such as:

- leaks from the lubricator, stuffing box and hose or fitting failure, which are expected to be less than 10 L (0.01 m^3)
- loss of containment – fluids – surface holding tanks
- back loading of raw slop fluids in an intermediate bulk container (IBC)
- stuffing box leak/under pressure
- draining of lubricator contents
- excess grease/lubricant leaking from the grease injection head
- wind-blown lubricant dripping from cable/on deck
- lubricant used to lubricate hole.

Consequence assessment

Environmental value(s) potentially impacted

Water quality

Change in water quality

Unplanned discharges of non-process chemicals and hydrocarbons from the MODU and project vessels will decrease the water quality in the immediate vicinity of the release; however, the impacts are expected to be temporary and very localised due to dispersion and dilution in the open ocean environment.

Given the occasional nature of unplanned chemical discharge, the small volumes, and the offshore location of the Operational Areas, the change to water quality resulting from unplanned discharge of chemicals will not be substantial. The consequence of a release of hydrocarbons/chemicals on water quality assessed as having no lasting effect (F).

Marine fauna

Injury or mortality to marine fauna

As a result of a change in water quality, further impacts to receptors may occur, which include injury or mortality to marine fauna resulting from exposure to toxins in the released chemicals/hydrocarbons. Given that surface discharges are rapidly dispersed, and subsea discharges (from ROVs) would be of very small volumes, potential impacts would be highly localised and temporary.

The potential biological and ecological impacts associated with hydrocarbon spills are presented in Sections 6.7.2 to 6.7.4 and impacts from minor chemical spills are described in Sections 6.7.5 and 6.7.6. A minor loss of hydrocarbons from deck and subsea spills will be much reduced in terms of spatial and temporal scales from impacts described in Sections 6.7.2 to 6.7.4. Given the small area of the potential spill and the dilution and weathering of any spill, the likelihood of ecological impacts to marine fauna (including protected species), other communities and habitats will be limited to no lasting effect and restricted to individual animals.

Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[55]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
Legislation, codes and standards				
Marine Order 91 (marine pollution prevention – oil) 2014, requires Shipboard Oil Pollution Emergency Plan (SOPEP) (as appropriate to vessel class).	F: Yes. CS: Minimal cost. Standard practice.	Legislative requirements to be followed reduce the likelihood of an unplanned release. The consequence is unchanged.	Controls based on legislative requirements – must be adopted.	Yes **C 12.1**
Liquid chemical and fuel storage areas are bunded or secondarily contained when they are not being handled/moved temporarily.	F: Yes. CS: Minimal cost. Standard practice.	Reduces the likelihood of contaminated deck drainage water being discharged to the marine environment.	Controls based on legislative requirements – must be adopted.	Yes **C 14.1**
Good practice				
Where there is potential for loss of primary containment of oil and chemicals on the MODU, deck drainage will be collected via a closed drainage system. E.g. drill floor.	F: Yes. CS: Minimal cost. Standard practice.	Reduces the likelihood of contaminated deck drainage water being discharged to the marine environment.	Benefits outweigh cost/sacrifice.	Yes **C 6.3**
Fluids, flocculants and additives intended or likely to be discharged to the marine environment will have an environmental assessment completed before use.	F: Yes. CS: Minimal cost. Standard practice	Environmental assessment of chemicals will reduce the consequence of impacts resulting from discharges to the marine environment by ensuring chemicals have been assessed for environmental acceptability. Planned discharges are required for the safe execution of activities and therefore no reduction in likelihood can occur.	Benefits outweigh cost/sacrifice.	Yes **C 7.1**
Spill kits positioned in high-risk locations around the MODU and Project vessels (near potential spill points such as transfer stations).	F: Yes. CS: Minimal cost. Standard practice.	Reduces the likelihood of a deck spill from entering the marine environment. The consequence is unchanged.	Benefits outweigh cost/sacrifice.	Yes **C 14.2**
MODU and project vessels have self-	F: Yes.	Requirements for self-containing	Benefits outweigh cost/sacrifice.	Yes **C 14.3**

[55] *Qualitative measure.*

Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[55]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
containing hydraulic oil drip tray management system.	CS: Minimal cost. Standard practice	hydraulic oil drip tray management system would reduce the likelihood of contaminants being discharged to the marine environment. No change in consequence would occur.		
Professional judgement – Eliminate				
No additional controls identified.				
Professional judgement – Substitute				
No additional controls identified.				
Professional judgement – Engineered solution				
Below-deck storage of all hydrocarbons and chemicals.	F: No. During operations there is a need to keep small volumes near activities and within equipment requiring use of hydrocarbons and chemicals and can result in increased risk of leaks from transfers via hose or smaller containers. CS: Not considered – control not feasible.	Not considered – control not feasible.	Not considered – control not feasible.	No
A reduction in the volumes of chemicals and hydrocarbons stored onboard the MODU/vessels.	F: Yes. Increases the risks associated with transportation and lifting operations. CS: Volumes of required chemicals for survey activities are already very small in scale. Onboard storage is less risky, costly and time consuming than associated transport and lifting operations from a supply vessel to project vessel.	No reduction in likelihood or consequence since chemicals will still be required to enable activities to occur.	Disproportionate. The cost/sacrifice outweigh the benefit gained.	No
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 2.2.4.2) and Woodside's criteria for demonstrating ALARP (Section 2.3.1), Woodside considers the adopted controls appropriate to manage potential risks associated with potential unplanned deck and subsea spills described above. As no reasonably practicable additional/alternative controls were identified that would further reduce the impacts without disproportionate sacrifice, the risks are considered ALARP.				

Demonstration of acceptability
Acceptability statement: The impact assessment has determined that, given the adopted controls, an unplanned minor discharge of hydrocarbons and chemicals as a result of minor deck and subsea spills represents a low risk that may result in negligible, localised impacts (<1 month) to species, habitat (but not affecting ecosystem function), physical or biological attributes. BIAs within the Operational Areas include flatback turtle internesting buffer, whale shark foraging, and wedge-tailed shearwater breeding. However, these species are not expected to be impacted. On the basis of the assessment outcomes, use of the relevant tools appropriate to the decision type (i.e. Decision Type A; Section 2.2.4.2) and Woodside's criteria for demonstrating acceptability (Section 2.3.2), Woodside considers the adopted controls appropriate to manage the impacts 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			
EPO	***Controls***	***PS***	***MC***
EPO 18 Undertake the Petroleum Activity in a manner that does not result in a substantial change in water quality which may adversely impact on biodiversity, ecological integrity, social amenity or human health. **EPO 19** No release of hydrocarbons or chemical spills to the marine environment from vessel and subsea activities.	**C 6.3** See Section 6.6.6.	**PS 6.3** See Section 6.6.6.	**MC 6.3.1** See Section 6.6.6.
	C 7.1 See Section 6.6.7.	**PS 7.1** See Section 6.6.7.	**MC 7.1.1** See Section 6.6.7.
	C 12.1 See Section 6.7.4.	**PS 12.1** See Section 6.7.4.	**MC 12.1.1** See Section 6.7.4.
	C 14.1 Liquid chemical and fuel storage areas are bunded or secondarily contained when they are not being handled/ moved temporarily.	**PS 14.1** Failure of primary containment in storage areas does not result in loss to the marine environment.	**MC 14.1.1** Environmental inspection records confirm all liquid chemicals and fuel are stored in bunded/ secondarily contained areas when not being handled/moved temporarily.
	C 14.2 Spill kits positioned in high-risk locations around the rig (near potential spill points such as transfer stations).	**PS 14.2** Spill kits to be available for use to clean up deck spills.	**MC 14.2.1** Records confirms spill kits are present, maintained and suitably stocked.
	C 14.3 Project vessels have self-containing hydraulic oil drip tray management system.	**PS 14.3** Contain any on-deck spills of hydraulic oil.	**MC 14.3.1** Records demonstrate project vessels are equipped with a self-containing hydraulic oil drip tray management system.
Detailed preparedness and response performance outcomes, standards and measurement criteria for the Petroleum Activity are presented in Appendix G.			

6.7.7 Physical presence: interaction with marine fauna

Context		
Project vessels – Section 3.5	Protected species – Section 4.6 Socio-economic environment – Section 4.9	Stakeholder consultation – Section 5

Risk evaluation summary

Source of risk	***Environmental value 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 collision between project vessels/MODU and protected marine fauna within the Operational Areas					X		A	F	1	L	LCS GP PJ	Broadly Acceptable	EPO 20, 21

Description of source of risk

The MODU and project vessels operating in and around the Operational Areas may present a potential hazard to cetaceans (e.g. humpback whales) and other protected marine fauna, such as marine turtles and whale sharks. Vessel movements can result in collisions between the vessel (hull and propellers) and marine fauna, potentially resulting in superficial injury, serious injury that may affect life functions (e.g. movement and reproduction) and mortality.

The factors that contribute to the frequency and severity of impacts due to collisions vary greatly due to vessel type, vessel operation (specific activity, speed), physical environment (e.g. water depth), the type of animal potentially present and their behaviours.

Vessels used during the Petroleum Activity may include subsea support vessels, with multiple vessels likely to be used to support the MODU. Project vessels would typically be stationary or moving at low speeds when supporting the Petroleum Activity; support vessels typically transit to and from the Operational Areas between two and four trips per week (e.g. to port). Support vessels do not anchor within the Operational Areas during the activities due to water depth; therefore, vessels will utilise DP.

Consequence assessment

Environmental value(s) potentially impacted

Vessel collisions with marine fauna have potential to occur within the Operational Areas. Vessel disturbance is a key threat to a number of migratory and threatened species identified as occurring within the Operational Areas including cetaceans, marine turtles and whale sharks. Relevant conservation actions outlined in recovery plans and threat abatement plans are outlined in Appendix C. Relevant BIAs that intercept at least one Operational Area includes:

- whale shark foraging BIA
- flatback turtle internesting buffer BIA
- wedge-tailed shearwater breeding BIA

Refer to Section 4.6.1 and Section 1.1.1 for more information about these species and details of seasonal timings.

The likelihood of vessel/fauna 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.

Project vessels within the Operational Areas are likely to be travelling <8 knots (and will often be stationary), therefore, the chance of a vessel collision with protected species resulting in a lethal outcome is considered unlikely, as fauna can move away from project vessels. The risk of marine life getting caught in operating thrusters is unlikely, given the low presence of individuals, combined with the avoidance behaviour commonly displayed during dynamic positioning operations.

Cetaceans

Cetaceans are naturally inquisitive marine mammals. The reaction of cetaceans to the approach of a vessel is quite variable. Some species remain motionless when close to a vessel, while others are known to be curious and often approach ships that have stopped or are slow-moving, although they generally do not approach and sometimes avoid faster-moving ships (Richardson et al., 1995). The Whale and Dolphin Conservation Society (WDCS, 2006) indicates some cetacean species, such as humpback whales, can detect and change course to avoid a vessel.

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 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. Project vessels within the Operational Areas are likely to be travelling less than eight knots; therefore, the chance of a vessel collision with protected species resulting in a lethal outcome is considered unlikely, as fauna can move away from project vessels.

Collisions between vessels and marine mammals occur more frequently in areas where high vessel traffic and important habitat coincide (WDCS, 2006). The Operational Areas are approximately 33 km from the pygmy blue whale migration BIA and 34 km from the humpback whale migration BIA. Individuals may transit through these Operational Areas and increased numbers may occur during whale migration periods (April-July northern migration, October-January southern migration (pygmy blue whales) and migrating humpback whales may be present between about May and November but aggregations are not expected. Given the absence of aggregations, the size of the BIA in total, duration of activities within the Operational Areas and the slow speeds at which project vessels operate, collisions with cetaceans are considered highly unlikely.

Whale sharks

Whale sharks which have been shown to spend approximately 25% of their time less than 2 m from the surface and greater than 40% in the upper 15 m of the water column (Wilson et al., 2006; Gleiss et al., 2013), making them vulnerable to vessel strike. Individuals 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 North West Shelf waters including the Operational Areas during their migrations to and from Ningaloo Reef between July and November. However, considering the slow speed of vessels during the activity, the risk is considered low.

Marine turtles

Turtles are also at risk from vessel strikes, particularly in shallow coastal foraging habitats and internesting areas where there are high numbers of recreational and commercial vessels (Commonwealth of Australia, 2017). Considering the distance of the Operational Areas from the nearest nesting beaches (Montebello Islands: 107 km south-west of Operational Area A, 139 km south-west of Operational Area B, and 72 km south-west of Operational Area C) it is expected that the presence of marine turtles would be very unlikely and only comprise individuals transiting the open, offshore waters for short periods of time. Given the slow speeds at which project vessels operate, collisions with transiting marine turtles are considered highly unlikely.

It is unlikely that vessel movement associated with the Petroleum Activity will have a significant impact on marine fauna populations, given the low presence of transiting individuals and the low operating speed of the support vessels (generally less than eight knots or stationery, unless operating in an emergency).

Cultural values and heritage

Through consultation and review of available literature (Section 4.9.1), Woodside understands that marine fauna that may be affected by a collision with a project vessel, such as marine mammals, whale sharks and turtles, are culturally important to Traditional Custodians. 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 species to which they are kin. Traditional Custodians may also have a cultural obligation to care for the environmental values of Sea Country. Activities that impact turtle populations and their marine environment may have an indirect impact on some Indigenous communities if they deplete hunting areas and threaten local food security (Delisle et al. 2018:251). Whale species may be subject of First Nations' increase ceremonies / rituals which are performed to enhance or maintain populations. As these Thalu ceremonies are performed to maintain and increase populations of marine species, it is considered that management applies at the species/population level and not to individuals. For example, it is anticipated 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. 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). Inter-generational transmission of cultural knowledge (including songlines) relating to marine reptiles may be impacted where changes 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). As described in the assessment of impacts to marine fauna (above), 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 ecologically significant proportions of the populations of the species, nor 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 these species are expected to be maintained. It is not deemed credible, that vessel movement associated with the Petroleum Activity could have a significant impact on marine fauna populations given (1) the low presence of transiting individuals, (2) avoidance behaviour commonly displayed by whales, whale sharks and marine turtles and (3) low operating speed of the activity support vessels (generally less than 8 knots or stationary, unless operating in an emergency). Activities are considered unlikely to result in a consequence greater than slight short-term disruption to individuals or a small proportion of the population and no impact on critical habitat or fauna activity. Cumulative effects from the activity and from other activities conducted in the vicinity are not expected, due to the short-term nature of the operations and the slow speed at which vessels will be operating. Since activities will be conducted sequentially, rather than concurrently, and given the low-level impacts expected, cumulative impacts to receptors are not expected.

Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[56]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
Legislation, codes and standards				
EPBC Regulations 2000 – Part 8 Division 8.1 Interacting with cetaceans, including the following measures[57]: • Project vessels will not travel greater than six knots within 300 m of a cetacean or turtle (caution zone) and not deliberately approach closer than 100 m from a whale. • Project vessels will not deliberately approach closer than 50 m for a dolphin or turtle and/or 100 m for a whale (with the exception of animals bow riding). • If the cetacean or turtle shows signs of being disturbed, project vessels will immediately withdraw from the	F: Yes. CS: Minimal cost. Standard practice.	Implementing these controls will reduce the likelihood of a collision occurring between a cetacean, whale shark or turtle. The consequence of a collision is unchanged.	Controls based on legislative requirements – must be adopted.	Yes **C 15.1**

[56] *Qualitative measure.*

[57] *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.*

Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[56]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
caution zone at a constant speed of less than six knots. • Project vessels will not travel greater than eight knots within 250 m of a whale shark and not allow the vessel to deliberately approach closer than 30 m of a whale shark.				
Good practice				
Variation of the timing of the Petroleum Activity to avoid migration and foraging periods.	F: No. Timing of activities is linked to MODU/support vessel schedule. Timing of all activities is currently not determined and, due to MODU/support vessel availability and operational requirements, performing activities during migration seasons may not be able to be avoided. CS: Not considered, control not feasible.	Not considered, control not feasible.	Not considered, control not feasible.	No
Professional judgement – Eliminate				
No additional controls identified.				
Professional judgement – Substitute				
Variation of the timing of the Petroleum Activity to avoid migration and foraging periods.	F: Yes. Avoidance of the migration period is technically feasible, although not considered to be reasonably practicable. CS: Significant cost and schedule delays in contracting vessel for a specific timeframe.	Negligible reduction in consequence, given the duration and nature of the activity and receiving environment.	Grossly disproportionate. Implementation of the control requires considerable cost sacrifice for minimal environmental benefit.	No
Professional judgement – Engineered solution				
The use of dedicated MFOs on support vessels for the duration of each activity to watch for whales and provide direction about and monitor compliance with Part 8	F: Yes. However, vessel crews already maintain a constant watch during operations in compliance with the Woodside Marine – Charterers Instructions on the requirements of	Given that support vessel bridge crews already maintain a constant watch during operations in compliance with the Woodside Marine – Charterers Instructions, additional MFOs would	Disproportionate. Cost/sacrifice outweighs the benefit.	No

Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[56]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
of the EPBC Regulations.	vessel and whale interactions, and crew perform specific cetacean observation training. CS: Additional cost of MFOs beyond that required during surveys considered unnecessary.	not significantly further reduce the risk.		
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 2.2.4.2) and Woodside's criteria for demonstrating ALARP (Section 2.3.1), Woodside considers the adopted controls appropriate to manage potential risks associated with potential vessel collision with protected marine fauna. As no reasonably practicable additional/alternative controls were identified that would further reduce the impacts without disproportionate sacrifice, the risks are considered ALARP.				

Demonstration of acceptability
Acceptability statement: The risk assessment has determined that, given the adopted controls, a vessel collision with marine fauna represents a low risk rating that may result in negligible, localised impacts (<1 month) on species, habitat (but not affecting ecosystem function), physical or biological attributes. Further opportunities to reduce the risks have been investigated above. The adopted controls are considered good oil-field practice/industry best practice and meet the requirements of Part 8 (Division 8.1) of the EPBC Act Regulations 2000. The residual risk of vessel collision with marine fauna is not inconsistent with the relevant objectives and actions of any applicable recovery plans or threat abatement plans (refer to Section 6.8), based on the adopted controls. Regard has been given to relevant conservation advice during the assessment of potential risks. Marine species such as cetaceans, whale sharks and turtles have been identified, during consultation for this EP as well as for other Woodside activities, as a cultural value for Traditional Custodians. Impacts on a population level are not expected to occur, and cultural values and intangible cultural heritage associated with these species are expected to be maintained. On the basis of the assessment outcomes, use of the relevant tools appropriate to the decision type (i.e. Decision Type A; Section 2.2.4.2) and Woodside's criteria for demonstrating acceptability (Section 2.3.2), 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			
EPO	***Controls***	***PS***	***MC***
EPO 20 Prevent injury or mortality to seabirds as a result of the Petroleum Activities Program. **EPO 21** No injury or mortality to EPBC Act 1999 and *WA Biodiversity Conservation Act 2016* listed marine fauna as a result of the Petroleum Activities Program.	**C 15.1** EPBC Regulations 2000 – Part 8 Division 8.1 Interacting with cetaceans, including the following measures[58]: • Project vessels will not travel greater than six knots within 300 m of a cetacean or turtle (caution zone) and not deliberately approach closer than 100 m from a whale. • Project vessels will not deliberately approach closer than 50 m for a dolphin or turtle and/or 100 m for a whale (with the exception of animals bow riding). • If the cetacean or turtle shows signs of being disturbed, project vessels will immediately withdraw from the caution zone at a constant speed of less than six knots. • Project vessels will not travel greater than eight knots within 250 m of a whale shark and not allow the vessel to deliberately approach closer than 30 m of a whale shark.	**PS 15.1.1** Compliance with EPBC Regulations 2000 – Part 8 Division 8.1 (Regulation 8.05 and 8.06) Interacting with cetaceans to minimise the potential for vessel strike and application of these regulations to whale sharks and marine turtles.	**MC 15.1.1** Records demonstrate no breaches with EPBC Regulations 2000 – Part 8 Division 8.1 Interacting with cetaceans and application of these regulations to whale sharks and marine turtles.
		PS 15.1.2 All vessel strike incidents with cetaceans, whale sharks and marine turtles reported in the National Ship Strike Database (as outlined in the Conservation Management Plan for the Blue Whale – A Recovery Plan under the *EPBC Act 1999*, (CoA, 2015).	**MC 15.1.2** Records demonstrate reporting cetacean, whale shark and marine turtle ship strike incidents to the National Ship Strike Database.

[58] *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.*

6.7.8 Physical presence: disturbance to seabed from loss of station keeping

Context		
Project vessels – Section 3.5	Physical environment – Section 4.4 Habitats and biological communities – Section 4.5	Stakeholder consultation – Section 5

Risk evaluation summary

Source of risk	*Environmental value 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
Loss of station keeping of MODU leading to seabed disturbance		X		X			A	D	1	L	GP PJ	Broadly Acceptable	EPO 22

Description of source of risk

A moored MODU is planned to be used for the Petroleum Activity for permanently plugging the wells, secured on station by an 8-point pre-laid mooring system deployed to the seabed, as dictated by the mooring analysis. High energy weather events such as cyclones, occurring while the 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 anchor drag across the seafloor. A hybrid MODU that uses DP in conjunction with a pre-laid mooring system to hold station, may be used to conduct the drilling. In this scenario, there may be an opportunity to disconnect the rig anchor release (RAR) system (see Section 3.9.6), which would allow the rig to avoid the cyclone and for the anchor drag risk to be reduced.

For a moored MODU, personnel on-board are typically evacuated during cyclones. Woodside implements a risk-based assessment process to aid in decision-making for cyclone evacuations. Support vessels will also demobilise from the Operational Areas during the passage of a cyclone. While the MODU is temporarily abandoned, the position of the MODU is monitored remotely for any deviation. Support vessels and MODU personnel will return to the Operational Areas as soon as safe to do so after a cyclone evacuation. Operational experience indicates cyclone evacuations typically last for seven days.

Industry statistics from the North Sea show that a single mooring line failure for MODUs is the most common failure mechanism (33 × 10-4 per line per year), followed by a double mooring line failure (11 × 10-4 per line per year) (Petroleumstilsynet, 2014). Note that single and double mooring line failures do not typically result in the loss of station keeping. If partial or complete mooring failures 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). Seabed disturbance area size from anchor drag will depend on the extent of the drag.

Consequence assessment
Environmental value(s) potentially impacted
During the very unlikely event of the MODU breaking its moorings, the anchors could drag along the seabed, however potential environmental effects would be limited to minor physical impacts on benthic communities. ***Epifauna and infauna*** As a result of a change in water quality and change in habitat, injury or mortality to marine fauna resulting from an increase in turbidity may occur. Given a change to water quality is unlikely, the only receptors that would potentially be at risk of unplanned seabed disturbance are bottom dwelling species including epifauna and infauna. Benthic communities, including epifauna and infauna may be impacted by the drag of anchors on the seabed. If anchor drag occurs, habitat impact will span the extent of the drag area, leading to a localised change in communities; however, substantial adverse effect is not anticipated, given the sparse marine life that are well represented elsewhere in the region. Given generally sparse benthic communities in the Operational Areas, no threatened or migratory benthic species or ecological communities were identified, and those epifauna and infauna communities observed are likely to be well represented elsewhere in the region (refer to Table 4-3), impacts are expected to be restricted to a localised proportion of epifauna and infauna communities. The magnitude of potential impacts to epifauna and infauna from unplanned seabed disturbance during activities associated with the Petroleum Activity is evaluated to be slight. Sensitivity for epifauna and infauna is low, leading to a slight (E) risk consequence. ***KEFs*** As described in Section 4.7, the Glomar Shoal KEF overlaps Operational Area B and the Ancient Coastline at 125 m depth contour KEFs overlaps all Operational Areas. As described above, benthic communities in the Operational Areas are representative of the deep-water soft sediment habitats reported in the wider region, and are likely to consist of soft sediment seabed habitat, characterised by sparse, widely represented epifauna and infauna (Woodside, 2004; Brewer et al., 2007). Given the nature and scale of risks and consequences from mooring failure, slight impacts are expected to seabed sensitivities within the Operational Areas. Furthermore, the Operational Areas overlap relatively minor proportions of both KEFs (Section 4.7). There will be no substantial adverse effect on the KEF, communities or cultural heritage sites within it. On this basis, the magnitude of potential impacts to KEFs from unplanned seabed disturbance during activities is evaluated to be slight. Receptor sensitivity for the KEF is low, leading to a slight (E) risk consequence. ***Cultural values and heritage*** As described in Section 4.9.1, the Operational Areas overlap the Ancient Coastline at 125 m depth contour KEF and therefore mooring failure has the potential to impact cultural heritage sites if present within the Operational Areas. It is noted that an archaeological assessment of the area where seabed disturbance may occur (500 m radius) was undertaken for the TPA-03 well by a qualified and experienced maritime archaeologist, including review of remote sensing data, which did not identify any underwater cultural heritage that will be affected by well intervention activities (Nutley, 2023). Further archaeological studies will be undertaken prior to the activity commencing to understand any potential cultural features. Cultural features or heritage values identified through consultation with Traditional Custodians are not expected to be impacted by seabed disturbance activities. In the case an unplanned seabed disturbance event occurs in an area not previously assessed and identifies Underwater Cultural Heritage the Unexpected Finds Procedure (See Section 7.2.3) is applicable.

Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[59]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
Legislation, codes and standards				
No additional controls identified.				

[59] *Qualitative measure.*

Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[59]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
Good practice				
Project-specific Mooring Design Analysis.	F: Yes. CS: Minimal cost. Standard practice.	Reduces the likelihood of mooring failure occurring. Although no reduction in consequence would occur, the overall risk is reduced.	Benefits outweigh cost/sacrifice.	Yes **C 2.4**
Specifications and requirements for station keeping equipment (mooring systems) require that: • systems are tested and inspected in accordance with API RP 21 • systems have sufficient capability such that a failure of any single component will not cause progressive failure of the remaining anchoring arrangement.	F: Yes. CS: Minimal cost. Standard practice.	Reduces the likelihood of mooring failure leading to loss of station keeping. Should mooring failure occur, no significant reduction in consequence could occur.	Benefits outweigh cost/sacrifice.	Yes **C 16.1**
Mooring system is tested to recommended tension as per API RP 2SK.	F: Yes. CS: Minimal cost. Standard practice.	Reduces the likelihood of anchor drag leading to seabed disturbance.	Benefits outweigh cost/sacrifice.	Yes **C 16.2**
Professional judgement – Eliminate				
No additional controls identified.				
Professional judgement – Substitute				
No additional controls identified.				
Professional judgement – Engineered solution				
MODU tracking equipment operational when the MODU is unmanned.	F: Yes. CS: Minimal cost. Standard practice.	Reduces the likelihood of a loss of station keeping occurring. Although no reduction in consequence could occur, the overall risk is reduced.	Benefits outweigh cost/sacrifice.	Yes **C 16.3**
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 2.2.4.2) and Woodside's criteria for demonstrating ALARP (Section 2.3.1), Woodside considers the adopted controls appropriate to manage potential risks associated with seabed disturbance from a loss of station keeping. As no reasonably practicable additional/alternative controls were identified that would further reduce the impacts without disproportionate sacrifice, the risks are considered ALARP.				

Demonstration of acceptability
Acceptability statement: The risk assessment has determined that, given the adopted controls, disturbance to seabed from a loss of station keeping represents a low current risk rating and may result in slight, short-term impacts (>1 year) on habitat (but not affecting ecosystems function), physical or biological attributes. On the basis of the assessment outcomes, use of the relevant tools appropriate to the decision type (i.e. Decision Type A; Section 2.2.4.2) and Woodside's criteria for demonstrating acceptability (Section 2.3.2), 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			
EPO	***Controls***	***PS***	***MC***
EPO 22 No Seabed disturbance from loss of station keeping.	**C 2.4** See Section 6.6.2.	**PS 2.4** See Section 6.6.2.	**MC 2.4.1** See Section 6.6.2.
	C 16.1 Specifications and requirements for station keeping equipment (mooring systems), require that: • systems are tested and inspected in accordance with API RP 21 • systems have sufficient capability such that a failure of any single component will not cause progressive failure of the remaining anchoring arrangement.	**PS 16.1** MODU mooring system tested and in place to ensure no complete mooring failure.	**MC 16.1.1** Records demonstrate mooring system tests and inspection.
	C 16.2 Mooring system is tested to recommended tension as per API RP 2SK.	**PS 16.2** Monitoring compliant with ISO 19901-7:2013.	**MC 16.2.1** Records confirm mooring system is tested to recommended.
	C 16.3 MODU tracking equipment operational when the MODU is unmanned.	**PS 16.3** Tracking of the MODU is possible when the MODU is unmanned.	**MC 16.3.1** Records show the MODU has functional tracking equipment for instances when MODU is unmanned.

6.7.9 Unplanned discharges: loss of solid hazardous and non-hazardous wastes (including dropped objects)

Context		
Project vessels – Section 3.5 Well intervention activities – Section 3.10 Permanent plugging activities – Section 3.11 Removal and recovery of infrastructure – Section 3.12	Physical environment – Section 4.4 Habitats and biological communities – Section 4.5 Protected species – Section 4.6 Socio-economic environment – Section 4.9	Stakeholder consultation – Section 5

Risk evaluation summary

Source of risk	***Environmental value 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 loss of hazardous or non-hazardous wastes to the marine environment (excludes sewage, grey water, putrescible waste and bilge water)		X		X	X		A	F	2	L	LCS GP	Broadly Acceptable	EPO 23
Dropped objects resulting in the disturbance of benthic habitat	X			X		X	A	F	2	L			
Inappropriate disposal of waste generated from infrastructure removal		X	X	X	X	X	A	F	2	L			

Description of source of risk

Solid wastes

The MODU and project vessels will generate a variety of solid wastes, including packaging and domestic wastes such as aluminium cans, bottles, paper and cardboard. Hence, there is the potential for solid wastes to be lost overboard to the marine environment. Equipment that has been recorded as being lost on previous campaigns has primarily been windblown or dropped overboard and has included things such as personal protective equipment and small tools or materials. These events have occurred during backloading activities, periods of adverse weather and incorrect waste storage.

Dropped objects

There is the potential for objects to be dropped overboard from the MODU and project vessels to the marine environment. Objects that have been dropped during previous offshore activities include small numbers of personal protective gear (e.g. glasses, gloves, hard hats), small tools (e.g. spanners) hardware fixtures (e.g. riser hose clamp) and drill equipment (e.g. drill pipe); however, there is also potential for larger equipment to also be dropped during the activity, particularly during recovery of infrastructure from the seabed. The spatial extent in which dropped objects can occur is restricted to the Operational Areas.

For the Petroleum Activity, the largest dropped object would be a subsea tree. A subsea tree, once removed will be between approximately 2.2 m and 4.5 m tall, with a radius of approximately 1 m. The overall footprint of disturbance within each Operational Area from a subsea tree being dropped is estimated to be minimal and localised (less than 5 m^2).

Generation and disposal of waste from infrastructure removal

Infrastructure recovery will also generate industrial waste mainly comprising of steel (Section 3.12.2) that will require onshore handling and disposal at licenced facilities. Wastes generated from decommissioning of subsea infrastructure could contribute to the increasing pressure on local landfills if not managed appropriately through consideration of the waste hierarchy and alternate means of disposal to landfill. There is also the potential for recovered infrastructure to be incorrectly classified and disposed of inappropriately leading to contamination of waste streams.

Consequence assessment

Environmental value(s) potentially impacted

Solid wastes

The potential impacts of solid wastes accidentally discharged to the marine environment include direct pollution and contamination of the environment and secondary impacts relating to potential contact of marine fauna with wastes, resulting in entanglement or ingestion and leading 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 Operational Areas, the types, size and frequency of wastes that could occur, and species present. Given this, impacts will have no lasting effect on any species or water quality.

Water Quality

Change in Water Quality

Hazardous solid wastes such as paint cans, oily rags, etc., can cause localised contamination of the water through a release of toxins and chemicals. Given the 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

Injury/Mortality to Fauna

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 (e.g. DoEE, 2018; Commonwealth of Australia, 2017) and ingested causing damage to internal tissues and potentially preventing feeding activities. In the worst instance this could have a lethal affect to an individual. Marine debris has been identified as threat in the Recovery Plan for Marine Turtles in Australia (2017–2027).

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 and the location of the activities at significant distance from sensitive habitats. 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.

While the threat abatement plan for impacts of marine debris on vertebrate marine life does not list explicit management actions for non-related industries (Commonwealth of Australia, 2018) management controls will reduce the risk of unplanned discharge of solid waste.

The temporary or permanent loss of waste materials into the marine environment will have no lasting effect on any species or water quality, based on the types, size and frequency of wastes that could occur.

Dropped objects

In the unlikely event of loss of an object being dropped into the marine environment, potential environmental effects would be limited to localised physical impacts on benthic communities. In most cases, objects will be able to be recovered and therefore these impacts will also be temporary in nature. However, there may be instances where objects are unable to be recovered due to health and safety, operational constraints or other factors such as the difficulty of recovering dropped objects at depth. When dropped objects are unable to be recovered, the impact will continue to be localised but would also be long-term.

The temporary or permanent loss of dropped objects into the marine environment is likely to result in a localised impact only, as the benthic communities associated with the Operational Areas are of low sensitivity and are broadly represented throughout the NWMR. As described in Section 4.7, the Ancient Coastline at 125 m Depth Contour KEF overlaps all Operational Areas and the Glomar Shoals KEF overlaps Operational Area B. The habitat types associated with the hard substrate that characterises the Ancient Coastline at 125 m Depth Contour KEF are not considered to be unique by Falkner et al. (2009) in their review of KEFs in the NWMR. Furthermore, benthic habitats in the Operational Areas are expected to consist of bare unconsolidated sediments dominated by silt and clay fractions (Section 4.5),

and the Operational Areas overlap a relatively minor proportion of both KEFs (Section 4.7). Given the nature and scale of risks and consequences from dropped objects, no lasting effect is expected to seabed sensitivities associated with the Operational Areas. Further, considering the types, size and frequency of dropped objects that could occur, it is unlikely that a dropped object would have a significant impact on any benthic community.

Generation and disposal of waste from infrastructure removal

Incorrect classification of waste can also result in inappropriate disposal of hazardous decommissioning wastes that could contaminate non-hazardous waste streams. This has the potential to result in contamination to air, soil and water during disposal. Incorrect disposal of hazardous waste onshore could result in negligible impacts to the environment on a near-field scale (i.e. limited to the disposal site/facility).

The increasing pressure on landfills globally is considered a significant environmental and social challenge and can result in indirect impacts to biodiversity, air and water pollution. Decommissioning wastes generated from the activity will result in a negligible contribution domestically and negligible contribution globally to increasing landfill capacity.

Cultural values and heritage

The Ancient Coastline at the 125 m depth contour KEF is also an area where potential First Nations archaeological material may exist on the seabed (Section 4.9.1), therefore dropped objects or mooring failure have the potential to impact cultural heritage sites if present within the Operational Areas. Archaeological assessment of the area where seabed disturbance may occur (500 m radius around the TPA-03 well) by a qualified and experienced maritime archaeologist, including review of remote sensing data, has not identified any underwater cultural heritage that will be affected by the proposed activity (Nutley 2023). While no cultural features have been identified in the Operational Areas, further archaeological studies will be undertaken prior to the activity commencing to understand any potential cultural features.

Cultural features or heritage values identified through consultation with Traditional Custodians are not expected to be impacted by unplanned discharges. Potential impacts to culturally significant marine ecosystems and species are not expected to have a lasting effect, as such, cultural values and intangible cultural heritage associated with these species are expected to be maintained. In the case an unplanned seabed disturbance event occurs in an area not previously assessed and identifies Underwater Cultural Heritage the Unexpected Finds Procedure (See Section 7.2.3) is applicable.

Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[60]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
Legislation, codes and standards				
Project 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.	Legislative requirements to be followed reduce the likelihood of an unplanned release. The consequence is unchanged.	Controls based on legislative requirements – must be adopted.	Yes **C 17.1**
Disposal of any hazardous waste associated with the subsea infrastructure will comply with relevant State and Commonwealth legislation: • *Hazardous Waste (Regulation of Exports and Imports) Act 1989* (Cth)	F: Yes. CS: Minimal cost. Standard practice.	Legislative requirements to be followed reduce the likelihood of an unplanned release. The consequence is unchanged.	Controls based on legislative requirements – must be adopted.	Yes **C 17.2**

[60] *Qualitative measure.*

• WA Environmental Protection (Controlled Waste) Regulations 2004.				
Drilling and completions waste arrangements, which require: • dedicated space for waste segregation bins and skips to be provided on the MODU • records of all waste to be disposed, treated or recycled • waste streams to be handled and managed according to their hazard and recyclability class • all non-putrescible waste (excludes all food, greywater or sewage waste) to be transported from the MODU and disposed onshore.	F: Yes. CS: Minimal cost. Standard practice.	Controls outlined in the management plan will reduce the likelihood of an unplanned release. The consequence is unchanged.	Benefits outweigh cost/sacrifice.	Yes **C 17.3**
Good practice				
Vessel waste arrangements, which require: • dedicated space for waste segregation bins and/or skips to be provided • records of all waste to be disposed, treated or recycled • waste streams to be handled and managed according to their hazard and recyclability class • all non-putrescible waste (excludes all food, greywater or sewage waste) to be transported from the MODU and disposed onshore.	F: Yes. CS: Minimal cost. Standard practice.	Reduces the likelihood of an unplanned release. The consequence is unchanged.	Benefit outweighs cost sacrifice.	Yes **C 17.4**
Project vessel waste arrangements, which require: • dedicated waste segregation bins • records of all waste to be disposed, treated or recycled	F: Yes. CS: Minimal cost. Standard practice.	Reduces the likelihood of an unplanned release. The consequence is unchanged.	Benefit outweighs cost sacrifice.	Yes **C 17.5**

• waste streams to be handled and managed according to their hazard and recyclability class.				
Lost waste or dropped objects will be recovered, where safe and practicable. Where safe and practicable for this activity, will consider: • risk to personnel to retrieve object • whether the location of the object is in recoverable water depths • object's proximity to subsea infrastructure • ability to recover the object (as in, nature of object, lifting equipment and suitable weather).	F: Yes; however, it may not always be practicable. Assessed on a case-by-case situation. CS: Minimal cost. Standard practice.	No reduction in likelihood, as this is an unplanned event. Since the equipment may be recovered, a reduction in consequence is possible.	Benefits outweigh cost/sacrifice.	Yes **C 17.6**
The MODU and project vessels' work procedures for lifts, bulk transfers and cargo loading, which require: • the security of loads shall be checked before commencing lifts • loads shall be covered if there is a risk of loss of loose materials • lifting operations shall be conducted using the PTW and JSA systems to manage the specific risks of that lift, including consideration of weather and sea state.	F: Yes. CS: Minimal cost. Standard practice.	By implementing MODU and project vessels' work procedures for lifts, bulk transfers and cargo loading, the likelihood of a dropped object event is reduced. Since the object may be recovered, a reduction in consequence is possible.	Benefits outweigh cost/sacrifice.	Yes **C 17.7**
MODU and project vessel inductions include material to raise crew awareness of dropped object prevention.	F: Yes. CS: Minimal cost. Standard practice.	By raising awareness of dropped object prevention, the likelihood of a dropped object event is reduced. Since the object may be recovered, a reduction in consequence is possible.	Benefits outweigh cost/sacrifice.	Yes **C 17.8**
Implement an infrastructure disposal and	F: Yes. CS: Minimal cost. Standard practice	Reduces the risk of unsuitable disposal through efficient use of resources and reduces	Benefits outweigh cost/sacrifice.	Yes **C 17.9**

resource recovery strategy that: • monitors and tracks waste from recovery to end state • considers the waste hierarchy when determining appropriate end state for waste • describes contingency procedures for dealing with contaminants offshore and onshore.		the risk of an unplanned contamination of waste streams during disposal.		
Undertake engagement with waste contractors to identify potential waste disposal pathways.	F: Yes. CS: Minimal cost. Standard practice	Reduces the risk of unsuitable disposal through efficient use of resources.	Benefits outweigh cost/sacrifice.	Yes **C 17.10**
Professional judgement – Eliminate				
No additional controls were identified.				
Professional judgement – Substitute				
No additional controls were identified.				
Professional judgement – Engineered solution				
No additional controls were 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 2.2.4.2) and Woodside's criteria for demonstrating ALARP (Section 2.3.1), Woodside considers the adopted controls appropriate to manage potential risks associated with seabed disturbance from loss of hazardous and non-hazardous solid waste, including dropped objects. As no reasonably practicable additional/alternative controls were identified that would further reduce the impacts without disproportionate sacrifice, the risks are considered ALARP.				
Demonstration of acceptability				
Acceptability statement: The risk assessment has determined that, given the adopted controls, accidental discharge of solid waste or dropped objects represents a low current risk rating that may result in negligible, localised impacts (<1 month) on species, habitat (but not affecting ecosystem function), physical or biological attributes. Further opportunities to reduce the impacts and risks have been investigated above. Relevant recovery plans conservation advice and threat abatement plans have been considered during the impact assessment, and the Petroleum Activity is not considered to be inconsistent with the overall recovery objectives and actions of these recovery plans, advice and threat abatement plans (refer to Section 1.7.3). On the basis of the assessment outcomes, use of the relevant tools appropriate to the decision type (i.e. Decision Type A; Section 2.2.4.2) and Woodside's criteria for demonstrating acceptability (Section 2.3.2), 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			
EPO	***Controls***	***PS***	***MC***
EPO 23 Woodside will manage its activities to prevent material loss of solid	**C 17.1** Project vessels compliant with Marine Orders for safe vessel operations:	**PS 17.1** Project vessels compliant with Marine Orders 94 and 95.	**MC 17.1.1** Records demonstrate compliance with Marine Orders 94 and 95.

EPOs, EPS and MC			
EPO	***Controls***	***PS***	***MC***
hazardous and non-hazardous waste from occurring. Environmental risk from hazardous and non-hazardous waste management limited to Moderate[61] during the Petroleum Activity. No release of solid hazardous or non-hazardous waste[62] to the marine environment.	• Marine Order 94 (Marine pollution prevention –packaged harmful substances) 2014 • Marine Order 95 (Pollution prevention – Garbage).		
	C 17.2 Disposal of any hazardous waste associated with the subsea infrastructure will comply with relevant State and Commonwealth legislation: • *Hazardous Waste (Regulation of Exports and Imports) Act 1989* (Cth) • WA Environmental Protection (Controlled Waste) Regulations 2004.	**PS 17.2** Disposal of any hazardous waste associated with the subsea infrastructure is compliant with the *Hazardous Waste (Regulation of Exports and Imports) Act 1989* (Cth) and Environmental Protection (Controlled Waste) Regulations 2004 (WA).	**MC 17.2.1** Records demonstrate disposal of hazardous waste associated with the subsea infrastructure was compliant with relevant Commonwealth and State legislation.
	C 17.3 Drilling and Completions waste arrangements will be applied, which require: • dedicated space for waste segregation bins and skips to be provided on the MODU • records of all waste to be disposed, treated or recycled • waste streams to be handled and managed according to their hazard and recyclability class • all non-putrescible waste (excludes all food, greywater or sewage waste) to be transported from the MODU and disposed onshore.	**PS 17.3** Hazardous and non-hazardous waste will be managed in accordance with the Drilling and Completions waste arrangements.	**MC 17.3.1** Records demonstrate compliance against Drilling and Completions waste arrangements.
	C 17.4 Vessel waste arrangements, which require:	**PS 17.4** Hazardous and non-hazardous waste will be managed in accordance	**MC 17.4.1** Records demonstrate compliance against Vessel waste arrangements.

[61] *Defined in Section 2.2.6.*

[62] *Waste as defined in the Woodside Offshore Facilities Waste Management Plan*

EPOs, EPS and MC			
EPO	***Controls***	***PS***	***MC***
	• dedicated space for waste segregation bins and/or skips to be provided • records of all waste to be disposed, treated or recycled • waste streams to be handled and managed according to their hazard and recyclability class • all non-putrescible waste (excludes all food, greywater or sewage waste) to be transported from the MODU and disposed onshore.	with the Vessel waste arrangements.	
	C 17.5 Project vessel waste arrangements, which require: • dedicated waste segregation bins • records of all waste to be disposed, treated or recycled • waste streams to be handled and managed according to their hazard and recyclability class.	**PS 17.5** Waste will be managed in accordance with the project vessel waste arrangements.	**MC 17.5.1** Records demonstrate compliance against project vessel waste arrangements.
	C 17.6 Lost waste or dropped objects will be recovered, where safe and practicable. Where safe and practicable for this activity, will consider: • risk to personnel to retrieve object • whether the location of the object is in recoverable water depths • object's proximity to subsea infrastructure • ability to recover the object (as in, nature of object, lifting equipment and suitable weather).	**PS 17.6** Waste dropped to the marine environment will be recovered where safe and practicable to do so.	**MC 17.6.1** Records detail the recovery attempt consideration and status of any waste lost to the marine environment.
	C 17.7	**PS 17.7**	**MC 17.7.1**

EPOs, EPS and MC			
EPO	***Controls***	***PS***	***MC***
	The MODU and project vessels' work procedures for lifts, bulk transfers and cargo loading, which require: • the security of loads to be checked before commencing lifts • loads to be covered if there is a risk of losing loose materials • lifting operations to be conducted using the PTW and JSA systems to manage the specific risks of that lift, including consideration of weather and sea state.	All lifts conducted in accordance with applicable MODU/project vessels' work procedures to limit potential for dropped objects.	Records show lifts conducted in accordance with the applicable MODU/ project vessels' work procedures.
	C 17.8 MODU and project vessel inductions include material to raise crew awareness of dropped object prevention.	**PS 17.8** MODU and project vessels crews aware of requirements for dropped object prevention.	**MC 17.8.1** Records show dropped object prevention material is provided to the MODU/ project vessels' crew during inductions.
	C 17.9 Implement an infrastructure disposal and resource recovery strategy that: • monitors and tracks waste from recovery to end state • considers the waste hierarchy when determining appropriate end state for waste • describes contingency procedures for dealing with contaminants offshore and onshore.	**PS 17.9** Decommissioning waste generated from infrastructure removal is managed in accordance with the infrastructure disposal and resource recovery strategy.	**MC 17.9.1** Records demonstrate compliance against an infrastructure disposal and resource recovery strategy.
	C 17.10 Undertake engagement with waste contractors to identify potential waste disposal pathways.	**PS 17.10** Engagement with relevant waste contractors to identify potential waste disposal pathways will be undertaken prior to inform preparation of an infrastructure disposal and resource recovery strategy.	**MC 17.10.1** Records demonstrating relevant waste contractors have been engaged.

6.7.10 Physical presence: introduction and establishment of invasive marine species

Context		
Project vessels – Section 3.5	Physical environment – Section 4.4 Habitats and biological communities – Section 4.5 Protected species – Section 4.6	Stakeholder consultation – Section 5

Risk evaluation summary

Source of risk	***Environmental value 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
Introduction and establishment of invasive marine species (IMS) within the Operational Areas				X	X	X	A	D	0	L	LCS GP PJ	Broadly Acceptable	EPO 24

Description of source of risk

During the Petroleum Activity, vessels will be transiting to and from the Operational Areas, potentially including traffic mobilising from beyond Australian waters. These project vessels may include the MODU, AHTSV and general support vessels (Section 3.5).

All vessels are subject to some level of marine fouling whereby organisms attach to the vessel hull. This could particularly occur in areas where organisms can find a good attachment surface (e.g. seams, strainers and unpainted surfaces) or where turbulence is lowest (e.g. niches, sea chests), although commercial vessels typically maintain anti-fouling coatings to reduce the build-up of fouling organisms. IMS could be present as biofouling on immersible equipment (survey equipment, ROV etc.) and could be translocated to the Operational Areas and transferred directly to the seafloor or subsea structures where they could establish. Organisms can also be drawn into ballast tanks during onboarding of ballast water as cargo is loaded or to balance vessels under load.

Project vessels have the potential to introduce IMS to the Operational Areas through marine biofouling (containing IMS) on vessels, as well as within high-risk ballast water exchange. There is also a remote potential that cross-contamination between vessels can also occur (such as IMS translocated between project vessels) during times when vessels need to be alongside each other and a remote potential that IMS may be transferred onto the benthic habitat of Glomar Shoals within Operational Area B.

Consequence assessment

Environmental value(s) potentially impacted

IMS are a subset of non-indigenous marine species (NIMS) that have been introduced into a region beyond their natural biogeographic range resulting in impacts to social/cultural, human health, economic and/or environmental values. NIMS are species that have the ability to survive, reproduce and establish founder populations. However, not all NIMS introduced into an area will thrive or cause demonstrable impacts; the majority of NIMS around the world are relatively benign and few have spread widely beyond sheltered ports and harbours. NIMS are only considered IMS when they result in impacts to environmental values and/or have social/cultural, economic and/or human health impacts.

Once introduced, IMS may prey on 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. These changes to the local marine environment result in changes to the natural ecosystem.

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 detected 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.

Potential IMS have historically been introduced and translocated around Australia by a variety of natural and human means, including marine fouling and ballast water. Potential IMS vary from one region to another depending on various environmental factors such as water temperature, salinity, nutrient levels and habitat type, which dictate their survival and invasive capabilities. IMS typically require hard substrate in the photic zone; therefore, requiring shallow waters to become established. Highly-disturbed, shallow-water environments such as shallow coastal waters, ports and marinas are more susceptible to IMS colonisation, whereas IMS are generally unable to successfully establish in deep-water ecosystems and open-water environments where the rate of dilution and the degree of dispersal are high (Williamson and Fitter, 1996; Paulay et al., 2002; Geiling, 2014).

Project vessels have the potential to introduce IMS into the Operational Areas. Water depths and absence of hard substrate in the majority of Operational Areas are not conducive to the establishment of IMS. However, there is an increased potential for the establishment of IMS, given the water depth of Operational Area B (approximately 80 m) which also overlaps with the Glomar Shoals KEF and thus there is potential for hard substrate to be encountered.

Glomar Shoals is a submerged feature at depths of 33 to 77 m (Falkner et al., 2009). Benthic habitats of Glomar Shoals vary with depth and are characterised by coarse, unconsolidated sediment at depths greater than 60 m to hard substrate supporting benthic communities comprising sparse hard and soft corals, sponges and macroalgae at depths less than 40 m. Total cover of benthic taxa (hard coral, soft coral, sponges and other benthic biota) is highest at depths less than 40 m and decreases with depth (Wahab et al., 2018). At depths of 60 to 80 m, benthic cover is low and approximately 2%; at depths greater than 80 m, benthic cover is barely present, with baseline survey data indicating 0.1% cover of benthic biota. Structurally complex, biodiverse benthic habitats associated with the Glomar Shoals feature itself are mainly found within the north-eastern section of the Glomar Shoals KEF.

Approximately 2.53% of the Glomar Shoals KEF overlaps Operational Area B (in the north-western section of the KEF), refer to Figure 5-12, with the Glomar Shoals feature located 5.4 km away. Given the AP2, AP3 and AP4 wells are located at a depth of approximately 80 m (water depth where benthic cover is less than 2%) and is located 5.4 km from hard coral communities associated with the Glomar feature itself, the likelihood of IMS being introduced and establishing viable populations within this Operational Area or immediate surrounds is considered remote.

Depending on prevailing currents, the larval life history of the IMS, and the recruitment potential based on a variety of factors, including propagule pressure, there is a remote likelihood that an IMS may be carried to and establish within the shallower waters of the Glomar Shoals (less than 50 m depth), where available substrate and light could facilitate establishment and growth.

Shallow-water marine habitats, such as coral reefs, are considered susceptible to the introduction and subsequent establishment of IMS due to the availability of light and complex habitats. It must, however, be noted that healthy natural reef ecosystems may also present challenges to IMS establishment relative to degraded shallow water environments due to the increased likelihood of predation and competition. However, IMS introduced to shallow water marine habitats are, therefore, much more likely to successfully establish than those introduced to deep oceanic waters. Overall, the benthic habitats of Glomar Shoals are considered pristine and host regionally distinct ecological communities. Given this sensitivity, the consequence of the introduction and successful establishment of an IMS has been determined as a consequence level of Minor (D). The likelihood that an IMS would be introduced, establish a self-sustaining population and cause environmental impacts is considered remote, given:

- Project vessels will be subject to the Woodside IMS risk assessment process. This process aligns with the approach adopted by WA DPIRD (such as vessel check tool) and has been proven effective in minimising the potential for IMS introduction. Woodside has successfully implemented this process for several large construction projects and ongoing operations over the last decade.
- There remains a significant distance (more than 45 km) from the Operational Areas to the closest shallow water habitat (Glomar Shoals feature) that may be susceptible to the introduction and subsequent establishment of IMS, further reducing the likelihood of the establishment of IMS.
- The short duration of operations further reduces the risk of IMS introduction and subsequent establishment.

While project vessels have the potential to introduce IMS into the Operational Areas, the deep offshore open waters of the Operational Areas (~80 m – 128 m) are not conducive to the settlement and establishment of IMS. Furthermore, the Operational Areas are away from shorelines and/or critical habitat. The likelihood of IMS being introduced and establishing viable populations within the Operational Areas or immediate surrounds is considered highly unlikely.

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. IMS have proven particularly difficult to eradicate from areas once established. If the introduction is detected 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. Given the low likelihood of IMS translocation to, and colonisation of environments within the Operational Areas, project activities will not result in establishment of IMS, and as such not adversely affect other marine user activities in the region.

Summary

In support of Woodside's assessment of the risks and consequences of IMS introduction associated with the Petroleum Activity, Woodside conducted a risk and impact evaluation of the different aspects of a marine pest translocation. The results of this assessment are presented in Table 6-24.

As a result of this assessment, Woodside has presented the highest potential consequence as a Minor (D) and likelihood as Remote (0), resulting in an overall Moderate risk following the implementation of identified controls.

Table 6-24: Credibility, consequence and likelihood of introducing invasive marine species

IMS Introduction Location	*Credibility of Introduction*	*Consequence of Introduction*	*Likelihood*
Introduced to Operational Areas and establishment on the seafloor or subsea structures.	**Credible** There is potential for the transfer of marine pests to the seafloor within the Operational Areas.	**Environment – D** While highly unlikely, introduction and establishment of IMS at Glomar Shoals from vessel operations during P&A activities in Operational Area B could result in loss of native species, should they be outcompeted or predated by the IMS.	**Remote (0)** Due to control measures in place, the likelihood of an IMS being introduced in the Operational Areas during vessel operations is considered remote.
Introduced to Operational Areas and establishment on a project vessel.	**Credible** There is potential for the transfer of marine pests between project vessels within the Operational Areas.	**Environment – Not credible** The translocation of IMS from a colonised project vessel to another vessel and then to the environment is not credible. This is because the Operational Areas are in deep open waters away from shorelines and/or critical habitat. Furthermore, the translocation to shallower environments via natural dispersion from a project vessel is not considered credible, given the distances of the Operational Areas from nearshore environments (i.e. greater than 50 m water depth). On this basis there is no credible environmental risk. **Reputation – D** If IMS were to establish on a project vessel from another colonised vessel, this could potentially impact the vessel operationally through the fouling of intakes, and potentially cause the infected vessels to be quarantined and requiring costly cleaning. Such introduction would be expected to have minor impact to Woodside's reputation, particularly with Woodside's contractors, and may impact future proposals.	**Remote (0)** Interactions between project vessel will be limited during the Petroleum Activity, with minimum 500 m safety exclusion zones being adhered to around the activity, and interactions limited to short periods of time alongside (as in, during backloading, bunkering activities). There is also no direct contact (in other words, they are not tied up alongside) during these activities. Spread of marine pests via ballast water or spawning in these open ocean environments is also considered remote.

Transfer between project vessels and from project vessels to other marine environments beyond the Operational Areas.	**Not credible** This risk is considered so remote that it is not credible for the purposes of the activity. As described above, the transfer of IMS between project vessels was already considered remote, given the offshore open-ocean environment. Project vessels will be located in an offshore, open-ocean, deep environment, where IMS survival is implausible. Furthermore, this marine pest once transferred would need to survive on a new vessel with good vessel hygiene (in other words, has been through Woodside's risk assessment process) and survive the transport back from the Operational Areas to shore. In the event it was to survive this trip, it would then need conditions conducive to establishing a viable population in the nearshore waters to which the infected vessel travels.

Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[63]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
Legislation, codes and standards				
Project vessels will manage their ballast water using one of the approved ballast water management options, as outlined in the Australian Ballast Water Management Requirements.	F: Yes. CS: Minimal cost. Standard practice.	Reduces the likelihood of transferring marine pests between project vessels within the Operational Areas. No change in consequence would occur.	Controls based on legislative requirements under the Biosecurity Act 2015 – must be adopted.	Yes **C 18.1**
Internationally sourced Project vessels will manage their biosecurity risk associated with biofouling as specified in the Australian Biofouling Management Requirements.	F: Yes. CS: 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 18.2**
Good practice				
Woodside's IMS risk assessment process[64] will be applied to project vessels and relevant immersible equipment undertaking the Petroleum Activity. Assessment will consider these risk factors: For vessels/MODU: • vessel/MODU type • recent IMS inspection and cleaning history,	F: Yes. CS: Minimal cost. Good practice implemented across all Woodside Operations.	Identifies potential risks and additional controls implemented accordingly. In doing so, the likelihood of transferring marine pests between project vessels within the Operational Areas is reduced. No change in consequence would occur.	Benefits outweigh cost/sacrifice.	Yes **C 18.3**

63 Qualitative measure.

64 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 (IMO Guidelines, 2011).

Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[63]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
including for internal niches • out-of-water period before mobilisation • age and suitability of antifouling coating at mobilisation date • internal treatment systems and history • origin and proposed area of operation • number of stationary/slow speed periods >7 days • region of stationary or slow periods • type of activity – contact with seafloor. For immersible equipment: • region of deployment since last thorough clean, particularly coastal locations • duration of deployments • duration of time out of water since last deployment • transport conditions during mobilisation • post-retrieval maintenance regime. Based on the outcomes of each IMS risk assessment, management measures commensurate with the risk (such as treating internal systems, IMS inspections or cleaning) will be implemented to minimise the likelihood of IMS being introduced.				

Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[63]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
Professional judgement – Eliminate				
No discharge of ballast water during the Petroleum Activity.	F: No. Ballast water discharges are critical for maintaining 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 considered – control not feasible.	Not considered – control not feasible.	Not considered – control not feasible.	No
Eliminate use of vessels	F: No. Given that vessels must be used to implement project, there is no feasible means to eliminate the source of risk. CS: Loss of the project.	Not considered – control not feasible.	Not considered – control not feasible.	No
Professional judgement – Substitute				
Source project vessels based in Australia only.	F: Potentially. Limiting activities to only use local project 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. For example, there are limited installation vessels based in Australian waters. While the project will attempt to source project vessels locally it is not always possible. Availability cannot always be 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.	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 Operational Areas 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 Operational Areas; however, the potential cost of implementing this control is grossly disproportionate to the minor environmental gain (or reducing an already remote likelihood of IMS introduction) potentially achieved by using only Australian based vessels, consequently this risk is considered not reasonably practicable.	No

Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[63]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
	CS: Significant cost and schedule impacts due to restrictions of vessel hire opportunities.			
IMS inspection of all vessels.	F: Yes. Approach to inspect vessels could be a feasible option. CS: Significant cost and schedule impacts. In addition, Woodside's IMS risk assessment process (C 13.2) 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 to and resources to areas of greatest concern.	Inspection of all vessels for IMS would reduce the likelihood of IMS being introduced to the Operational Areas. However, this reduction is unlikely to be significant given the other control measures implemented. No change in consequence would occur.	Disproportionate – cost/sacrifice outweighs benefit to be gained, as other controls to be implement achieve an ALARP position.	No
Professional judgement – Engineered solution				
No additional controls 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 2.2.4.2) and Woodside's criteria for demonstrating ALARP (Section 2.3.1), Woodside considers the adopted controls appropriate to manage potential risks associated with IMS introduction. As no reasonably practicable additional/alternative controls were identified that would further reduce the impacts without disproportionate sacrifice, the risks are considered ALARP.				

Demonstration of acceptability
Acceptability statement: The risk assessment has determined that, given the adopted controls, the accidental introduction and establishment of IMS through ballast water or biofouling on vessels represents a low residual risk that has a remote likelihood of resulting in a potential impact greater than minor, short-term impact (1–2 years) to a small proportion of the benthic community. Further opportunities to reduce the impacts and risks have been investigated above. On the basis of the assessment outcomes, use of the relevant tools appropriate to the decision type (i.e. Decision Type A; Section 2.2.4.2) and Woodside's criteria for demonstrating acceptability (Section 2.3.2), 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			
EPO	***Controls***	***PS***	***MC***
EPO 24 No introduction and establishment of invasive marine species into the	**C 18.1** Project vessels will manage their ballast water using one of the approved	**PS 18.1** Project vessels manage ballast water in accordance with Australian Ballast	**MC 18.1.1** Ballast Water Records System maintained by vessels which verifies

EPOs, EPS and MC			
EPO	***Controls***	***PS***	***MC***
Operational Area(s) as a result of the Petroleum Activities Program.	ballast water management options, as specified in the Australian Ballast Water Management Requirements.	Water Management Requirements.	compliance against Australian Ballast Water Management Requirements.
	C 18.2 Internationally sourced Project vessels will manage their biosecurity risk associated with biofouling as specified in the Australian Biofouling Management Requirements.	**PS 18.2** Compliance with Australian Biofouling Management Requirements.	**MC 18.2.1** Records of implementation of biofouling management measure and pre-arrival reporting.
	C 18.3 Woodside's IMS risk assessment process[65] will be applied to project vessels and relevant immersible equipment undertaking the Petroleum Activity. Assessment will consider these risk factors: For vessels/MODU: • vessel/MODU type • recent IMS inspection and cleaning history, including for internal niches • out-of-water period before mobilisation • age and suitability of antifouling coating at mobilisation date • internal treatment systems and history • origin and proposed area of operation • number of stationary/slow speed periods >7 days • region of stationary or slow periods • type of activity – contact with seafloor. For immersible equipment:	**PS 18.3.1** Before entering the Operational Areas, project vessels, MODU and relevant immersible equipment are determined to be low risk[66] of introducing IMS of concern, and maintain this low-risk status to mobilisation.	**MC 18.3.1** Records of IMS risk assessments maintained for all project vessels and relevant immersible equipment entering the Operational Areas or IMS management area to undertake the Petroleum Activity.
		PS 18.3.2 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 18.3.2** Records confirm that the IMS risk assessments undertaken by an Environment Adviser or IMS inspector (as relevant).

[65] 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 (IMO Guidelines, 2011).

[66] 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.

EPOs, EPS and MC			
EPO	***Controls***	***PS***	***MC***
	• region of deployment since last thorough clean, particularly coastal locations • duration of deployments • duration of time out of water since last deployment • transport conditions during mobilisation • post-retrieval maintenance regime. Based on the outcomes of each IMS risk assessment, management measures commensurate with the risk (such as treating internal systems, IMS inspections or cleaning) will be implemented to minimise the likelihood of IMS being introduced.		

6.8 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 *Eubalaena australis* (DCCEEW, 2024b)
- 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, 2018).

Table 6-25 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 below.

Table 6-25: 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			
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			
4. 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		
5. The management of marine turtles is supported	Y		
6. Anthropogenic threats are demonstrably minimised	Y	Y	Y
7. 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	Y	Y
A2. Adaptively manage turtle stocks to reduce risk and build resilience to climate change and variability	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		
B. Enabling and measuring recovery			

EPBC Act Part 13 statutory instrument	Applicable to:		
	Government	***Titleholder***	***Petroleum Activity***
B1. Determine trends in index beaches	Y	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			
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			
8. The conservation status of blue whale populations is assessed using efficient and robust methodology	Y		
9. The spatial and temporal distribution, identification of biologically important areas, and population structure of blue whales in Australian waters is described	Y	Y	Y
10. Current levels of legal and management protection for blue whales are maintained or improved and an appropriate adaptive management regime is in place	Y		
11. 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		
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

EPBC Act Part 13 statutory instrument	Applicable to:		
	Government	***Titleholder***	***Petroleum Activity***
Southern Right Whale			
Long-term vision: for the recovery of the Australian Southern Right Whale is that the population has increased in size 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			
12. 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		
13. Anthropogenic threats are managed consistent with ecologically sustainable principles to facilitate recovery of southern right whales	Y	Y	Y
14. 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		
15. 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		
16. 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			
A: 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		
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

EPBC Act Part 13 statutory instrument	Applicable to:		
	Government	***Titleholder***	***Petroleum Activity***
B: 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			
17. Develop and apply quantitative monitoring of the population status (distribution and abundance) and potential recovery of the grey nurse shark in Australian waters	Y		
18. Quantify and reduce the impact of commercial fishing on the grey nurse shark through incidental (accidental and/or illegal) take, throughout its range	Y		
19. Quantify and reduce the impact of recreational fishing on the grey nurse shark through incidental (accidental and/or illegal) take, throughout its range	Y		
20. Where practicable, minimise the impact of shark control activities on the grey nurse shark	Y		
21. Investigate and manage the impact of ecotourism on the grey nurse shark	Y		
22. Manage the impact of aquarium collection on the grey nurse shark	Y		
23. Improve understanding of the threat of pollution and disease to the grey nurse shark	Y	Y	Y

EPBC Act Part 13 statutory instrument	Applicable to:		
	Government	***Titleholder***	***Petroleum Activity***
24. 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	
25. Continue to develop and implement research programs to support the conservation of the grey nurse shark	Y	Y	
26. 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			
27. Reduce and, where possible, eliminate adverse impacts of commercial fishing on sawfish and river shark species	Y		
28. Reduce and, where possible, eliminate adverse impacts of recreational fishing on sawfish and river shark species	Y		
29. Reduce and, where possible, eliminate adverse impacts of Indigenous fishing on sawfish and river shark species	Y		
30. Reduce and, where possible, eliminate the impact of illegal, unregulated and unreported fishing on sawfish and river shark species	Y		
31. Reduce and, where possible, eliminate adverse impacts of habitat degradation and modification on sawfish and river shark species	Y	Y	Y
32. 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
33. Reduce and, where possible, eliminate any adverse impacts of collection for public aquaria on sawfish and river shark species	Y		
34. 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		

EPBC Act Part 13 statutory instrument	Applicable to:		
	Government	***Titleholder***	***Petroleum Activity***
35. Develop research programs to assist conservation of sawfish and river shark species	Y	Y	
36. Improve community understanding and awareness in relation to sawfish and river shark conservation and management	Y		
Marine Debris Threat Abatement Plan			
Objectives			
37. Contribute to long-term prevention of the incidence of marine debris	Y	Y	
38. Understand the scale of impacts from marine plastic and microplastic on key species, ecological communities and locations	Y	Y	Y
39. Remove existing marine debris	Y		
40. Monitor the quantities, origins, types and hazardous chemical contaminants of marine debris, and assess the effectiveness of management arrangements for reducing marine debris	Y		
41. 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 6-26: Assessment against relevant actions of the Marine Turtle Recovery Plan

Part 13 statutory instrument	Relevant action areas/objectives	Relevant actions	Evaluation	Relevant EPO and EPS
Marine Turtle Recovery Plan	**Action Area A1:** Maintain and improve efficacy of legal and management protection.	**Action:** Manage anthropogenic activities to ensure marine turtles are not displaced from identified habitat critical to the survival	Refer Sections 6.6.3, 6.6.4 and 6.7.3 **Not inconsistent assessment:** The assessment of acoustic emissions, light emissions and potential vessel collisions has considered the potential impacts to marine turtles. Management of the Petroleum Activities Program will ensure that marine turtles are not displaced from identified habitat critical to the survival of marine turtles.	Refer Sections 6.6.3, 6.6.4 and 6.7.3
	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 6.7.9 **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 23 C 17.1 PS 17.1
	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 6.7.3 and 6.7.4 **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 6.7.3 and 6.7.4 Detailed oil spill preparedness and response performance outcomes, standards and measurement criteria for the Petroleum Activity are presented in Appendix G.

Part 13 statutory instrument	Relevant action areas/objectives	Relevant actions	Evaluation	Relevant EPO and EPS
	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 6.6.4 **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 the activity, the impacts to adult turtles moving through the Operational Areas from vessel lighting are expected to be localised and temporary with no lasting effect.	EPO 7 and EPO 8 C 4.1 PS 4.1.1 and PS 4.1.2
	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 North West Shelf stock to other stocks LH-WA – no relevant actions F-Pil – no relevant actions	Refer Section 6.6.3 **Not inconsistent assessment:** The assessment of acoustic emissions has considered the potential impacts to marine turtles. Noise related to the Petroleum Activity is not expected to result in behavioural response, injury or mortality of individuals, or any other lasting effect.	EPO 5 C 3.1 PS 3.1

Part 13 statutory instrument	Relevant action areas/objectives	Relevant actions	Evaluation	Relevant EPO and EPS
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.				

Table 6-27: Assessment against relevant actions of the Blue Whale Conservation Management Plan

Part 13 statutory instrument	Relevant action areas/objectives	Relevant actions	Evaluation	Relevant EPO and EPS
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 biologically important areas will be managed such that any blue whale continues to use the area without injury, and is not displaced from a foraging area	Refer Section 6.6.3 Not inconsistent assessment: The assessment of acoustic emissions has considered the potential impacts to pygmy blue whales. Acoustic emissions from project 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 Areas. If the Petroleum Activity within the Operational Areas overlaps with an individual northbound or southbound migration, they may deviate slightly from the migratory route but will continue on their migration.	EPO 5 C 3.1 PS 3.1
	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 6.7.7 Not inconsistent assessment: The assessment of vessel collision with marine fauna has considered the potential risks to pygmy blue whales. If the Petroleum Activity within the Operational Areas overlaps with an individual northbound or southbound migration, they may deviate slightly from the migratory route but will continue on their migration. Vessel collisions with pygmy blue whales are highly unlikely to occur, given the low operating speed of support vessels.	EPO 20 and 21 C 15.1 PS 15.1.1 and PS 15.1.2
	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).	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.				

Table 6-28: Assessment against relevant actions of the Southern Right Whale Recovery Plan

Part 13 statutory instrument	Relevant action areas/objectives	Relevant actions	Evaluation	Relevant EPO and EPS
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.	Not inconsistent assessment: This EP assesses the potential impacts of the petroleum activity do not 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 250 km from the Operational Areas.	N/A
	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.	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 250 km from the Operational Areas therefore it is not expected that noise from the petroleum activity program will impact the southern right whales.	N/A
	A6: Manage, minimise and	Action 1: Assess risk of vessel strike to southern right whales in BIAs	Not inconsistent assessment: The assessment of vessel collision with marine fauna has considered	N/A

Part 13 statutory instrument	Relevant action areas/objectives	Relevant actions	Evaluation	Relevant EPO and EPS
	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	the potential risks to southern right whales. The nearest BIAs and HCTS for the southern right whale being over 250 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 Activities Program is not considered to be inconsistent with the relevant actions of this plan.				

Table 6-29: Assessment against relevant actions of the Grey Nurse Shark Recovery Plan

Part 13 statutory instrument	Relevant action areas/objectives	Relevant actions	Evaluation	Relevant EPO and EPS
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 6.7.9 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.	N/A
			Refer Sections 6.7.3 and 6.7.4 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 6.7.3 and 6.7.4 Detailed oil spill preparedness and response performance outcomes, standards and measurement criteria for the Petroleum Activity are presented in Appendix G

Part 13 statutory instrument	Relevant action areas/objectives	Relevant actions	Evaluation	Relevant EPO and EPS
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.				

Table 6-30: Assessment against relevant actions of the Sawfish and River Sharks Recovery Plan

Part 13 statutory instrument	Relevant action areas/objectives	Relevant actions	Evaluation	Relevant EPO and EPS
Sawfish and River Sharks 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 6.7.3 and 6.7.4 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 6.7.3 and 6.7.4 Detailed oil spill preparedness and response performance outcomes, standards and measurement criteria for the Petroleum Activity are presented 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 6.7.9 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.	N/A

Part 13 statutory instrument	Relevant action areas/objectives	Relevant actions	Evaluation	Relevant EPO and EPS
Assessment summary The Sawfish and River Sharks 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.				

Table 6-31: Assessment against relevant actions of the Marine Debris Threat Abatement Plan

Part 13 statutory instrument	Relevant action areas/objectives	Relevant actions	Evaluation	Relevant EPO and EPS
Marine Debris Threat Abatement Plan	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 6.7.9 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.	N/A
Assessment summary The Marine Debris Threat Abatement Plan 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.				

7. IMPLEMENTATION STRATEGY

7.1 Overview

Regulation 22 of the Environment Regulations requires an EP to contain an implementation strategy for the activity. The implementation strategy for the Petroleum Activity confirms fit-for-purpose systems, practices and procedures are in place to direct, review and manage the activities so that environmental risks and impacts are continually being reduced to ALARP and are acceptable, and that EPOs and EPS outlined in this EP are achieved.

Woodside, as Operator, is responsible for ensuring that the Petroleum Activity is managed in accordance with this Implementation Strategy and the WMS (Section 1.6).

7.2 Systems, practices, and procedures

All operational activities are planned and performed in accordance with relevant legislation and standards, management measures identified in this EP and internal environment standards and procedures (Section 6). The systems, practices and procedures that will be implemented are listed in the EPSs adopted in Section 6. Document names and reference numbers may be subject to change during the statutory duration of this EP and is managed through a Change Register and update process.

7.2.1 Assessment of project fluids

All chemicals that may be operationally released or discharged to the marine environment by the Petroleum Activity are evaluated using a defined framework and set of tools to ensure the potential impacts are acceptable, ALARP and meet Woodside's expectation for environmental performance. This excludes legacy chemicals, including residual NWBM currently present in the wellbore, which have been assessed for discharge in Section 6.7.5.

All approved plugging and drilling chemicals are included on the Woodside Drilling and Completions Chemical Assessment Register which is reviewed as per the Chemical Selection and Assessment Environment Guideline.

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. It applies the requirements of the Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR Convention). The OSPAR Convention is widely accepted as best practice for chemical management.

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 7-1):

- 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.

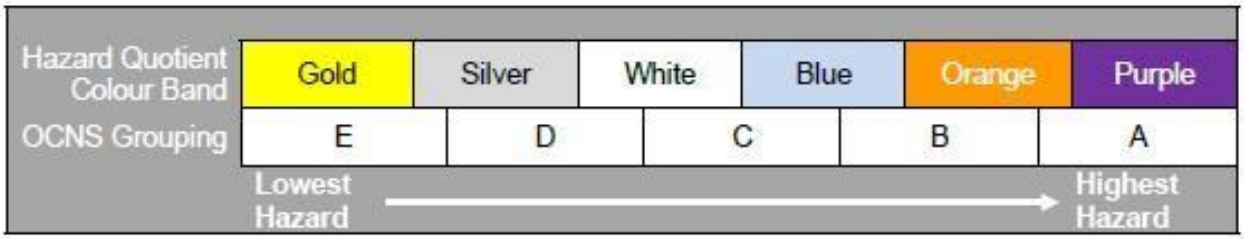

Figure 7-1: OCNS ranking scheme

Chemicals fall into the following assessment types:

- No further assessment: Chemicals with an HQ band of Gold or Silver or an OCNS ranking of E or D with no substitution or product warnings do not require further assessment. Such chemicals do not represent a significant impact on the environment under standard use scenarios and are therefore considered ALARP and acceptable.
- Further assessment/ALARP justification required: The following types of chemicals require further assessment to understand the environmental impacts of discharge into the marine environment:
  - chemicals with no OCNS ranking
  - chemicals with an HQ band of White, Blue, Orange or Purple or an OCNS ranking of A, B or C
  - chemicals with an OCNS product or substitution warning.

This includes assessing the ecotoxicity, biodegradation and bioaccumulation of the chemicals in the marine environment in accordance with the Centre for Environment, Fisheries and Aquaculture Science (CEFAS) Hazard Assessment and the Department of Energy, Mines, Industry Regulation and Safety (DEMIRS) Chemical Assessment Guide: Environmental Risk Assessment of Chemicals used in WA Petroleum Activities Guideline.

Ecotoxicity

Chemical ecotoxicity is assessed using the criteria used by CEFAS to group chemicals based on ecotoxicity results (Table 7-1). If a chemical has an aquatic or sediment toxicity within the criteria for the OCNS grouping of D or E, this is considered acceptable in terms of ecotoxicity.

Table 7-1: Centre for Environment, Fisheries and Aquaculture Science's Offshore Chemical Notification Scheme (OCNS) grouping based on ecotoxicity results

Initial Grouping	A	B	C	D	E
Results of aquatic toxicity data (ppm)	<1	>1–10	>10–100	>100–1000	>1000
Results for sediment toxicity data (ppm)	<10	>10–100	>100–1000	>1000–10,000	>10,000

Note: Aquatic toxicity refers to the Skeletonema costatum EC50, Acartia tonsa LC50 and Scophthalmus maximus (juvenile turbot) LC50 toxicity tests; sediment toxicity refers to Corophium volutator LC50 test.

Biodegradation

The biodegradation of chemicals is assessed using the CEFAS biodegradation criteria, which align with the categorisation outlined in the DEMIRS Chemical Assessment Guide: Environmental Risk Assessment of Chemicals used in WA Petroleum Activities Guideline.

CEFAS categorises biodegradation into the following groups:

- Readily biodegradable: results of >60% biodegradation in 28 days to an OSPAR harmonised offshore chemical notification format (HOCNF) accepted ready biodegradation protocol.
- Inherently biodegradable: results >20% and <60% to an OSPAR HOCNF accepted ready biodegradation protocol or result of >20% by OSPAR accepted inherent biodegradation study.
- Not biodegradable: results from OSPAR HOCNF accepted biodegradation protocol or inherent biodegradation protocol are <20%, or half-life values derived from aquatic simulation test indicate persistence.

Chemicals with >60% biodegradation in 28 days to an OSPAR HOCNF accepted ready biodegradation protocol are considered acceptable in terms of biodegradation.

Bioaccumulation

The bioaccumulation of chemicals is assessed using the CEFAS bioaccumulation criteria, which align with the categorisation outlined in the DEMIRS Chemical Assessment Guide: Environmental Risk Assessment of Chemicals used in WA Petroleum Activities Guideline.

The following guidance is used by CEFAS:

- Non-bioaccumulative: Log Pow <3, or Bioconcentration Factor (BCF) ≤100 and molecular weight is ≥700.
- Bioaccumulative: Log Pow ≥3 or BCF >100 and molecular weight is <700.

Chemicals that meet the non-bioaccumulative criteria are considered acceptable. If a product has no specific ecotoxicity, biodegradation or bioaccumulation data available, the following options are considered:

- Environmental data for analogous products can be referred to where chemical ingredients and composition are largely identical.
- Environmental data may be referenced for each separate chemical ingredient (if known) within the product.

Alternatives

If no environmental data are available for a chemical or if the environmental data does not meet the acceptability criteria outlined above, potential alternatives for the chemical will be investigated, with preference for options with an HQ band of Gold or Silver, or OCNS Group E or D with no substitution or product warnings.

Decision

Once the further assessment/ALARP justification has been completed, the relevant environment adviser must concur that the environmental risk as a result of chemical use is ALARP and acceptable.

7.2.2 Woodside invasive marine species risk assessment process

7.2.2.1 Objective and scope

To minimise the risk of introducing invasive marine species (IMS) as a result of the proposed activities, all applicable vessels and immersible equipment will be subject to Woodside's IMS risk assessment process (unless exempt as outlined below).

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)[67]
- '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[68]. Vessels, or immersible equipment are defined as locally sourced when the same supply facilities/port

[67] 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.

[68] 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 (excluding high environmental value areas, World Heritage Areas, Commonwealth Marine Reserve Sanctuary Zones and State Marine Management Areas and Marine Parks and any government-declared Quarantine Areas).

have been used since their last IMS inspection, full hull clean in dry dock or application of antifouling coating (AFC).

7.2.2.2 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 project vessel, or immersible equipment planning to undertake activities within an IMSMA or Operational Areas. The risk assessment process considers a range of factors, as listed in Table 7-2 and Table 7-3.

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 7-2: 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 7-3: 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.
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 project sites, 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 3 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 Areas.

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 7 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
- treating vessels. internal seawater systems, typically applied in isolation for vessels with AFC applied to their hull within the last 12 months and where subsequent assessment through the process achieves a low risk rating

- 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.

Before they enter the Operational Area, project vessels and immersible equipment are required to be a low risk of introducing IMS.

7.2.3 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* (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*.
- 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.

7.3 Roles and responsibilities

Key roles and responsibilities for Woodside and contractor personnel relating to implementing, managing and reviewing this EP are described in Table 7-4. Roles and responsibilities for oil spill preparation and response are outlined in Appendix G and the Woodside Oil Pollution Emergency Arrangements (Australia). 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 7-4: Roles and responsibilities

Title (role)	Environmental responsibilities
All personnel	
All offshore-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.
Office-based personnel	
Woodside Project Manager	• Monitor and manage the activity so it is performed as per the relevant standards and commitments in this EP and approval conditions. • Notify the Woodside Environment Adviser in a timely manner of any scope changes. • Liaise with regulatory authorities as required. • Review this EP as necessary and manage change requests. • Provide sufficient resources to implement the permanent plugging-related management measures (i.e. controls, EPOs, PSs and MC) in this EP. • Ensure MODU and support vessel personnel are given an HSE Induction, as per Section 7.4.2 of this EP, at the start of the permanent plugging programs. • Verify that contractors meet environmental related contractual obligations. • Confirm controls and performance standards in this EP are actioned, as required, before permanent plugging commences. • Ensure the MODU start-up meets the requirements of the Drilling and Managing Rig Operations Process. • Confirm environmental incident reporting meets regulatory requirements (as outlined in this EP) and Woodside's HSE Reporting and Investigation Procedure. • Monitor and close out corrective actions identified during environmental monitoring or audits.
Woodside Head of Projects/Region (Global Wells and Seismic)	• Ensure drilling operations are undertaken as per this EP and approval conditions. • Provide sufficient resources to implement the drilling-related management measures (i.e. controls, EPOs, PSs and MC) in this EP. • Ensure MODU and project vessel personnel are given an Environmental Induction, as per Section 7.4.2 of this EP, at the start of the drilling programs. • Confirm controls and performance standards in this EP are actioned, as required, before drilling commences. • Ensure the MODU start-up meets the requirements of the Drilling and Managing Rig Operations Process.

Title (role)	Environmental responsibilities
Subsea Delivery Lead	• Monitor and manage the activity so it is performed as per the relevant standards and commitments in this EP and approval conditions. • Notify the Woodside Environment Adviser in a timely manner of any scope changes. • Liaise with regulatory authorities as required. • Provide sufficient resources to implement the subsea related management measures (i.e. controls, EPOs, PSs and MC) in this EP. • Ensure vessel personnel are given an HSE Induction, as per Section 7.4.2 of this EP, at the start of the activities. • Verify that contractors meet environmental related contractual obligations. • Confirm controls and performance standards in this EP are actioned, as required, before activities commence. • Ensure relevant vessels meet the requirements of Woodside's Marine Operations Operating Standard. • Review this EP and manage change requests for the activity. • Confirm that site-based personnel are given an HSE Induction, as per Section 7.4.2 of this EP, at the start of the activity. • Ensure all chemicals and drill fluids proposed to be discharged are assessed and approved as per the requirements of the EP. • Confirm environmental incident reporting meets regulatory requirements (as outlined in this EP) and Woodside's HSE Reporting and Investigation Procedure. • Monitor and close out corrective actions identified during environmental monitoring or audits.
Woodside Drilling Superintendent	• Ensure the permanent plugging program meets the requirements detailed in this EP. • Ensure changes to the permanent plugging program are communicated to the Woodside Environmental Adviser. • Ensure Woodside's Well Site Manager is provided with the resources required to ensure the management measures (i.e. controls, EPOs, EPs and MC) in this EP are implemented. • Confirm environmental incident reporting meets regulatory requirements (as outlined in this EP) and Woodside's HSE Reporting and Investigation Procedure. • Monitor and close out corrective actions identified during environmental monitoring or audits.
Woodside Drilling, Completion and Subsea Engineers	• Ensure changes to the permanent plugging program are communicated to the Woodside Environmental Adviser. • Ensure all drilling and completions fluid chemical components and other fluids that may be used downhole have been reviewed by the Drilling and Completions Environmental Adviser.

Title (role)	Environmental responsibilities
Woodside Environmental Adviser	• Verify relevant Environmental Approvals for the activities exist before commencing activity. • Track compliance with performance outcomes and performance standards as per the requirements of this EP. • Prepare environmental component of relevant Induction Package. • Assist with the review, investigation and reporting of environmental incidents. • Ensure environmental monitoring and inspections/audits are performed as per the requirements of this EP. • Liaise with relevant regulatory authorities as required. • Assist in preparing required external regulatory reports, in line with environmental approval requirements and Woodside incident reporting procedures. • Monitor and close out corrective actions (Campaign Action Register) identified during environmental monitoring or audits. • Provide advice to relevant Woodside personnel and contractors to help them understand their environment responsibilities. • Liaise with contractors to ensure communication and understanding of environment requirements as outlined in this EP and in line with Woodside's Compass values and management systems.
Woodside Corporate Affairs Adviser	• Prepare and implement the Stakeholder Consultation Plan for the Petroleum Activity. • Report on stakeholder consultation. • Continuously liaise and provide notification as required as outlined in the EP.
Woodside Marine Assurance Superintendent	• 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.
Corporate Incident Management Team (CIMT) Incident Commander (IC)	On receiving notification of an incident, the Woodside CIMT 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.
Mobile offshore drilling unit (MODU)-based personnel	
MODU Offshore Installation Manager (OIM)	• Ensure the MODU's management system and procedures are implemented. • Ensure personnel starting work on the MODU receive an environmental induction that meets the requirements specified in this EP. • Ensure personnel are competent to perform the work they have been assigned. • Verify that emergency drills are conducted as per the MODU's schedule. • Ensure the MODU's Emergency Response Team has been given sufficient training to implement the MODU's SOPEP. • Ensure any environmental incidents or breaches of outcomes or standards are reported immediately to the Well Site Manager. • Ensure corrective actions for incidents or breaches are developed, communicated to the Well Site Manager, and tracked to close-out in a timely manner.

Title (role)	Environmental responsibilities
Woodside Well Site Manager	• Ensure the permanent plugging program is performed as detailed in this EP. • Ensure the management measures (i.e. controls, EPOs, PSs and MC) detailed in this EP (relevant to offshore activities) are implemented on the MODU (other controls will be implemented onshore). • Ensure environmental incidents or breaches of outcomes or standards are reported as per the Woodside Corporate Event Notification Matrix. Ensure corrective actions for incidents and breaches are developed, tracked and closed out in a timely manner. • Ensure actions in the Drilling and Completions HSE Improvement Plan are performed. • Ensure periodic environmental inspections/reviews are completed. Ensure corrective actions from inspections are developed, tracked and closed out in a timely manner.
Woodside Offshore HSE Adviser	• Support the Well Site Manager to ensure the controls detailed in this EP relevant to offshore activities are implemented on the MODU and help collect and record evidence of implementation (other controls are implemented and evidence collected onshore). • Support the Well Site Manager to ensure the EPOs are met and the PSs detailed in this EP are implemented on the MODU. • Confirm actions in the Drilling and Completions HSE Improvement Plan are performed. • Support the Well Site Manager to ensure environmental incidents or breaches of outcomes or standards outlined in this EP, are reported, and corrective actions for incidents and breaches are developed, tracked and closed out in a timely manner. • Ensure periodic environmental inspections/reviews are completed and corrective actions from inspections are developed, tracked and closed out in a timely manner. • Review contractors' procedures, input into Toolbox talks and JSAs. • Provide day-to-day environmental support for activities in consultation with the Woodside Environment Adviser.
Drilling Logistics Coordinator	• Ensure waste is managed on the MODU and sent to shore as per the Drilling and Completions Waste Management Plan (WMP).
Vessel-based personnel	
Vessels Master	• Ensure personnel commencing work on the vessel receive an environmental induction that meets the relevant requirements specified in this EP. • Ensure personnel are competent to perform the work they have been assigned. • Verify SOPEP drills are conducted as per the vessel's schedule. • Ensure the vessel Emergency Response Team has been given sufficient training to implement the SOPEP. • Ensure any environmental incidents or breaches of relevant EPOs or PSs detailed in this EP are reported immediately to the Woodside Well Site Manager. • Ensure corrective actions for incidents or breaches are developed, communicated to the Well Site Manager, and tracked to close-out in a timely manner. Ensure close-out of actions is communicated to the Well Site Manager.
Vessel Logistics Coordinators	• Ensure waste is managed on the relevant support vessels and sent to shore as per the relevant WMP.
Vessel HSE Advisers	• Refer to Woodside HSE Offshore Adviser responsibilities detailed above under MODU-based personnel.
Contractor Project Manager	• Confirm activities are performed in accordance with this EP, as detailed in the Woodside-approved Contactor Environmental Management Plan. • Ensure personnel commencing work on the project receive a relevant environmental induction that meets the requirements specified in this EP. • Ensure personnel are competent to perform the work they have been assigned. • Ensure any environmental incidents or breaches of objectives, standards or criteria outlined in this EP, are reported immediately to the Woodside Responsible Engineer or Vessel Master.

Title (role)	Environmental responsibilities
Woodside Site Representative/ Resident Engineer	• Ensure activities are undertaken as detailed in this EP. • Ensure the management measures made in this EP are implemented on the vessel. • Ensure environmental incidents or breaches of objectives, standards or criteria outlined in this EP, are reported as per the Woodside Corporate Event Notification Matrix. • Verify HSE improvement actions identified during the project are implemented where practicable. • Ensure periodic environmental inspections are completed.

7.4 Training and competency

7.4.1 Overview

Woodside as part of its contracting process assesses a proposed contractor's environmental management systems 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.

7.4.2 Inductions

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.

7.4.3 Petroleum Activity-specific environmental awareness

Before commencing the plug and abandonment or well intervention campaigns associated with the Petroleum Activity, a pre-activity meeting will be held on-board the MODU and project 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-board the MODU and project vessels with all crew. During these meetings, recent environmental incidents will be reviewed and awareness material presented.

7.4.4 Management of training requirements

All personnel on the MODU and project 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.

7.5 Monitoring, auditing, and managing non-conformance and review

7.5.1 Monitoring

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 risks and impacts 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, performance standards and measurement criteria from the EP and tracks compliance against each of these items. Before a project vessel is mobilised, Woodside confirms the compliance systems in place on the vessel and identifies, and records in the ECAR, the specific records that will be provided by the vessel contractor during the offshore campaign. This provides Woodside with the opportunity to confirm the records provided during the activity are sufficient for demonstrating compliance against the EP. It also serves as a central depository for compliance information relevant to each Petroleum Activity.

7.5.2 Auditing

Environmental performance auditing will be performed to:

- identify potential new, or changes to existing environmental impacts and risk, and methods for reducing those to ALARP
- confirm that mitigation measures detailed in this EP are effectively reducing environmental impacts and risk, that mitigation measures proposed are practicable and provide appropriate information to verify compliance
- confirm compliance with the Performance Outcomes, Controls and Standards detailed in this EP.
- Internal auditing will be performed to cover each key project activity as summarised below.

7.5.2.1 Mobile offshore drilling unit activities

Internal auditing is performed on a MODU-specific schedule, rather than a schedule to align with the Petroleum Activity. This enables continuous review and improvement of environmental performance over the term of the MODU contract. The following internal audits, inspections and reviews will be performed to review the environmental performance of the activities:

Survey environment rig equipment for a newly contracted MODU (if not previously contracted to Woodside within the last 2 years) against Woodside's Engineering Standard – Rig Equipment. This standard covers functional and technical requirements for Woodside contracted rigs and their associated equipment. An environment rig equipment survey scope typically includes mud and solids control systems, environmental discharge control (including drainage management), and loss of containment management.

Complete a minimum of monthly environmental inspection (conducted by offshore Woodside personnel or a delegate) which may include verifying:

- bunkering/transfers between support vessels and MODU /project vessels

- environment containment including chemical storage, spill response equipment and housekeeping
- general MODU environment risks including waste management, drilling fluids oil/water separation, and inspection of subsea and moonpool areas.

Perform environment audits quarterly during the Petroleum Activity, while the MODU is on location (by a Woodside Environment Adviser or delegate), which may include, but is not limited to:

- operational compliance audits relevant to environmental risk of activities, which may include compliance with training commitments, discharge requirements, bunkering activities, verification of use of approved chemicals, and satisfactory close out of items from previous audits
- inspection of selected risk areas/activities (which may include shaker house, drill floor and mud management while commencing riser drilling or reservoir interception) during routine MODU visits throughout the MODU campaign, determined by risk, previous incidents or operation specification requirements.
- audit findings relevant to continuous improvement of environmental performance will be tracked through the MODU or vessel compliance action register, a contractor register between the MODU operator or vessel contractor and Woodside.

7.5.2.2 Marine assurance

Woodside's marine assurance is managed by the Marine Assurance Team of the Logistics Function in accordance with Woodside's Marine Offshore Vessel Assurance Procedure. 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 operators operate seaworthy vessels that 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) system verification
- vessel inspections
- offshore vessel inspection database (OVID) or condition and suitability assessment
- project support for tender review, evaluation and pre/post contract award.

Vessel inspections are used to verify actual levels of compliance with the company's Safety Management System, the overall condition of the vessel and the status of the planned maintenance system onboard. 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 marine assurance process, to confirm that identified concerns are addressed appropriately and conditions imposed are managed, the Woodside Marine Assurance Team will issue the vessel a statement of approval. Should a vessel not meet the requirements of the Woodside Marine Offshore

Vessel Assurance Process and be rejected, there does exist an opportunity to further scrutinise the proposed vessel.

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.

7.5.2.3 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 project)
  - 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.

7.5.3 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 Woodside's HSE Event Reporting and Investigation Procedure 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.

7.5.4 Review

7.5.4.1 Management review

Within the Environment Function, senior management regularly monitor and review environmental performance and the effectiveness of managing environmental risks and performance. Within each Function and Business Unit Leadership Team (e.g. Drilling and Completions, Subsea and Developments/Projects), managers review environmental performance regularly, including through quarterly HSE review meetings.

- Woodside's Drilling and Completions Environment Team will perform six-monthly reviews of the effectiveness of the implementation strategy and associated tools. This will involve reviewing the:tools and systems to monitor environmental performance
- lessons learned about implementation tools and throughout each campaign
- reviews of oil spill arrangements and testing are performed in accordance with this EP.

7.5.4.2 Learning and knowledge sharing

Learning and knowledge sharing occurs via several different methods including:

- event investigations
- event bulletins
- after action review conducted at the end of each well, including review of environmental incidents as relevant
- ongoing communication with MODU operators
- formal and informal industry benchmarking
- cross-asset learnings
- engineering and technical authorities discipline communications and sharing.

7.5.4.3 Review of impacts, risks and controls across the life of the EP

In the unlikely case that activities described in this EP do not occur continuously or sequentially, before recommencing activities after a cessation period greater than 12 months, impacts, risks and controls will be reviewed.

The process will identify or review impacts and risks associated with the newly-commencing activity, and will identify or review controls to ensure impacts and risks remain/are reduced to ALARP and acceptable levels. Information learned from previous activities conducted under this EP will be considered. Controls which have previously been excluded on the basis of proportionality will be reconsidered. Any required changes will be managed by the MOC process outlined below.

7.6 Management of knowledge

Review of knowledge relevant to the existing environment is undertaken to identify changes relating to the understanding of the environment or legislation that supports the risk and impact assessments for EPs (in-force and in-preparation). New knowledge checks take place both routinely primarily via quarterly and annual knowledge reviews and ad hoc (as information is obtained), and encompasses the following topics:

- Environmental science – update checks conducted via desktop reviews: scientific literature, government publications and Woodside supported publications and studies relating to existing environment topics

(including but not limited to species and habitats) as well as EPBC Act Matters of National Environmental Significance (Part 3) and Part 13 statutory instruments.

- Socio-economic environment and stakeholder information – update checks conducted via desktop reviews: scientific literature, government publications and Woodside consultation; and,
- Environmental legislation – monitoring of emerging regulatory changes and the subsequent management of regulatory change (as outlined in the WMS Regulatory Compliance Management Procedure).

A management of knowledge tracker is maintained to record reviews and updates. Communication of relevant new knowledge is addressed at the EP Consolidation meetings where changes in knowledge prompt a consideration of MOC, this is actioned and documented appropriately.

The frequency and documentation of reviews, communication of relevant new knowledge and consideration of MOC are documented in the WMS EP Guideline.

Any relevant new information on cultural values and heritage will be assessed using the EP Management of Change Process.

Under the Oil Spill Scientific Monitoring Program preparedness, an annual review and update to the environmental baseline studies database is completed and documented. Periodic location-focused environmental studies and baseline data gap analyses are completed and documented. Any subsequent studies scoped and executed as a result of such gap analysis are managed by the Environment Science Team and tracked via the Corporate Environment Baseline Database.

7.7 Management of change and revision

7.7.1 EP management of change

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 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 risks and impacts of the 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 risks and impacts 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 risk changes, as well as enable internal EP updates/reissuing as required. This document will be made available to NOPSEMA during regulator environment inspections.

7.7.2 Oil Pollution Emergency Plan management of change

Relevant documents from the OPEP will be reviewed in the circumstances of:

- 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 are required to the OPEP, based on the outcomes of the reviews described above, they will be assessed against Regulation 39 to determine if EP, including OPEP, resubmission is. Changes with potential to influence minor or technical changes to the OPEP are tracked in MOC records, project records and incorporated during internal updates of the OPEP or the five-yearly revision.

New sources of receptor-based 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.

7.8 Record keeping

Compliance records referenced in the measurement criteria contained within this EP will be maintained. Many of the measurement criteria listed in this EP refers to 'records'; in this context, 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.

Record keeping will be in accordance with Regulation 22(6) that addresses maintaining records of emissions and discharges.

7.9 Ongoing consultation

Although consultation for the purpose of Regulation 25 is complete, in accordance with Regulation 22(9) 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.

Woodside proposes to undertake the engagements with relevant interested persons throughout the life of the EP. Recent 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 at which members are provided updates on Woodside activities on a regular basis (for example community reference 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 those who are simply interested in the activities, can otherwise remain up to date on this activity through subscribing to the Woodside website, or by reading the publicly available version of the EP on NOPSEMA's website, where available.

Should consultation feedback be received following EP acceptance that identifies relevant new information or a measure or control that requires implementation or update to meet the intended outcome of consultation, Woodside will apply its EP Management of Knowledge process and Management of Change Process as appropriate.

Woodside has developed a Program of Ongoing Engagement with Traditional Custodians (Appendix I), which complies with Corporate Woodside Policies Strategies and procedures and is directly informed by feedback from Traditional Custodians.

It provides a mechanism for ongoing dialogue so 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 Program 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 activity are planned with Traditional Custodians. These are described in Appendix I. Where Traditional Custodian relevant persons have requested information or further engagement considered as ongoing consultation, but have not requested a framework agreement, these requests have been captured in Table 7-5. However, a framework agreement may still be initiated by these groups at any time.

Table 7-5: Ongoing consultation engagements

Report/ information	Recipient	Purpose	Frequency	Content
Program of Ongoing Engagement with Traditional Custodians (Appendix I)	Relevant cultural authorities	Ongoing engagement.	Ongoing. Progress on the Program will be reported in line with annual sustainability reporting via the Woodside website. Responses to any feedback received by Traditional Custodian groups will be provided by Woodside within four weeks of receipt.	Assessment of cultural values. Any relevant new information on cultural values will be assessed using the EP Management of Knowledge (refer to Section 7.6) and Management of Change Process (refer to Section 7.7).
Ongoing engagement	Malgana	Ongoing engagement.	Ongoing. Responses will be provided within four weeks of receipt of additional feedback.	As requested during consultation. Engagement is not specific to this activity.
Notification (email)	AHO	As requested by AMSA during consultation.	No less than 4 weeks prior to commencement and after wellhead removal.	PS 1.1 and PS 1.2 (Section 6.6.1). Date of activity start and end.
Updates (email)			As required.	Changes to planned activities.
Notification (email)	AMSA	As requested by AMSA during consultation.	At least 24-48 hours before operations commence.	PS 1.4 (Section 6.6.1). Date of activity start.
Updates (email)			Provide updates to the AHO and JRCC should there be changes to the activity.	Changes to planned activities.
Notification (email)	DoD	Standard practice	Five weeks prior to commencement of activities.	PS 1.3 (Section 6.6.1). Date of activity start.
Notification (email)	DEMIRS	Good practice.	At least 10 days prior to commencement.	Activity start date.
Notification (email)	AFMA DAFF – Fisheries DPIRD WAFIC	As requested during consultation	At least 10 days prior to commencement and following completion of activities.	PS 1.3 (Section 6.6.1) Date of activity start and end.

Report/ information	Recipient	Purpose	Frequency	Content
	CFA DCCEEW Recfishwest Relevant Commonwealth fishery licence holders (North West Slope and Trawl Fishery and Western Deepwater Trawl Fishery) Adjacent titleholder (Santos)	and/or organisation.		
Notification (email)	All relevant persons for the proposed activity	Notification of significant change.	As appropriate.	Notification of significant change. Any relevant new information will be assessed using the EP Knowledge Management System (refer to Section 7.6) and Management of Change Process (refer to Section 7.7).
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 be assessed using the EP Management of Knowledge (refer to Section 7.6) and Management of Change Process (refer to Section 7.7).

7.10 Reporting

To meet the EPOs and EPSs outlined in this EP, Woodside reports at a number of levels, as outlined in the next sections.

7.10.1 Routine reporting (internal)

7.10.1.1 Daily progress reports and meetings

Daily reports for activities are prepared and issued to key support personnel and stakeholders, by relevant managers responsible for the well. The report provides performance information about operational activities, heath, safety and environment, and 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.

7.10.1.2 Regular health, safety and environment meetings

The project support vessel will hold regular HSE meetings which cover all crews. During these meetings, environmental incidents will be reviewed, and awareness material presented. All personnel are required to

attend the HSE meetings and attendances sheets are retained by the project vessel contractor. Daily meetings held onboard the project support vessel will also serve to reinforce environmental awareness during the Petroleum Activity.

Dedicated HSE meetings will also be held with the offshore and Perth-based management to address targeted HSE incidents and initiatives. Minutes of these meetings are produced and distributed as appropriate.

7.10.1.3 Performance reporting

Monthly and quarterly performance reports are developed and reviewed by the Function and Business Unit Leadership Teams (e.g. Well Delivery). These reports cover several subject matters, including:

- 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.

7.10.2 Routine reporting (external)

7.10.2.1 Start and end notifications of the Petroleum Activity

In accordance with Regulation 54, Woodside will notify NOPSEMA of the start of the Petroleum Activity at least 10 days before the activity commences and will notify NOPSEMA within 10 days of completing the activity.

7.10.2.2 Environmental performance review and reporting

In accordance with applicable environmental legislation for the activity, Woodside is required to report information about environmental performance to the appropriate regulator. Regulatory reporting requirements are summarised in Table 7-6.

Table 7-6: 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)
Environmental Performance Report	NOPSEMA	Annually, with the first report submitted within 12 months of the commencement of the Petroleum Activity covered by this EP (as per the requirements of Regulation 22(7))	• Compliance with EPOs, controls and EPSs outlined in this EP, in accordance with the Environment Regulations

7.10.2.3 End of the Environmental Plan

The EP will end when Woodside notifies NOPSEMA that the Petroleum Activity has ended and 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.

7.10.3 Incident reporting (internal)

It is the responsibility of the Woodside Project Manager to ensure reporting of environmental incidents meets Woodside and regulatory reporting requirements as detailed in the Woodside HSE Event Reporting and Investigation Procedure and this section of this EP.

7.10.4 Incident reporting (external) – Reportable and recordable

7.10.4.1 Reportable incidents

Definition

A reportable incident is defined under Regulation 5 of the Environment Regulations as:

- '[A]n 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 marine environment resulting from a loss of well control (Section 6.7.2).

Any such incidents represent potential events which would be reportable incidents. Incident reporting is performed with consideration of NOPSEMA (2014) 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.

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 (DEMIRS) 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 and DEMIRS, within 7 days of the written report being provided to NOPSEMA.

Australian Maritime Safety Authority (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.

7.10.4.2 Recordable incidents

Definition

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'.

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.

7.10.4.3 Other external incident reporting requirements

In addition to the notification and reporting of environmental incidents defined under the Environment Regulations and Woodside requirements, Table 7-7 describes the incident reporting requirements that also apply in the Operational Areas.

The pollution activities that should also be reported to AMSA via RCC Australia by the Vessel Master are:

- any loss of plastic material
- garbage disposed of in the sea within 12 nm of land (garbage includes food, paper, bottles and such)
- any loss of hazardous materials.

For oil spill incidents, other agencies and organisations will be notified as appropriate to the nature and scale of the incident as per procedures and contact lists in the Oil Pollution Emergency Arrangements (Australia) and the First Strike Plan (Appendix H).

External incident reporting requirements under the OPGGS (Safety) Regulations, including under Sub-regulation 2.42, notices and reports of dangerous occurrences will be reported to NOPSEMA under the approved activity safety cases.

Table 7-7: External incident reporting requirements

Event	Responsibility	Notifiable party	Notification requirements	Contact	Contact detail
Any marine incidents during 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 Rescue Coordination Centre (RCC)	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 RCC Australia	If the ship is at sea, reports are to be made to: Free call: 1800 641 792 Phone: 08 9430 2100 (Fremantle)

Event	Responsibility	Notifiable party	Notification requirements	Contact	Contact detail
Oil pollution incidents in Commonwealth waters	Vessel Master	AMSA	Without delay as per the Commonwealth *Protection of the Sea (Prevention of Pollution from Ships) Act 1983*, part II, section 11(1), AMSA RCC 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	RCC Australia	Phone: 1800 641 792 OR +61 2 6230 6811

Event	Responsibility	Notifiable party	Notification requirements	Contact	Contact detail
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: 02 6274 2220
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

Event	Responsibility	Notifiable party	Notification requirements	Contact	Contact detail
Within 2 hours of becoming aware of a marine pollution incident that occurs in or may impact State waters	Corporate Incident Management Team (CIMT) Incident Commander (IC) or delegate	Department of Transport (DoT)	Verbally notify DoT's Maritime Environmental Emergency Response Unit (DoT MEER) Duty Officer that a spill has 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, DoT to be notified if spill is likely to extend into WA State waters. Request DoT to provide Liaison to Woodside Incident Management Team (IMT).	DoT MEER Duty Officer	Phone: 08 9480 9924
Within 24 hours of any suspected or confirmed presence of any marine pest or disease detected within Western Australian waters be reported to the department by email or phone.	Depending on contract arranged, Woodside, Qualified IMS Inspector or contractor	DPIRD	Vessel Master/Woodside to email or verbally notify DPIRD within 24 hours of any suspected or confirmed marine pests or diseases. This includes any organism listed in the Western Australian Prevention List for Introduced Marine Pests, which can be accessed from the Department's website.	DPIRD Biosecurity	Email: aquatic.biosecurity@dpird.wa.gov.au or by phone to FishWatch on 1800 815 507

7.11 Emergency preparedness and response

7.11.1 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 7-8 summarises how this EP and supporting documents address the various requirements of Environment Regulations relating to oil pollution response arrangements.

Table 7-8: 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: • Oil Pollution Emergency Arrangements (Australia) • 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 7.11.6 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 the oil pollution response arrangements are consistent with the national system for oil pollution preparedness and control	Regulation 22(16)	Oil Pollution Emergency Arrangements (Australia).

7.11.2 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 7-9).

Table 7-9: 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 • 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).	

7.11.3 Emergency response preparation

The Emergency Operations Centre (EOC), based in Woodside's head office, is the onshore coordination point for an offshore emergency. 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. A description of Woodside's Incident Command Structure and arrangements is further detailed in the Woodside Oil Pollution Emergency Arrangements (Australia), as are roles and responsibilities for facility emergency response.

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. For a drilling activity, the ERP will be a bridging document to the contracted rig's emergency documentation. This document summarises the emergency command, control and communications processes for the integrated operation and management of an emergency. It is developed in collaboration with the contracted rig and ensures roles and responsibilities between the

contracted rig and Woodside personnel are identified and understood. 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 an emergency of any type, the Vessel Master will assume overall onsite command and act as the Incident Controller (IC). All persons aboard the vessel will be required to act under the IC's directions. The vessel will maintain communications with the onshore Project Manager and other emergency services. Emergency response support can be provided by the contractor's emergency centre or Woodside Communication Centre if requested by the IC.

The project vessels will have onboard equipment for responding to emergencies, including medical, firefighting and hydrocarbon spill response equipment.

7.11.4 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 Woodside Oil Pollution Emergency Arrangements (Australia) document, supported by the Petroleum Activity's Oil Pollution First Strike Plan which provides tactical response guidance to the activity/area (Appendix H), cover spill response for this Petroleum Activity.

The Security & Emergency Management Function is responsible for managing Woodside's hydrocarbon spill response equipment and for maintaining hydrocarbon spill preparedness and response documentation. In the event of a major spill, Woodside will request that AMSA (administrator of the National Plan) provides support to Woodside through advice and access to equipment, people and liaison. The interface and responsibilities, as defined under the National Plan, are described in the Oil Pollution Emergency Arrangements (Australia). AMSA and Woodside have a Memorandum of Understanding in place to support Woodside in the event of a hydrocarbon spill.

The Petroleum Activity's Oil Pollution First Strike Plan provides immediate actions required to commence a response.

Vessels will have ship 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 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.

7.11.5 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.

7.11.6 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 7-10: Testing of response capability. 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).

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 7-10: Testing of response capability

Response category	Scope	Response testing frequency	Response testing objective
Level 1 Response	Exercises are MODU- and vessel-specific	One 'First Strike' drill must be conducted within 2 weeks of commencing an activity. For campaigns with an operational duration of greater than one month, this will occur within the first 2 weeks of commencing the activity and then at least every 6-month hire period thereafter.	Comprehensive exercises test elements of the Oil Pollution First Strike Plan (Appendix H). Emergency drills are scheduled to test other aspects of the ERP.
Level 2 Response	Exercises are MODU-specific	At least one Emergency Management exercise per MODU per campaign must be conducted within the first month of commencing the activity and then at every 6-month hire period thereafter.	Test both the facility IMT response and that of the CIMT following handover of incident control. Exercises may include testing of Source Control Response Strategies.
Level 3 Response	Exercises are relevant to all Woodside assets	The number of Crisis Management Team 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.

7.11.7 Testing of hydrocarbon spill response arrangements

There are a number of arrangements which, in the event of a spill, will underpin Woodside's ability to implement a response across its petroleum activities. To ensure these arrangements are adequately tested, the Capability Development Team within Security and Emergency Management ensures tests are conducted in alignment with the Hydrocarbon Spill Testing of Arrangements Schedule.

Woodside is required to test hydrocarbon spill response arrangements as per Regulations 8B and 8C 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. If the MODU leaves the field for an extended period, additional testing will

be undertaken when it returns to routine operations. 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 7-10: Testing of response capability, up to eight formal exercises are planned annually, pan-Woodside, to specifically test arrangements for responding to a hydrocarbon spill to the marine environment.

7.11.8 Testing of arrangements schedule

Woodside's Testing of Arrangements Schedule (Figure 7-2) aligns with international good practice for spill preparedness and response management; the testing is compatible with the International Petroleum Industry Environmental Conservation Association 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 scientific monitoring, or the ability of the Australian Marine Oil Spill Centre to provide response personnel and equipment.

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).

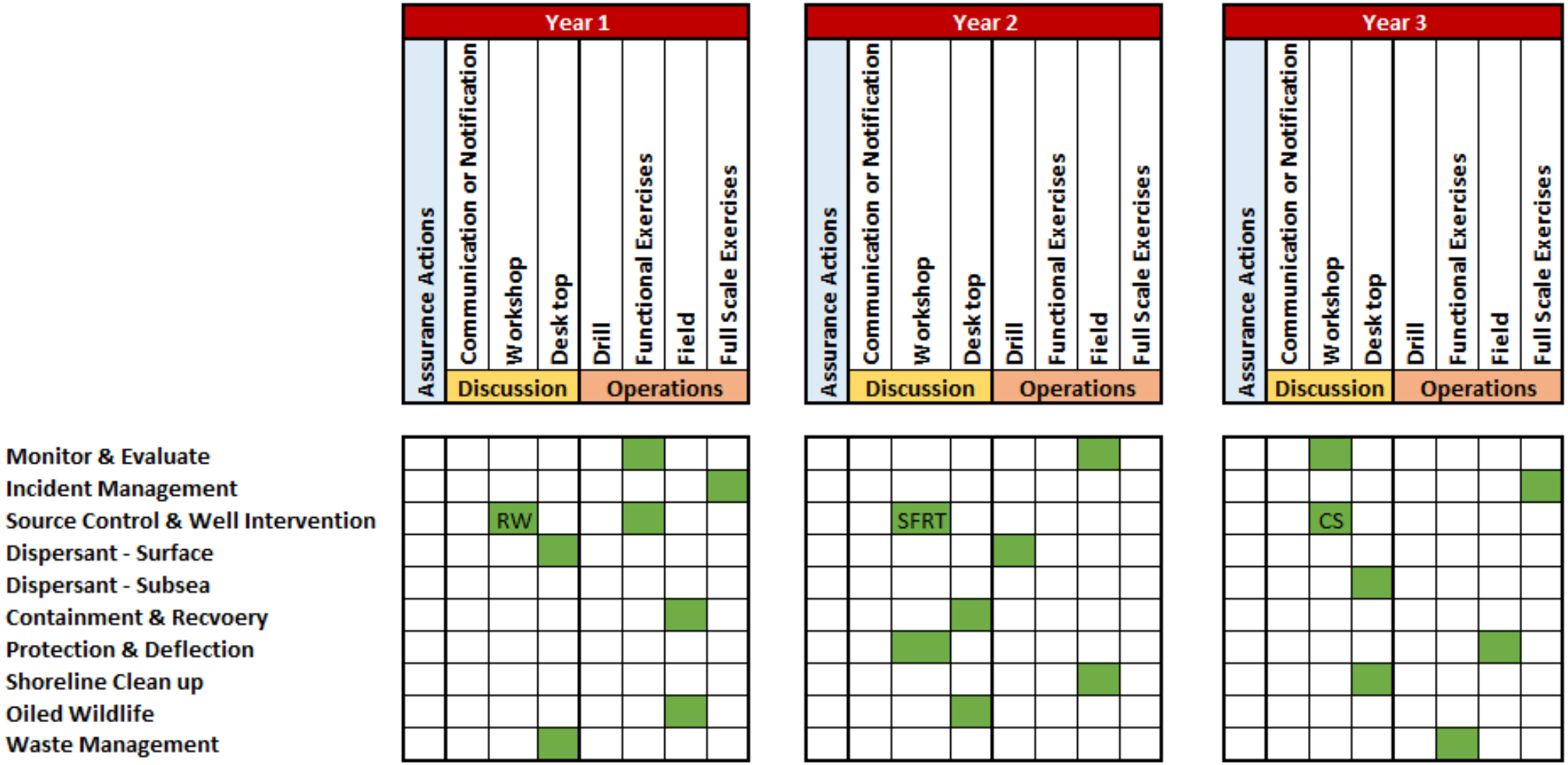

Figure 7-2: Indicative three-yearly testing of arrangements schedule

Note: Schedule is subject to change, additional detail is included in live document.

7.11.9 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.

As the timing of some activities associated with the Petroleum Activity are not yet determined, it is possible drilling and subsea activities will overlap with the cyclone season (November to April, with most cyclones occurring between January and March). If drilling in cyclone season, the MODU contractor and vessel contractors must have a Cyclone Contingency Plan in place outlining the processes and procedures that would be implemented during a cyclone event, which will be reviewed and accepted by Woodside.

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
ABARES	Australian Bureau of Agricultural and Resource Economics and Sciences
ACN	Australian Company Number
AFC	antifouling coating
AFMA	Australian Fisheries Management Authority
AHO	Australian Hydrographic Office
AHTSV	anchor handling tug supply vessel
AHV	anchor handling vessel
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
AS	Australian Standard
ASAP	as soon as possible
ATSB	Australian Transport Safety Bureau
AusSAR	Australian Search and Rescue
AUVs	autonomous underwater vehicles
AWJ	abrasive water jet
BIA	biologically important area
BCF	bioconcentration factor
BOM	Bureau of Meteorology
BOP	blow out preventer
CAES	Catch and Effort System
CALM	Conservation and Land Management
CCS	carbon capture and storage
CEFAS	Centre for Environment, Fisheries and Aquaculture Science
CFA	Commonwealth Fisheries Association
CHP	Commonwealth Heritage Places
CIMT	Corporate Incident Management Team
CMMS	Computerised Maintenance Management System
CS	cost/sacrifice
CV	company values
DAWE	Department of Agriculture, Water and the Environment
DCCEEW	Commonwealth Department of Climate Change, Energy, Environment and Water
DEMIRS	Western Australian Department of Energy, Mining, Industry Regulation and Safety
DNP	Director of National Parks

Term	Definition
DoT	Western Australian Department of Transport
DP	dynamic positioning
DPIRD	Department of Primary Industries and Regional Development
DSEWPaC	Department of Sustainability, Environment, Water, Population and Communities
ECAR	Environmental Compliance Action Register
EDS	emergency disconnect sequence
EFL/s	Electrical flying lead
EMBA	environment that may be affected
EMS	Environmental Management System
ENVID	environment identification
EOC	Emergency Operations Centre
EP	Environment Plan
EPBC	*Environment Protection and Biodiversity Conservation*
EPBC Act	Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*
EPO	environmental performance outcome
EPS	environmental performance standard
ERP	Emergency Response Plan
ESD	ecologically sustainable development
EVXT	enhanced vertical xmas trees
F	Feasibility
GHG	greenhouse gas
GP	good industry practice
GWA	Goodwyn Alpha
HAZID	historic hazard identification
HF	high frequency
HFL	Hydraulic flying lead
HOCNF	Harmonised Offshore Chemical Notification Format
HQ	hazard quotient
HSE	health, safety and environment
IAP	Incident Action Plan
IBC	intermediate bulk container
IC	Incident Controller
ICLDP	Incident and Crisis Leadership Development Program
ID	identity/identification
IMCA	International Maritime Contractors Association
IMCRA	Integrated Marine and Coastal Regionalisation of Australia
IMMR	inspection, maintenance, monitoring and repair
IMO	International Maritime Organization

Term	Definition
IMS	invasive marine species
IMSMA	IMS Management Area
IMT	Incident Management Team
IOPP	International Oil Pollution Prevention
IPIECA	International Petroleum Industry Environmental Conservation Association
ISO	International Organization for Standardization
IUCN	International Union for Conservation of Nature
JRCC	Joint Rescue Coordination Centre
KEF	key ecological feature
KPI	key performance indicator
LAT	lowest astronomical tide
LBL	long base line
LCS	legislation, codes and standards
LCV	light construction vessel
LF	low frequency
LNG	liquefied natural gas
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)
MC	measurement criteria
MDO	marine diesel oil
MEER	Maritime Environmental Emergency Response Unit
MFO	marine fauna observer
MGO	marine gas oil
MNES	matters of national environmental significance
MOC	management of change
MODU	mobile offshore drilling unit
MPA	Marine Protected Area
MPSV	multi-purpose support vessel
MSIN	Maritime Safety Information Notifications
MSPS	Management System Performance Standard
N/A	not applicable
NHP	National Heritage Places
NIMS	non-indigenous marine species
NLPG	National Light Pollution Guidelines
nm	nautical mile
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NOPSEMA	National Offshore Petroleum Safety and Environmental Management Authority

Term	Definition
NORM	naturally-occurring radioactive material
NTM	Notice to Mariners
NWBM	non-water based mud
NWMR	North-west Marine Region
NWS	North West Shelf
NWSTF	North West Slope Trawl Fishery
NZ	New Zealand
OCIMF	Oil Companies International Marine Forum
OGUK	Oil and Gas UK
OIW	oil in water
OOC	oil on cuttings
OCNS	Offshore Chemical Notification Scheme
OPEA	oil pollution emergency arrangements
OPEP	oil pollution emergency plan
OPGGS Act	Commonwealth *Offshore Petroleum and Greenhouse Gas Storage Act 2006*
OPP	Offshore Project Proposal
OSPAR	Oslo and Paris Commission for the 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
OSRO	Oil Spill Response Organisation
OVID	Offshore Vessel Inspection Database
OVMSA	Offshore Vessel Management System Assessment
PAH/s	polycyclic aromatic hydrocarbons
PGB	permanent guide base
PJ	professional judgement
PLONOR	pose little or no risk to the environment
PMST	Protected Matters Search Tool
PoG	Perseus-over-Goodwyn
PS	Performance Standard
PSM	process safety management
PSRA	Process Safety Risk Assessment
PSZ	Petroleum Safety Zone
PTS	permanent threshold shift
PTW	Permit to Work
PWC	perforate, wash and cement
QA/QC	quality assurance, quality control
RAR	rig anchor release

Term	Definition
RBA	risk-based analysis
RCC	Regional Coordination Centre
rms SPL	root mean square sound pressure level
ROV/s	remote operated vehicles
RWOC	Remote Work Over Control System
SAP-PM	Woodside's CMMS
SBMP	Seabird Management Plan
SCE	solids control equipment
SCERP	Source Control Emergency Response Planning Guide
SCM	subsea control module
SCQ	safety and environment critical equipment
SCSSV	surface-controlled subsurface safety valve
SDUs	subsea distribution units
SEL	sound exposure level
SIMAP	Spill Impact Mapping and Analysis Program
SIMOPS	simultaneous operations
SMPEP	Spill Monitoring Programme Execution Plan
SOPEP	Ship Oil Pollution Emergency Plan
SPL	sound pressure level
SSSV	sub-surface safety valve
SV	societal value
TGB	temporary guide base
TTS	temporary threshold shift
The Regulations	Commonwealth Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023
UCH	underwater cultural heritage
UCH Act	Commonwealth *Underwater Cultural Heritage Act 2018*
UK	United Kingdom
UNESCO	The United Nations Educational, Scientific and Cultural Organization
VHF	very high frequency
VOC	non-methane volatile organic compound
WA	Western Australia
WAFIC	WA Australian Fishing Industry Council
WAM	West Australian Museum
WBM	water based mud
WCBD	Well Control Bridging Document
WHA	World Heritage Area
WHP	World Heritage Properties

Term	Definition
WLS	Woodside Learning System
WMS	Woodside Management System
WMP	Waste Management Plan
WOMP	Well Operations Management Plan

APPENDIX A WOODSIDE ENVIRONMENT AND BIODIVERSITY, CLIMATE AND RISK MANAGEMENT POLICIES

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.

Revised by the Woodside Energy Group Ltd Board in December 2024.

[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 2024.

Risk Management Policy

OBJECTIVES

Woodside recognises that risk is inherent in our business and the effective management of risk is vital to deliver our strategic objectives, continued growth and success. We are committed to managing risks in a proactive and effective manner as a source of competitive advantage.

Our approach protects us against potential negative impacts, enables us to take risk for reward and improves our resilience against emerging risks. The objective of our risk management framework is to provide a single consolidated view of risks across the company to understand our full risk exposure and prioritise risk management and governance.

The success of our approach lies in the responsibility placed on everyone at all levels to proactively identify, assess and treat risks relating to the objectives they are accountable for delivering.

PRINCIPLES

Woodside achieves these objectives by:

- Applying a structured and comprehensive framework for the identification, assessment and treatment of current risks and response to emerging risks;
- Ensuring line of sight of financial and non-financial risks at appropriate levels of the organisation;
- Demonstrating leadership and commitment to integrating risk management into our business activities and governance practices;
- Recognising the value of stakeholder engagement, best available information and proactive identification of potential changes in external and internal context;
- Embedding risk management into our critical business processes and control framework;
- Understanding our exposure to risk and tolerance for uncertainty to inform our decision making and assure that Woodside is operating with due regard to the risk appetite endorsed by the Board; and
- Evaluating and improving the effectiveness and efficiency 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 2024.

APPENDIX B RELEVANT REQUIREMENTS

The below table refers to Commonwealth Legislation related to the project.

Commonwealth legislation	Legislation summary
Aboriginal and Torres Strait Islander Heritage Protection Act 1984	The 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. Damage or interference with Aboriginal objects or places is not an offence under the ATSIHP Act except within Victoria under Section 21U.
Air Navigation Act 1920 Air Navigation Regulations 1947 Air Navigation (Aerodrome Flight Corridors) Regulations 1994 Air Navigation (Aircraft Engine Emissions) Regulations 1995 Air Navigation (Aircraft Noise) Regulations 1984 Air Navigation (Fuel Spillage) Regulations 1999	This Act relates to the management of air navigation.
Australian Maritime Safety Authority Act 1990	This Act establishes a legal framework for the Australian Maritime Safety Authority (AMSA), which represents the Australian Government and international forums in the development, implementation and enforcement of international standards including those governing ship safety and marine environment protection. AMSA is responsible for administering the Marine Orders in Commonwealth waters.
Australian Radiation Protection and Nuclear Safety Act 1998	This Act relates to the protection of the health and safety of people, and the protection of the environment from the harmful effects of radiation.
Biosecurity Act 2015 Quarantine Regulations 2000 Biosecurity Regulation 2016 Australian Ballast Water Management Requirements 2017 Biosecurity Amendment (Biofouling Management) Regulations 2021	This Act provides the Commonwealth with powers to take measures of quarantine, and implement related programs as are necessary, to prevent the introduction of 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 powers of entry, seizure, detention and disposal. This Act includes mandatory controls on the use of seawater as ballast in ships and the declaration of 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 Biofouling Management 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.
Environment Protection and Biodiversity Conservation Act 1999 Environment Protection and Biodiversity Conservation Regulations 2000	This Act protects matters of national environmental significance. It streamlines the national environmental assessment and approvals process, protects Australian biodiversity and integrates management of important natural and culturally significant places. Under this Act, actions that may be likely to have a significant impact on MNES must be referred to the Commonwealth Environment Minister.

Commonwealth legislation	Legislation summary
Environment Protection (Sea Dumping) Act 1981 Environment Protection (Sea Dumping) Regulations 1983	This Act provides for the protection of the environment by regulating dumping matter into the sea, incineration of waste at sea and placement of artificial reefs.
Industrial Chemicals (Notification and Assessment Act) 1989 Industrial Chemicals (Notification and Assessment) Regulations 1990	This Act creates a national register of industrial chemicals. The Act also provides for restrictions on the use of certain chemicals which could have harmful effects on the environment or health.
National Environment Protection Measures (Implementation) Act 1998 National Environment Protection Measures (Implementation) Regulations 1999	This Act and Regulations provide for the implementation of National Environment Protection Measures (NEPMs) to protect, restore and enhance the quality of the environment in Australia and ensure that the community has access to relevant and meaningful information about pollution. The National Environment Protection Council has made NEPMs relating to ambient air quality, the movement of controlled waste between states and territories, the national pollutant inventory, and used packaging materials.
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 NGER scheme for reporting greenhouse gas emissions and energy consumption and production by corporations in Australia.
Navigation Act 2012 Marine Order 12: Construction – subdivision and stability, machinery and electrical installations 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 Safety of Life at Sea (SOLAS). The Act will apply to some activities of the survey vessels. This Act is the primary legislation that regulates ship and seafarer safety, shipboard aspects of marine environment protection and pollution prevention.
Offshore Petroleum and Greenhouse Gas Storage Act 2006 Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 Offshore Petroleum and Greenhouse Gas Storage (Resource Management and Administration) Regulations 2011 Offshore Petroleum and Greenhouse Gas Storage (Safety) Regulations 2009	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 Regulations listed.
Ozone Protection and Synthetic Greenhouse Gas Management Act 1989 Ozone Protection and Synthetic Greenhouse Gas Management Regulations 1995	This Act provides for measures to protect ozone in the atmosphere by controlling and ultimately reducing the manufacture, import and export of ozone depleting substances and synthetic greenhouse gases, and replacing them with suitable alternatives. The Act will only apply to Woodside if it manufactures, imports or exports ozone depleting substances.

Commonwealth legislation	Legislation summary
Protection of the Sea (Powers of Intervention) Act 1981	This Act authorises the Commonwealth to take measures for the purpose of protecting the sea from pollution by oil and other noxious substances discharged from ships and provides legal immunity for persons acting under an AMSA direction.
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 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* MARPOL Convention	This Act relates to the protection of 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. 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*. This Act is an amendment to the *Protection of the Sea (Prevention of Pollution from Ships) Act 1983*. This amended Act provides the protection of 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 the protection of the sea from the effects of harmful anti-fouling systems. It prohibits the application or reapplication of harmful anti-fouling compounds on Australian ships or foreign ships that are in an Australian shipping facility.
Recycling and Waste Reduction (Mandatory Product Stewardship – Mercury-added Products) Rules 2021 (Minamata Convention on Mercury 2017)	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 is not yet ratified by Australia, and hence is not currently implemented in Commonwealth law. Australia has signed the convention and is currently undertaking an assessment process prior to ratification.
Underwater Cultural Heritage Act 2018 Underwater Cultural Heritage Guidance for Offshore Developments DRAFT Guidelines to Protect Underwater Cultural Heritage	This Act prescribes penalties for damage to protected underwater cultural heritage without a permit under Section 30 or in contravention of a permit in 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. 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*.

APPENDIX C WOODSIDE MASTER EXISTING ENVIRONMENT

Description of the Existing Environment

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1. INTRODUCTION

1.1 Purpose

This document applies, where indicated in the relevant Environment Plan (EP), to Woodside Energy Ltd. (Woodside) activities and operations.

1.2 Scope

This document describes the existing environment within the Woodside areas of activity located in Commonwealth waters off north-western Western Australia (WA), with a focus on the North-west Marine Region (NWMR) (

Figure 1-1). This document includes details of the particular and relevant values and sensitivities of the environment as required by the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth) (OPGGS (E) Regulations) to inform the impact and risk evaluation of Woodside's activities within the NWMR. Furthermore, the key values of the South-west Marine Region (SWMR) and the North Marine Region (NMR) are summarised to encompass areas outside the NWMR. This is with reference to the environment that may be affected (EMBA), as defined and described in individual EPs, for unplanned hydrocarbon spill risks. Additional information appropriate to the nature and scale of the impacts and risks of activities that may interact with the environment will be used to further inform impact and risk assessments and be included in the Description of the Existing Environment of individual EPs.

This document is informed by a variety of resources that includes: 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 the three PMST reports provided in **APPENDIX A. Protected Matter Search Reports for NWMR, SWMR and** NMR; State (WA)/ Commonwealth Marine Park Management Plans, the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act) Species Profile and Threats Database (SPRAT), EPBC Act Part 13 statutory instruments (recovery plans, conservation advices and wildlife conservation plans for listed threatened and migratory species); and peer reviewed scientific publications, as well as Woodside and Joint Venture (JV) funded studies and other titleholder funded study findings available in the public domain.

1.3 Review and Revision

The information presented in this document is reviewed and updated on at least a 5-year basis. Key updates are captured in a 'change register'. Material risk may trigger updates within the 5-year review period, as per the OPGGS (E) Regulations. Key updates may include but are not limited to the status of EPBC Act listed species, Part 13 Instruments, policies and guidelines, key advice from external stakeholders and recently published scientific literature.

1.4 Regional Context

Where relevant, the physical, biological and social environments within the areas of interest are discussed with reference to the three marine bioregions of Australia—North-west marine region (NWMR), South-west marine region (SWMR)and North marine region (NMR), the Marine Bioregional Plans has been prepared under section 176 of the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)[1] (**Table 1-1)**. The NWMR is the focal marine bioregion for the Woodside Description of the Existing Environment as this is currently the location of most of Woodside's activities.

[1] https://www.dcceew.gov.au/environment/marine/marine-bioregional-plans (accessed:04/08/2024)

Table 1-1. Description of the Marine Bioregions

Marine Bioregion	Description
North-west (DSEWPAC, 2012a)	The NWMR includes all Commonwealth waters (from 3 nautical mile (nm) from the Territorial Sea Baseline (TSB) to the 200 nm Exclusive Economic Zone (EEZ) boundary) extending from the WA/Northern Territory border to Kalbarri, south of Shark Bay in WA, covering an area of approximately 1.07 million km^2 and includes extensive areas of shallower waters on the continental shelf, as well as deep areas of abyssal plain where water depths are 5000 m or greater.
South-west (DSEWPAC, 2012b)	The SWMR comprises Commonwealth waters from the eastern end of Kangaroo Island in South Australia to Shark Bay in WA. The region spans approximately 1.3 million km^2 of temperate and subtropical waters and abuts the coastal waters of SA and WA.
North (DSEWPAC, 2012c)	The NMR comprises Commonwealth waters from West Cape York Peninsula to the NT/WA border). The region covers approximately 625,689 km^2 of tropical waters in the Gulf of Carpentaria and Arafura and Timor seas, and abuts the coastal waters of Queensland and the NT.

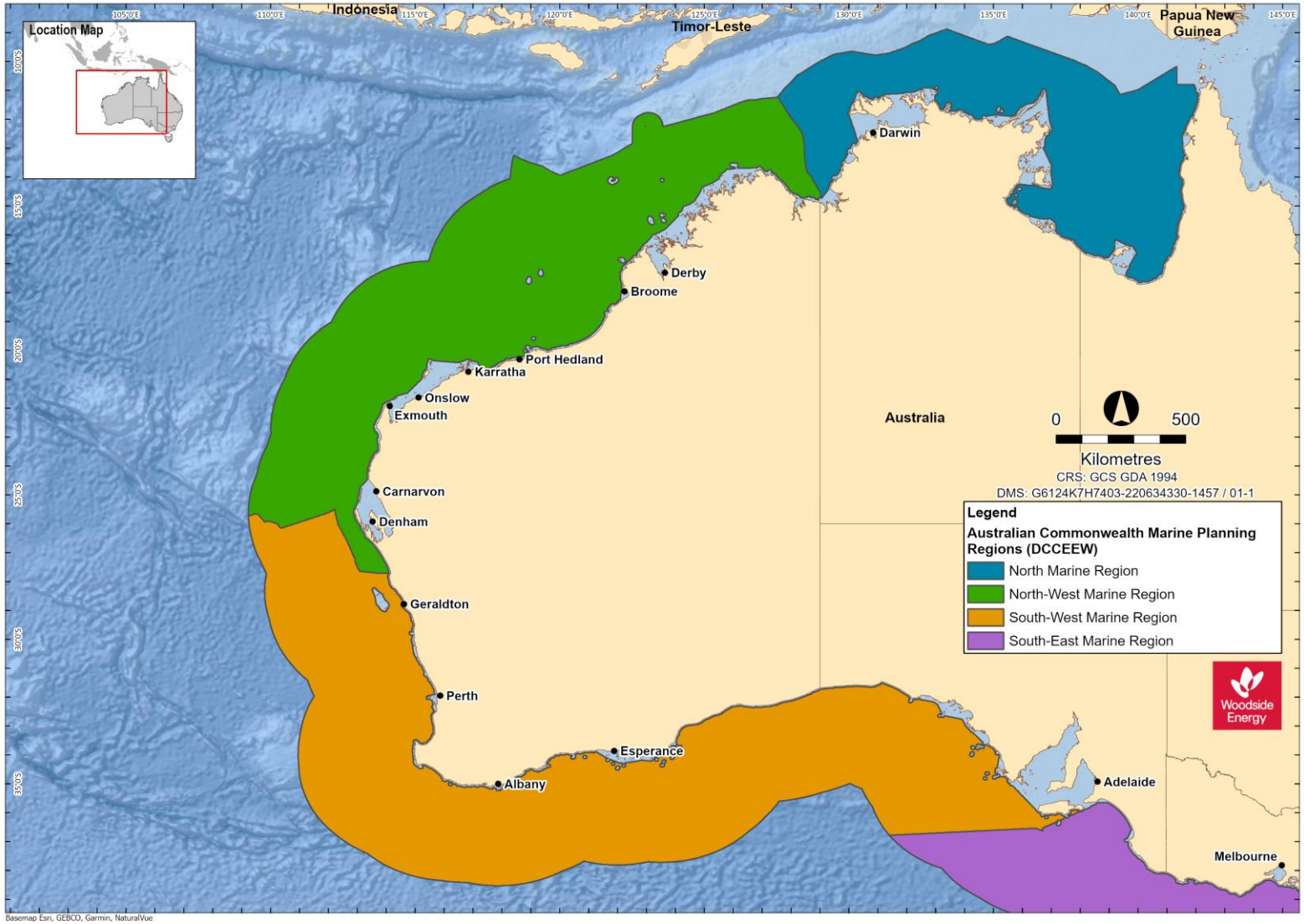


Figure 1-1. Marine Bioregions: North-west (NWMR), South-west (SWMR), North (NMR) and South-East (as defined under the EPBC Act, refer to (DCCEEW, 2021b).

2. PHYSICAL ENVIRONMENT

2.1 Regional Context

The key physical characteristics of the NWMR, SWMR and NMR are presented in **Table 2-1**. 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
North-west Marine Region	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 (DSEWPAC, 2012a).
	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 (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, and banks and shoals.
South-west Marine Region	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 that 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 (DSEWPAC, 2012b).
North Marine Region	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 (DSEWPAC, 2012c).
	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.

The NWMR is divided into three large scale ecological marine systems on the basis of the influence of major ocean currents, seafloor features and eco-physical processes (e.g. climate, tides, freshwater inflow) upon the Region (DSEWPAC, 2012a). The three large scale marine systems approximate the Woodside activity areas within the NWMR (**Figure 2-1**). The key characteristics of each marine system are outlined in **Table 2-2**.

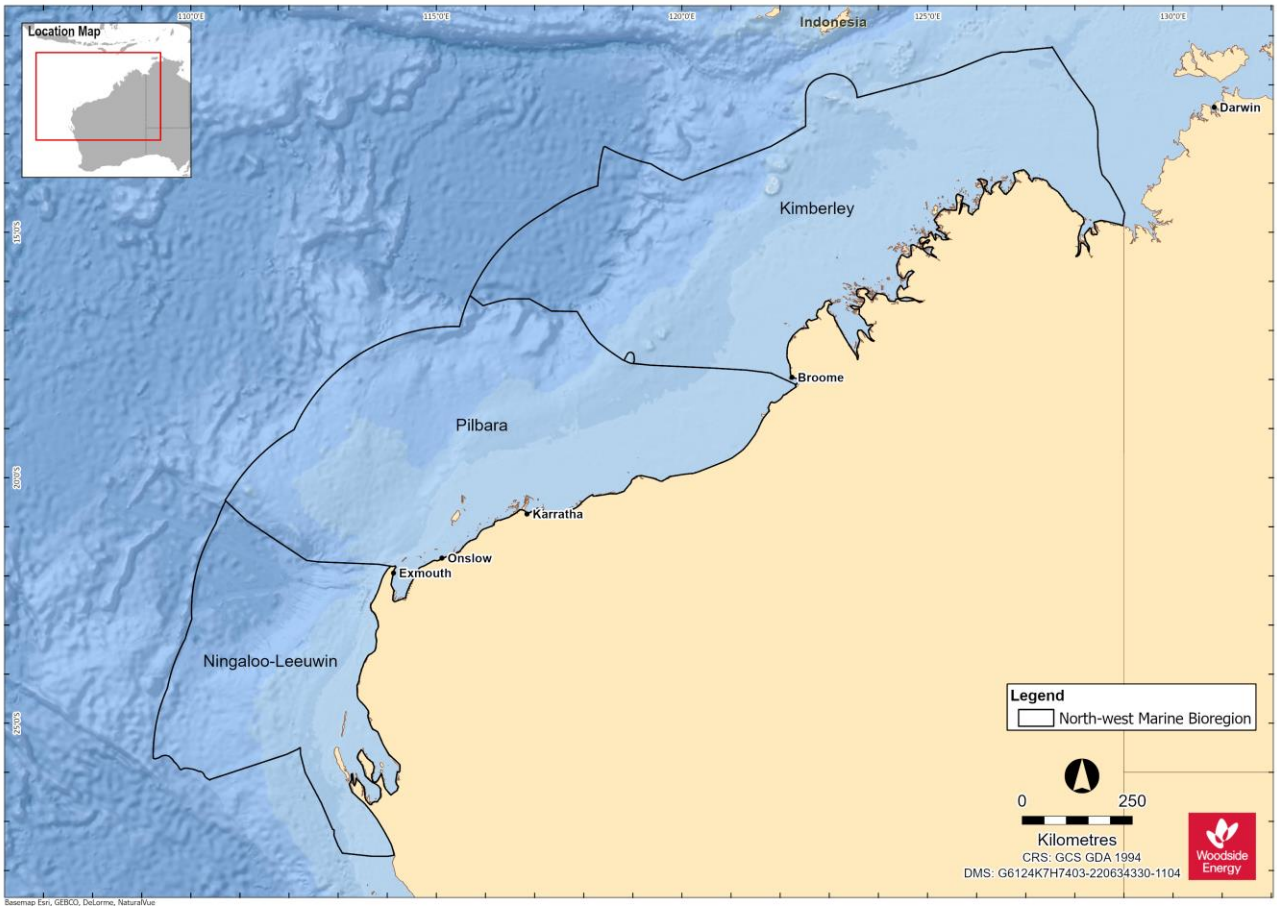


Figure 2-1. The marine systems of the North-west Marine Region (NWMR) (data source: DEWHA 2007a)

Table 2-2. Key characteristics of the Marine Systems of the NWMR

Note: Woodside areas align with the marine systems as described in DEWHA (2007a)

Marine System	Woodside Activity Area	Key Characteristics
Kimberley	Browse	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 run-off Turbid coastal waters (i.e. light limited systems) Dominated by shelf environments Predominantly hard substrates in inner to mid-shelf environments Includes a number of shelf-edge atolls (i.e. Scott Reef, Rowley Shoals)
Pilbara	North-west Shelf (NWS) / Scarborough	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	North-west Cape	Subtropical arid climate Leeuwin Current consolidates Transitional tropical/temperate faunal area Higher water clarity in near-shore and offshore environments Narrow shelf and slope Marginal tidal range Seasonal wind forcing more dominant influence on marine environment

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). The purpose of **Table 2-3** is to provide 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	The NWMR associated land mass of the Australian continent is characterised as a hot and humid summer climate zone. The broader NWMR experiences variations of a tropical or monsoon climate. In the far North-west (Kimberley), there is a hot summer season from December to March and a milder winter season between April and November. The Pilbara area is described as having a tropical arid climate with high cyclone activity (DEWHA, 2007a). The Pilbara and North-west Cape has a hot summer season from October to April and a milder winter season between May and September with transition periods between the summer and winter regimes.
Air temperature and rainfall	In summer (between September and March), maximum daily temperatures range from 18ºC to 36ºC. During winter (May to July), mean daily temperatures range from 12ºC to 30ºC (BOM, 2023c), refer to **Figure 2-2a** and **b**. Rainfall in the region typically occurs during the summer, with highest falls observed late in the season. This is often associated with the passage of tropical low-pressure systems and cyclones.
Wind	Wind patterns in North-west WA are dictated by the seasonal movement of atmospheric pressure systems. During summer, high-pressure cells produce prevailing winds from the North-west and South-west, which vary between 10 and 13 ms^{-1}. During winter, high-pressure cells over central Australia produce North-easterly to South-easterly winds with average speeds of between 6 and 8 ms^{-1}. Refer to **Figure 2-3** and **b**.
Tropical cyclones	The NWS and Pilbara coast (within the NWMR) experiences more cyclonic activity than any other region of the Australian mainland coast (BOM, 2021a). Tropical cyclone activity typically occurs between November and April and is most frequent in the region during December to March (i.e. considered the peak period), with an average of about one cyclone per month (BOM, 2021a). Refer to **Figure 2-4**.
Oceanography	
Ocean temperature	Waters in NWMR are tropical year-round, with sea surface temperature in open shelf waters reaching ~26°C in summer and dropping to ~22°C in winter. Nearshore temperatures (as recorded for the NWS area) fluctuate more widely on an annual basis from ~<23°C in winter to ~31°C in summer (Hallenberger et al. 2022), indicative of present-day sea surface temperatures, acquired from the CISRO Oceans and Atmosphere database. Refer to **Figure 2-5a** and **b,** 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). Refer to **Figure 2-6**. 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 and 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 predominately 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 facilitates upwelling events and localised productivity events (Holloway, 2001).
Tides	Tides on the NWS (NWMR) 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 (NWMR) 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.

Receptor	Description
	The tide range—represented by the Mean Spring Range (MSR)—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 MSR then increases again through Joseph Bonaparte Gulf and on up 5.5 m at Darwin (RPS, 2016).

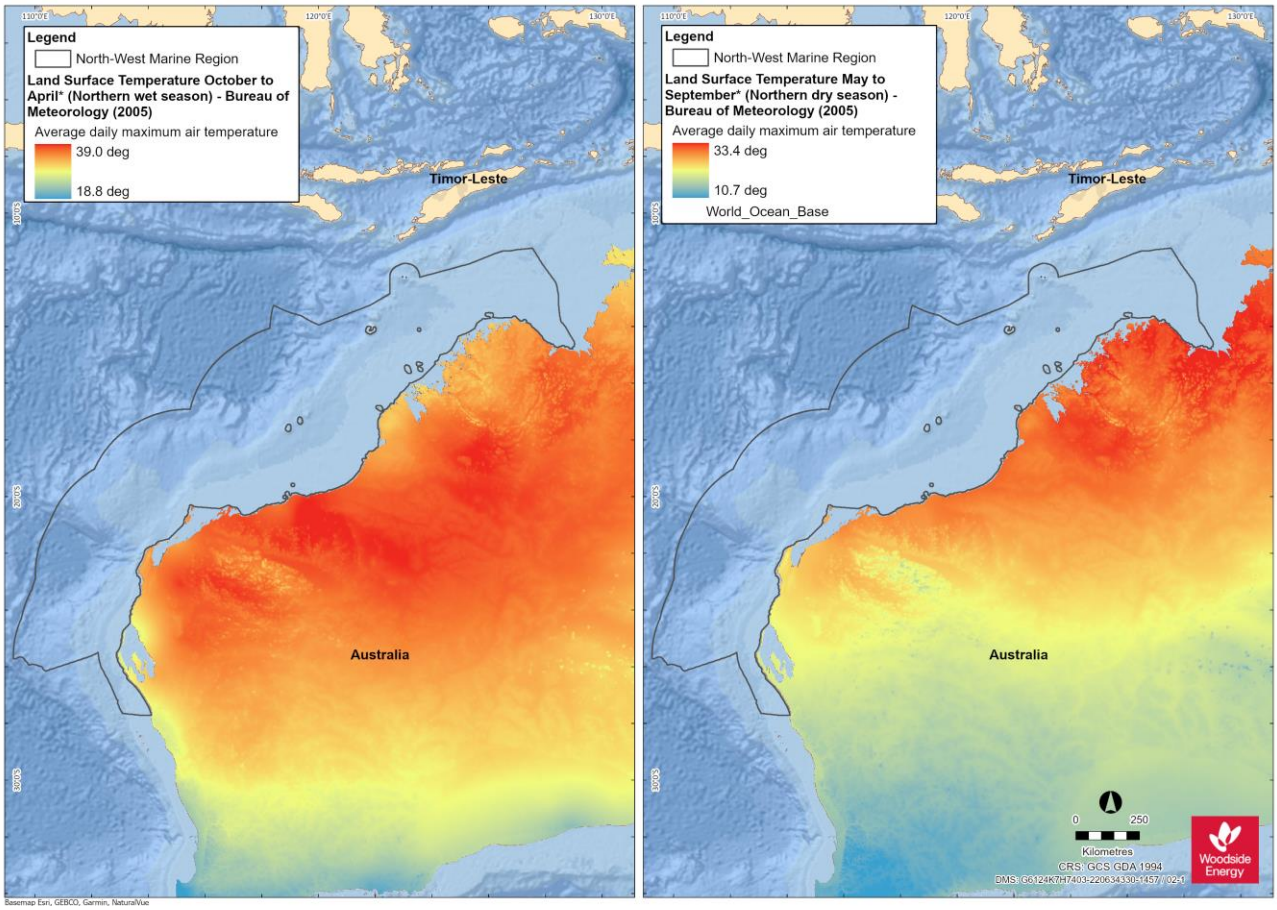


Figure 2-2. Average daily maximum air temperature for land surface adjacent to NWMR: (a) summer (northern wet season) and (b) winter (northern dry season)

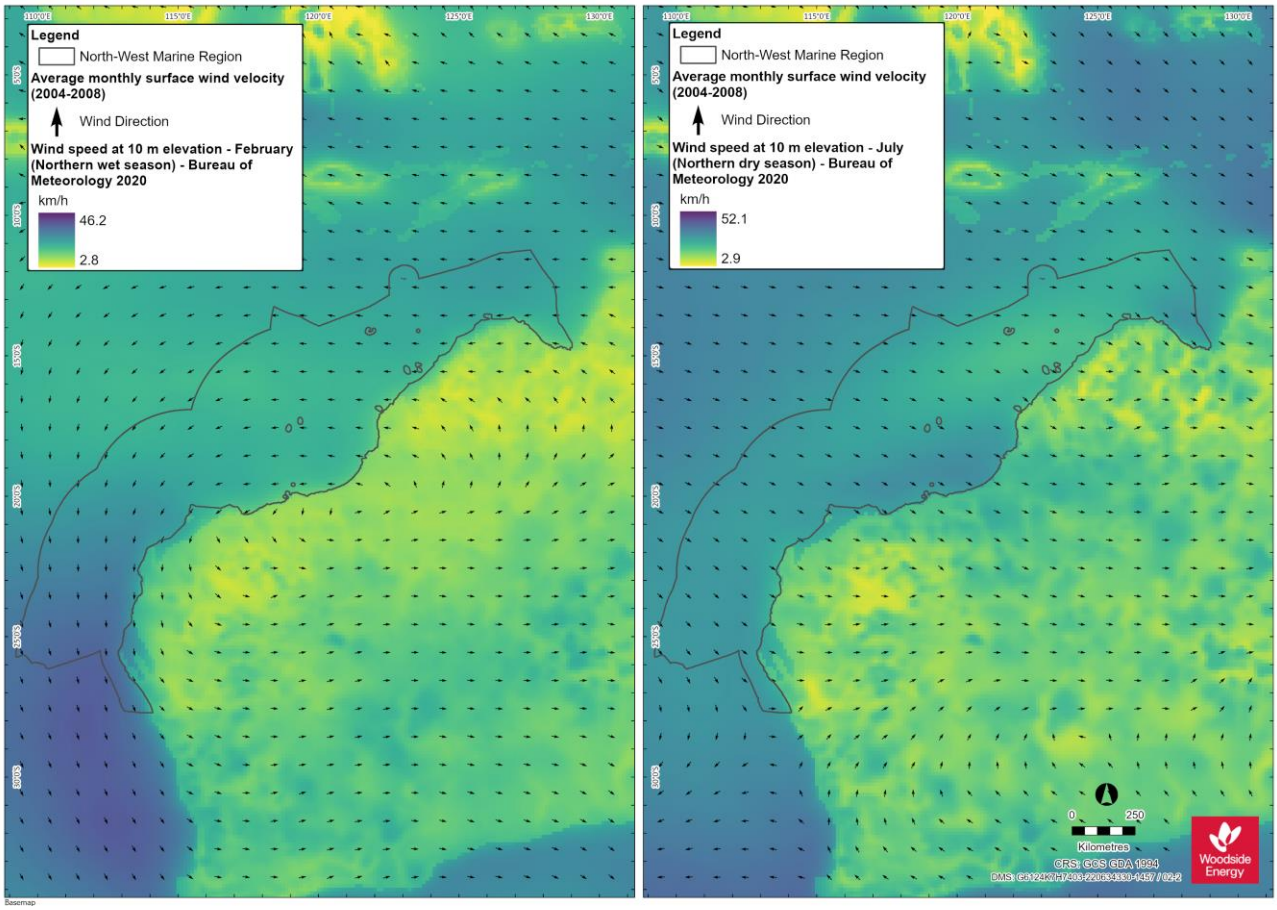


Figure 2-3. Average monthly surface wind direction and velocity for NWMR: (a) summer (February, northern wet season) and (b) winter (July, northern dry season)

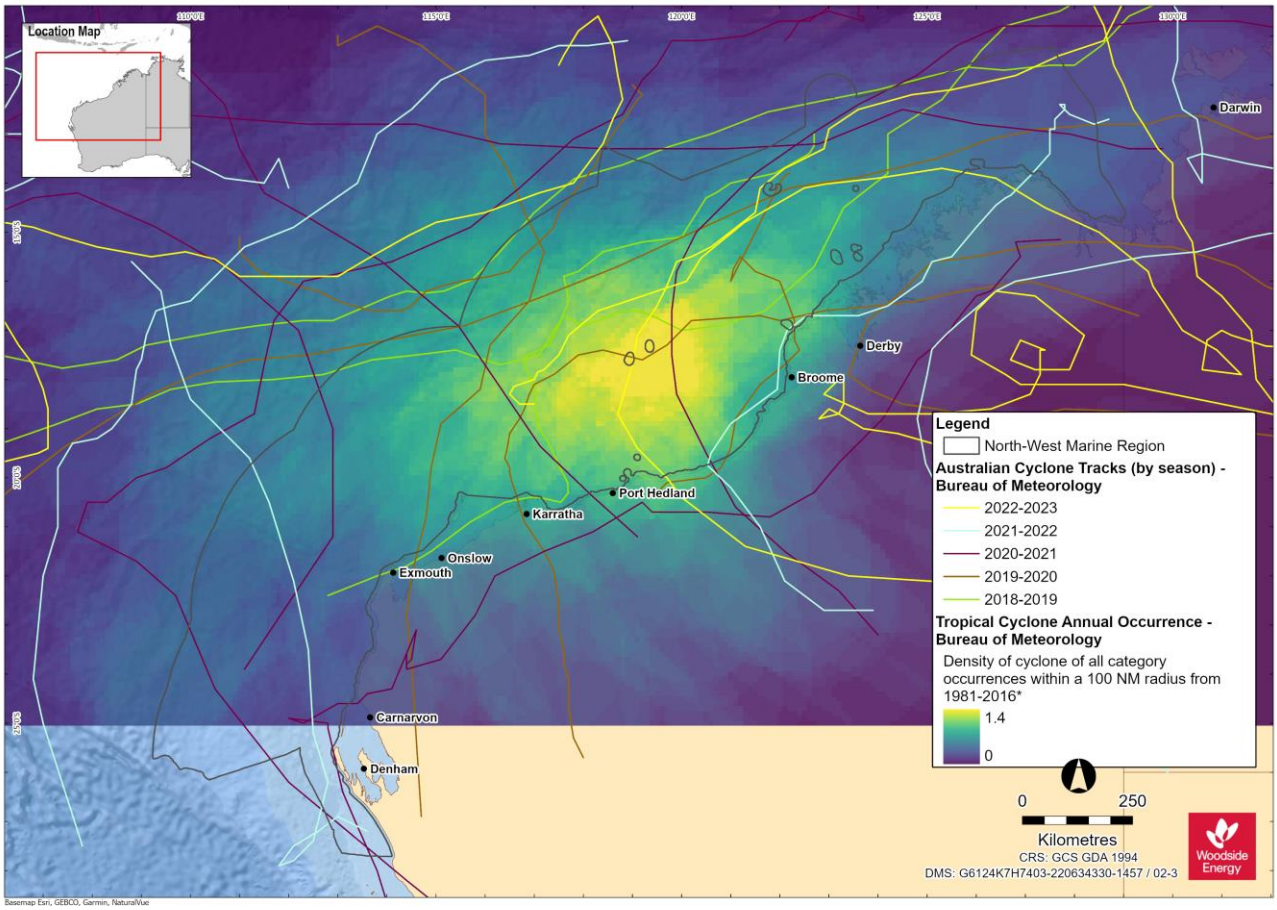


Figure 2-4. Tropical cyclone annual occurrence and cyclone tracks for NWMR

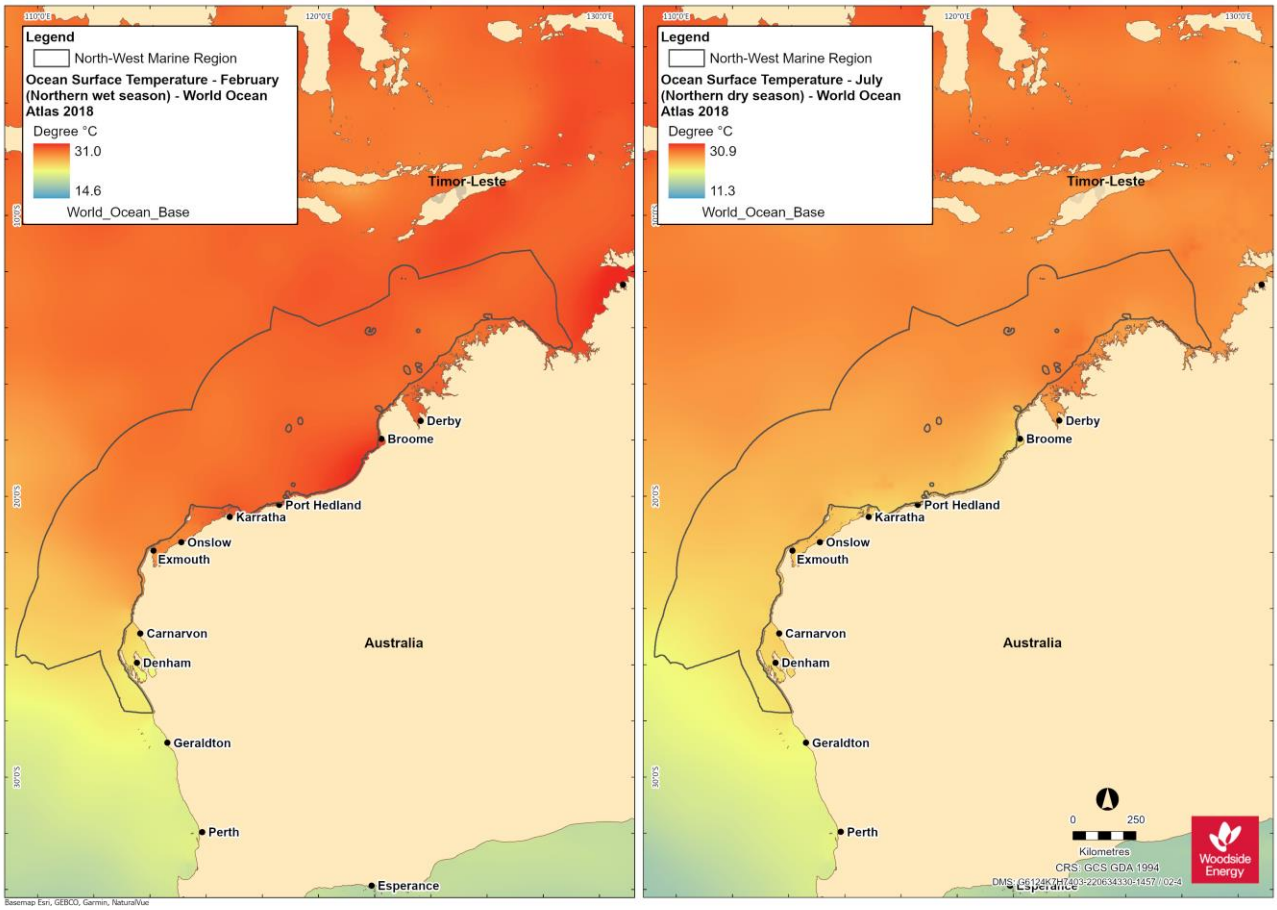


Figure 2-5. Ocean surface temperature for NWMR: (a) summer (February, northern wet season) and (b) winter (July, northern dry season) (data source: Locarnini et al**. 2018 in World Ocean Atlas 2018)**

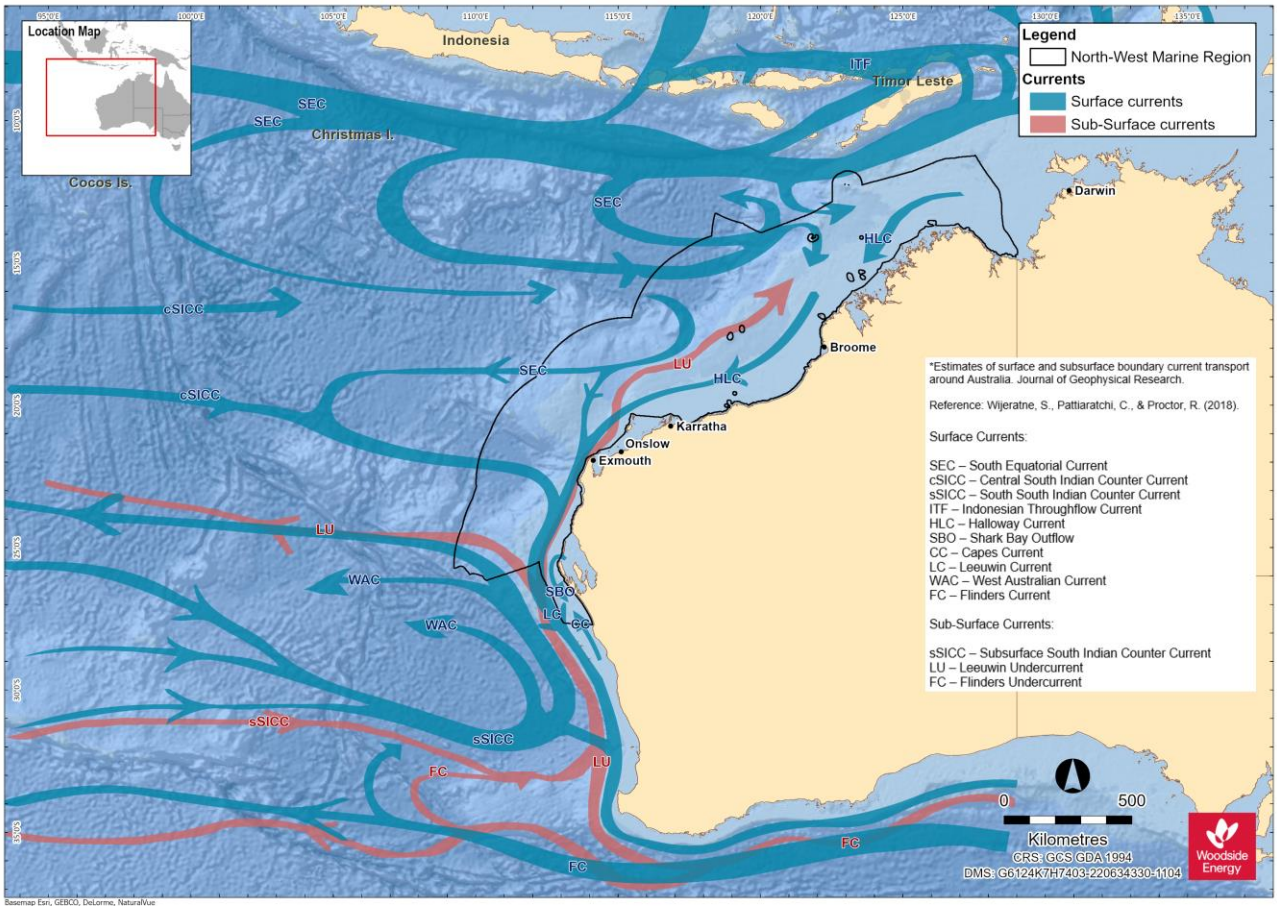


Figure 2-6. Ocean surface and sub-surface currents of the NWMR and wider region (data source: adopted from Wijeratne et al**. 2018)**

2.3.1 Browse

Table 2-4 Summary meteorology and oceanography for Browse (refer to APPENDIX B. Supporting Figures for Section 2.3 Meteorology and Oceanography for supporting metocean figures and data sources)

Receptor	Description
Meteorology	
Seasonal patterns	The Browse area overlapping the Kimberley marine system experiences tropical monsoon climate with two distinct seasons: the wet season from December to March and dry season from April to November.
Air temperature	The mean annual air temperature recorded at Troughton Island between 2010 and 2020 ranged from 22.5ºC in 2019 to 32.8ºC in 2016 and highest mean monthly air temperatures were recorded for the months of November and December (BOM, 2023a).
Rainfall	Rainfall recorded from Troughton Island in the Browse basin ranged from barely detectable (<1 mm) mean monthly level to >100 mm in December to March, with the highest rainfall recorded for January (reflecting the wet monsoon season of the Kimberley marine system) (BOM, 2023a).
Wind	The dry season experiences high-pressure systems that bring East to South-easterly winds with average wind speeds during the season of approximately 16.6 km/h and maximum wind gusts of 65 km/h. In contrast the wet season brings predominately westerly winds with average wind speeds approximately 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 Summary meteorology and oceanography for the North West Shelf and Scarborough (refer to APPENDIX B. Supporting Figures for Section 2.3 Meteorology and Oceanography for supporting metocean figures and data sources)

Receptor	Description
Meteorology	
Seasonal patterns	The NWS and Scarborough areas experience the monsoonal climate of the wider NWMR with a distinct wet and dry seasonal regime and transitions periods between seasons.
Air temperature	Air temperatures as measured at the North Rankin A platform on the NWS ranged from a maximum average of 39.8ºC in summer to a minimum average temperature of 15.2ºC 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**.
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 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 and Condie et al. 2006).

2.3.3 North-west Cape

Table 2-6 Summary meteorology and oceanography for the North-west Cape (refer to APPENDIX B. Supporting Figures for Section 2.3 Meteorology and Oceanography for supporting metocean figures)

Receptor	Description
Meteorology	
Seasonal patterns	The climate of the NWMR is dry tropical exhibiting 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.
Air temperature	Air temperatures in the North-west Cape area range from high summer temperatures (maximum average of 38ºC) and mild winter temperatures (minimum average of 11.5ºC) as recorded from the Learmonth Airport (BOM, 2023b).
Rainfall	Rainfall typically occurs during the summer, with highest rainfall during later summer and autumn (mean monthly level to >19 mm), with the highest rainfall recorded during June, often associated with the passage of tropical low-pressure systems and cyclones. Rainfall is typically low in winter (<2 mm) (BOM, 2023b).
Wind	Winds vary seasonally, generally from the South-west quadrant during summer months and the south, south-east 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 NWMR

Based on the Integrated Marine and Coastal Regionalisation of Australia (IMCRA) Version 4.0, there are eight provincial bioregions that occur within the NWMR, which are based on patterns of demersal fish diversity, benthic habitat and oceanographic data (Commonwealth of Australia, 2006), **Figure 2-7**. Of the eight provincial bioregions that occur within the NWMR, these include four offshore (~65% of total NWMR area) and four shelf (~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 located 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 10 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 more than five km. A unique feature of the region is the significant narrowing of the continental shelf around North-west Cape (approximately 7 km wide) from the broad continental shelf in the north of the region (approximately 400 km wide at Joseph Bonaparte Gulf) (DEWHA, 2007a), **Figure 2-8.**

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 2-9**.

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).

This variation in bathymetry and interactions with oceanographic processes provides a diversity of habitats to 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 South-east Asian regions (Vadrevu et al. 2014; Kim Oanh et al. 2018).

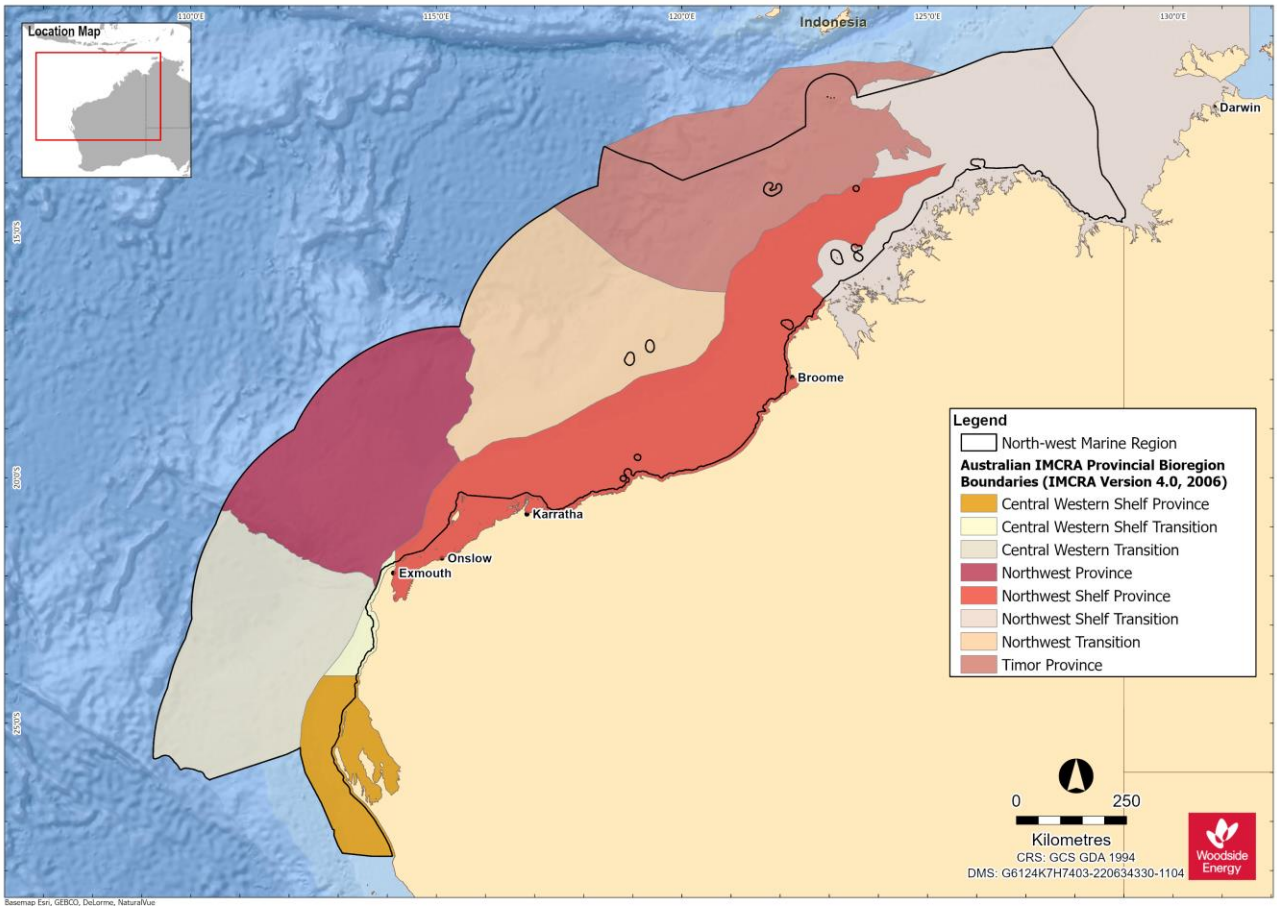


Figure 2-7. The eight Integrated Marine and Coastal Regionalisation of Australia (IMCRA) v4.0 provincial bioregions of the NWMR (GA, 2024)

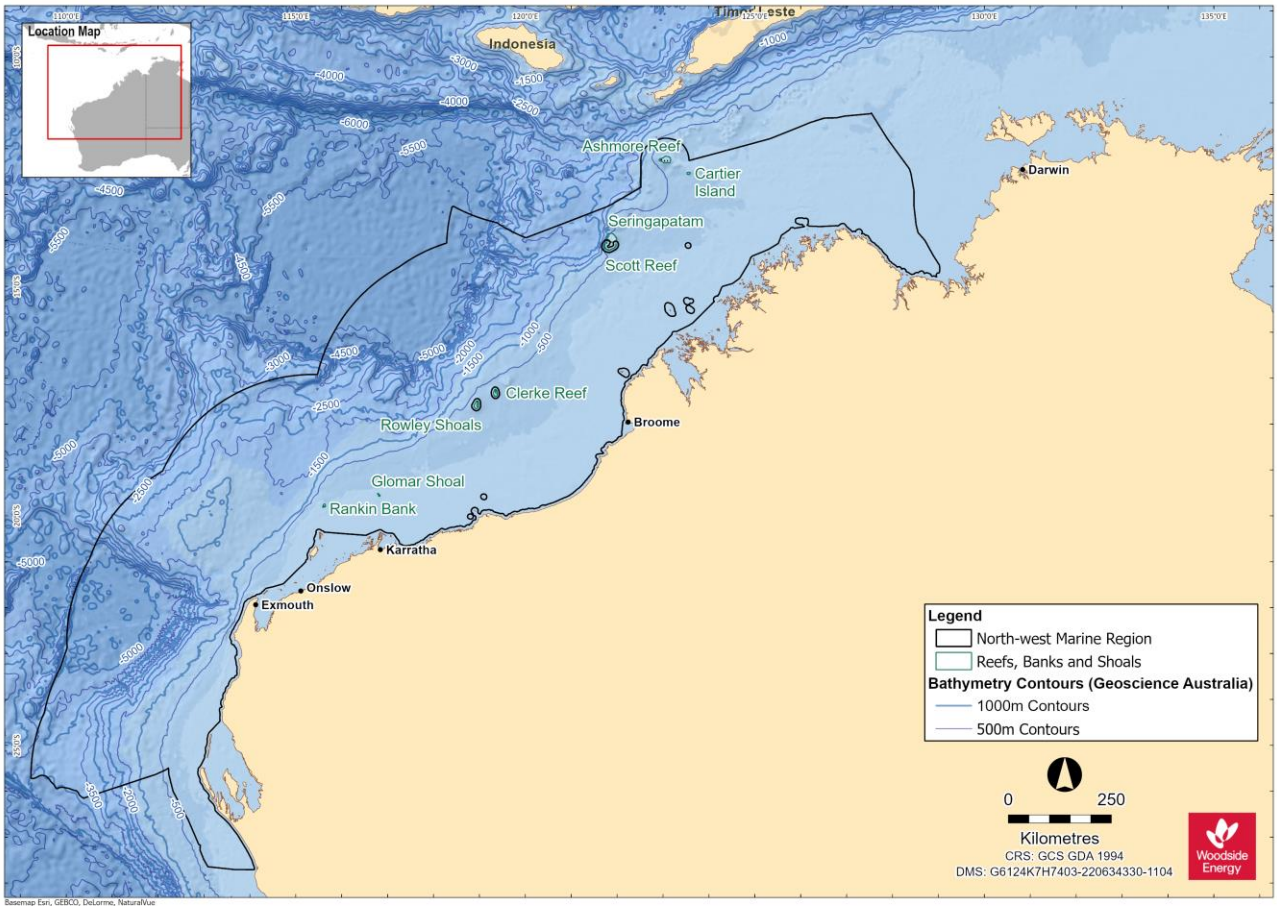


Figure 2-8. Bathymetry of the NWMR (data source: Geoscience Australia)

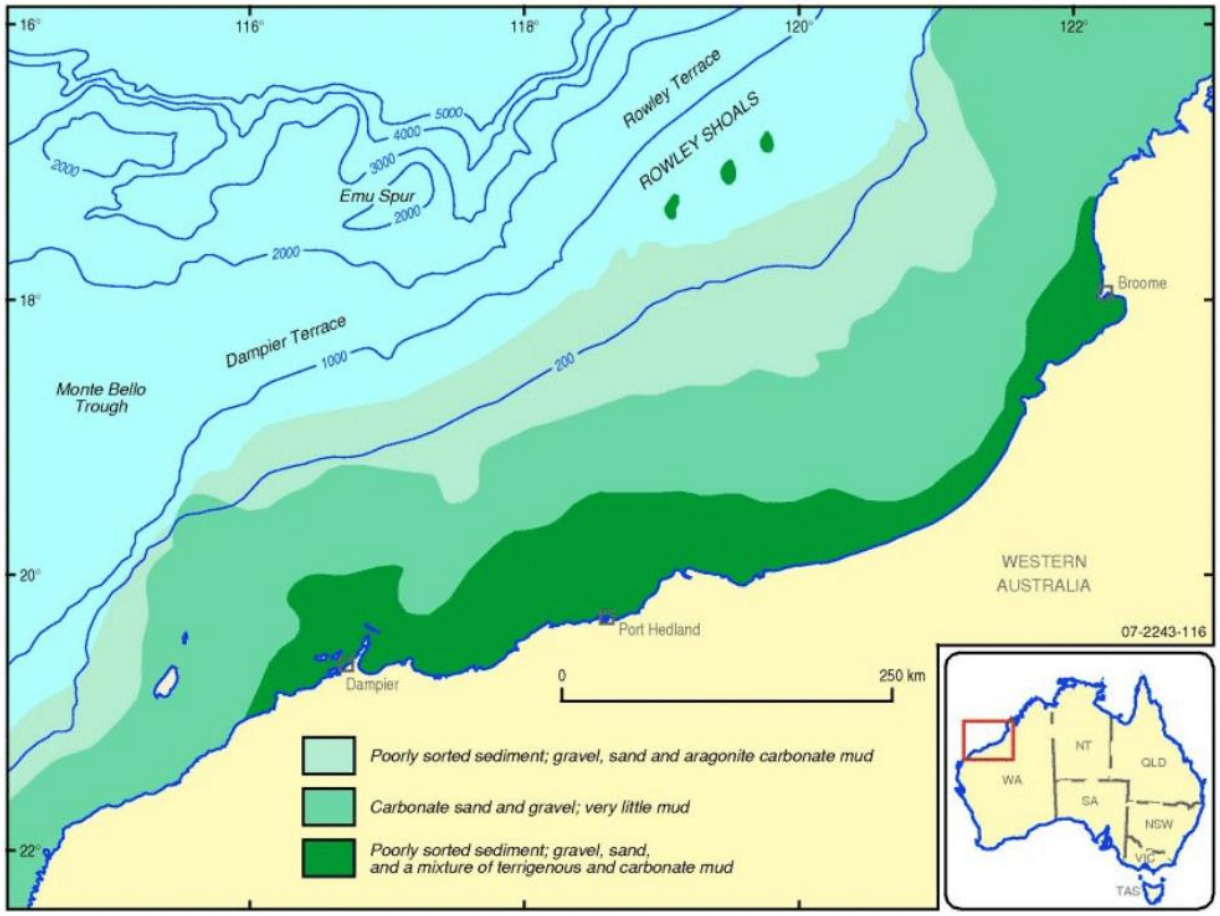


Figure 2-9. Overview of the seabed sediments of the NWMR (data source: Baker et al**., 2008)**

3. MATTERS OF NATIONAL ENVIRONMENTAL SIGNIFICANCE (EPBC ACT)

3.1 Summary of Matters of National Environmental Significance (MNES)

This section summarises the matters of national environmental significance (MNES) reported for the three bioregions; NWMR **(Table 3-1),** SWMR (**Table 3-2**) and NMR (**Table 3-3**), based on the Protected Matters search reports (**APPENDIX A**. Protected Matter Search Reports for NWMR, SWMR and NMR).

Additional information on these MNES is provided in subsequent sections (referenced in **Table 3-1**, **Table 3-2** and **Table 3-3**).

Table 3-1 Summary of 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	2	Shark Bay The Ningaloo Coast	**Section 11**
National Heritage Places	5	Shark Bay The Ningaloo Coast The West Kimberley The Dampier Archipelago (including Burrup Peninsula) Dirk Hartog Landing Site 1616	**Section 11**
Wetlands of International Importance (Ramsar)	4	Ashmore Reef National Nature Reserve Eighty Mile Beach Ord River Floodplain Roebuck Bay	**Section 11**
Commonwealth Marine Areas	5	EEZ and Territorial Sea Key Ecological Features (KEFs) Australian Marine Parks (AMPs) Australian Whale Sanctuary Extended Continental Shelf	**Section 0** **Section 11**
Listed Threatened Ecological Communities	1	Monsoon vine thickets on the coastal sand dunes of Dampier Peninsula	Terrestrial community and not considered further
Listed Threatened Species	109	Refer NWMR PMST report (**APPENDIX A**. Protected Matter Search Reports for NWMR, SWMR and NMR)	**Section 5 – Section 9**
Listed Migratory Species	97	Refer NWMR PMST report (**APPENDIX A**. Protected Matter Search Reports for NWMR, SWMR and NMR)	**Section 5 – Section 9**

Table 3-2 Summary of MNES identified by the EPBC Act Protected Matters Search Tool (PMST) within and potentially occurring within the SWMR

MNES	Number	Description	Section of this Document
World Heritage Properties	1	Australian Convict Sites (Fremantle Prison).	**Section 11**
National Heritage Places	5	Cheetup Rock Shelter Batavia Shipwreck site HMAS Sydney II and HSK Kormoran Fitzgerald River National Park Fremantle Prison (former).	**Section 11**

MNES	Number	Description	Section of this Document
Wetlands of International Importance (Ramsar)	6	Becher Point Wetlands Forrestdale and Thomsons Lakes Peel-Yalgorup System Vasse-Wonnerup System Lake Gore Lake Warden System	**Section 11**
Commonwealth Marine Areas	5	EEZ and Territorial Sea Key Ecological Features (KEFs) Australian Marine Parks (AMPs) Australian Whale Sanctuary Extended Continental Shelf	**Section 0** **Section 11**
Listed Threatened Ecological Communities	9	SWMR Subtropical and Temperate Coastal Saltmarsh Terrestrial Banksia Woodlands of the Swan Coastal Plain ecological community Proteaceae Dominated Kwongkan Shrublands of the Southeast Coastal Tuart (*Eucalyptus gomphocephala*) Woodlands and Forests of the Swan Coastal Plain ecological community Aquatic Root Mat Community 3 in Caves of the Leeuwin Naturaliste Ridge Thrombolite (microbial) community of coastal freshwater lakes of the Swan Coastal Plain (Lake Richmond) Sedgelands in Holocene dune swales of the southern Swan Coastal Plain Honeymyrtle shrubland on limestone ridges of the Swan Coastal Plain Bioregion Empodisma peatlands of southwestern Australia	**Section 11**
Listed Threatened Species	166	Refer SWMR PMST report (**APPENDIX A**. Protected Matter Search Reports for NWMR, SWMR and NMR)	N/A
Listed Migratory Species	89	Refer SWMR PMST report (**APPENDIX A**. Protected Matter Search Reports for NWMR, SWMR and NMR)	N/A

Table 3-3 Summary of MNES identified by the EPBC Act Protected Matters Search Tool (PMST) within and potentially occurring within the NMR

MNES	Number	Description	Section of this Document
World Heritage Properties	0	N/A	N/A
National Heritage Places	0	N/A	N/A
Wetlands of International Importance (Ramsar)	0	N/A	N/A
Commonwealth Marine Areas	5	EEZ and Territorial Sea Key Ecological Features (KEFs) Australian Marine Parks (AMPs) Australian Whale Sanctuary Extended Continental Shelf	**Section 0** **Section 11**
Listed Threatened Ecological Communities	0	N/A	N/A
Listed Threatened Species	82	Refer NMR PMST report (**APPENDIX A**. Protected Matter Search Reports for NWMR, SWMR and NMR)	N/A
Listed Migratory Species	82	Refer NMR PMST report (**APPENDIX A**. Protected Matter Search Reports for NWMR, SWMR and NMR)	N/A

3.2 Part 13 Statutory Instruments for EPBC Act Listed Threatened and Migratory Species in the NWMR, SWMR and 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 the assessment of impacts and risks associated with petroleum activities in each of the Woodside activity areas. The screening criteria included:

- overlap amongst the Woodside activity areas with habitat critical for survival (marine turtles etc) and with biologically important areas (BIAs) (overlapping the marine environment) for any listed threatened and/or migratory species as reported in the PMST searches;
- published literature, unpublished reports and/or credible anecdotal information (e.g. feedback from stakeholders) indicating species presence/occurrence within the Woodside activity areas;
- temporal overlap between the likely timing of petroleum activities and peak periods for key critical life stage behaviours (e.g. breeding, nesting, calving, resting, foraging, migration); and
- environmental aspects associated with petroleum activities that have been identified as a key threat to a species in a Part 13 statutory instrument (e.g. anthropogenic noise, light emissions, marine debris).

Relevant EPBC Act threatened and migratory species and their Part 13 statutory instruments are listed in **Table 3-4**. For the full list of EPBC Act listed species for each marine bioregion refer to the PMST reports (**APPENDIX A**. Protected Matter Search Reports for NWMR, SWMR and NMR).

Table 3-4 Summary of EPBC Act threatened and migratory species to be considered for impact or risk evaluation for Woodside operations

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)
Marine Mammals	
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)
Southern right whale	National Recovery Plan for the Southern Right Whale *Eubalaena australis* (DCCEEW, 2024a)
Sei whale	Conservation Advice *Balaenoptera borealis* sei whale (Threatened Species Scientific Committee, 2015a)
Fin whale	Conservation Advice *Balaenoptera physalus* fin whale (Threatened Species Scientific Committee, 2015c)
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, 2020a) (in effect under the EPBC Act from 23-Dec-2020)
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, 2023d)
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)
Leaf-scaled sea snake	Approved Conservation Advice for *Aipysurus foliosquama* (Leaf-scaled Sea Snake) (DSEWPAC, 2011b)
Fishes, Sharks, Rays and Sawfishes	
Grey nurse shark (West coast population)	Recovery Plan for the Grey Nurse Shark (*Carcharias taurus*) 2014 (DOE, 2014)
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)
All sawfishes (largetooth, green, dwarf, speartooth, narrow)	Sawfish and River Sharks Multispecies Recovery Plan (Commonwealth of Australia, 2015b)
Seabirds	
Migratory 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, 2023d)

Species	EPBC Act Part 13 Statutory Instrument
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 (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 (DEWHA, 2009)
Amsterdam Petrel	National Recovery Plan for albatrosses and petrels (DCCEEW, 2022) EPBC Act Threat Abatement Plan for the impacts of marine debris on the vertebrate wildlife of Australia's coasts and oceans (DoEE, 2018)
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)
Wedge-tailed shearwater	
Flesh-footed shearwater	
Wilson's storm petrel	
Shorebirds	
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, 2023d)
Eastern curlew, far eastern curlew	Conservation Advice *Numenius madagascariensis* Far eastern curlew (DCCEEW, 2023f)
Curlew sandpiper	Conservation Advice *Calidris ferruginea* curlew sandpiper (DCCEEW, 2023g)
Bar-tailed godwit (*menzbieri*)	Conservation Advice *Limosa lapponica menzbieri* Bar-tailed godwit (northern Siberia) (DCCEEW, 2024e)
Lesser sand plover	Conservation Advice *Charadrius mongolus* Lesser sand plover (Threated Species Scientific Committee, 2016)
Australian painted snipe	Conservation Advice *Rostratula australis* Australian painted snipe (Threatened Species Scientific Committee 2013a)
Great knot	Conservation Advice *Calidris tenuirostris* Great knot (DCCEEW, 2024g)
Red knot, knot	Conservation Advice *Calidris canutus* Red knot (DCCEEW, 2024f)
Greater sand plover	Conservation Advice *Charadrius leschenaultii* Greater sand plover (DCCEEW, 2023h)
Black-tailed godwit	Conservation Advice for *Limosa limosa* black-tailed godwit (DCCEEW, 2024h)
Common greenshank	Conservation Advice for *Tringa nebularia* (common greenshank) (DCCEEW, 2024i)
Asian dowitcher	Conservation Advice for *Limnodromus semipalmatus* (Asian dowitcher) (DCCEEW, 2024j)
Ruddy turnstone	Conservation Advice for *Arenaria interpres* (ruddy turnstone) (DCCEEW, 2024k)
Sharp-tailed sandpiper	Conservation Advice for *Calidris acuminata* (sharp-tailed sandpiper) (DCCEEW, 2024l)

Species	EPBC Act Part 13 Statutory Instrument
Terek sandpiper	Conservation Advice for Xenus cinereus (terek sandpiper) (DCCEEW, 2024m)
Grey plover	Conservation Advice for *Pluvialis squatarola* (grey plover) (DCCEEW, 2024n)

4. HABITAT AND BIOLOGICAL COMMUNITIES

4.1 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).

The summary of key habitats and biological communities provided in the following sub-sections is focused on the primary features of relevance to the activity areas within the NWMR – primarily the offshore habitats of the continental shelf and slope, submerged shoals and banks, and remote oceanic reef systems of recognised conservation value.

4.2 Biological Productivity of 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. Cyclones and North-westerly winds during the North-west monsoon (approximately November–March) and the strong offshore winds of the South-east monsoon (approximately April–September) facilitate the upwelling and mixing of nutrients from deep-water to shallow water environments (Brewer et al., 2007).

The Indonesian Throughflow (ITF) 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 ITF is weaker, the thermocline lifts bringing deeper, more nutrient-rich waters into the photic zone and hence 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 ITF, 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 water depths of 400 m and 1000 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 as a result of cyclones generally last between one and two weeks, and it is believed that 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 are able to 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 utilisation 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 that approximately half of the nutrients available are utilised by microzooplankton (e.g. protozoa) with the remainder going to macro/meso-zooplankton (e.g. copepods). As primary and secondary consumers, gelatinous zooplankton (e.g. salps, 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 that chlorophyll (and thus phytoplankton) levels are low in summer months (December to March) and higher in the 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 that 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 lifecycle as plankton (e.g. copepods, euphausiids) as well 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 (CALM, 2005a) can occur throughout the year. Spatial and temporal patterns in the distribution and abundance of macro-zooplankton on the North-west Shelf 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).

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 (e.g. bacteria), whereas shelf waters are dominated by larger taxa such as diatoms (Hanson et al., 2007).

Zooplankton within the activity area may include organisms that complete their lifecycle as plankton (e.g. copepods, euphausiids) as well 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 (approximately equates to the Browse activity area). However, small-scale topographically associated current movements and upwellings are thought to occur, which inject nutrients into specific locations within the system and result in 'productivity hot-spots'. Similarly, internal waves, generated at the shelf break (e.g. 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 (Sutton et al, 2019). 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.

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 result in the drawing of deeper cooler waters into the photic zone, stirring up nutrients and triggering primary productivity. Broadly the greatest productivity within this sub-system is found around the 200 m isobath associated with the shelf break.

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 Key Ecological Feature(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).

4.4 Habitats and Biological Communities in the NWMR

4.4.1 Offshore Habitats and Biological communities

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 sub-tropical 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 1000 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 (approximately 400 m deep) predominately 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 was 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 700-1000 m (Williams et al., 2010) With reference to the North-west Shelf (NWS), multiple 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 (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). The key habitats and biological communities that are representative of the broader NWMR are summarised in **Table 4-1**.

The key habitats and biological communities representative of the broader SWMR and NMR are summarised in **Table 4-2** and **Table 4-3**.

There is a marked biodiversity gradient from high ecological 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), with the exception of the submerged shoal features, remote oceanic reef systems of the Rowley Shoals, Scott Reef and Ashmore Reef as well as the fringing reef habitats of Ningaloo, the Kimberley coastline, the offshore island groups such as Barrow Island, Lowendal and Montebellos and the Dampier Archipelago. A brief overview of the high valued biodiversity reef and mesophotic habitats and associated benthic communities are presented in the following sub-sections.

4.4.2 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 and 2023), refer to **Figure 4-1.** 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 and provides unprecedented understanding of the background (baseline) changes at oceanic reefs on Australia's North-west Shelf, encompassing the physical drivers, and underlying processes of change (impact and recovery) from acute disturbances (heat stress – coral mass-bleaching and cyclones).

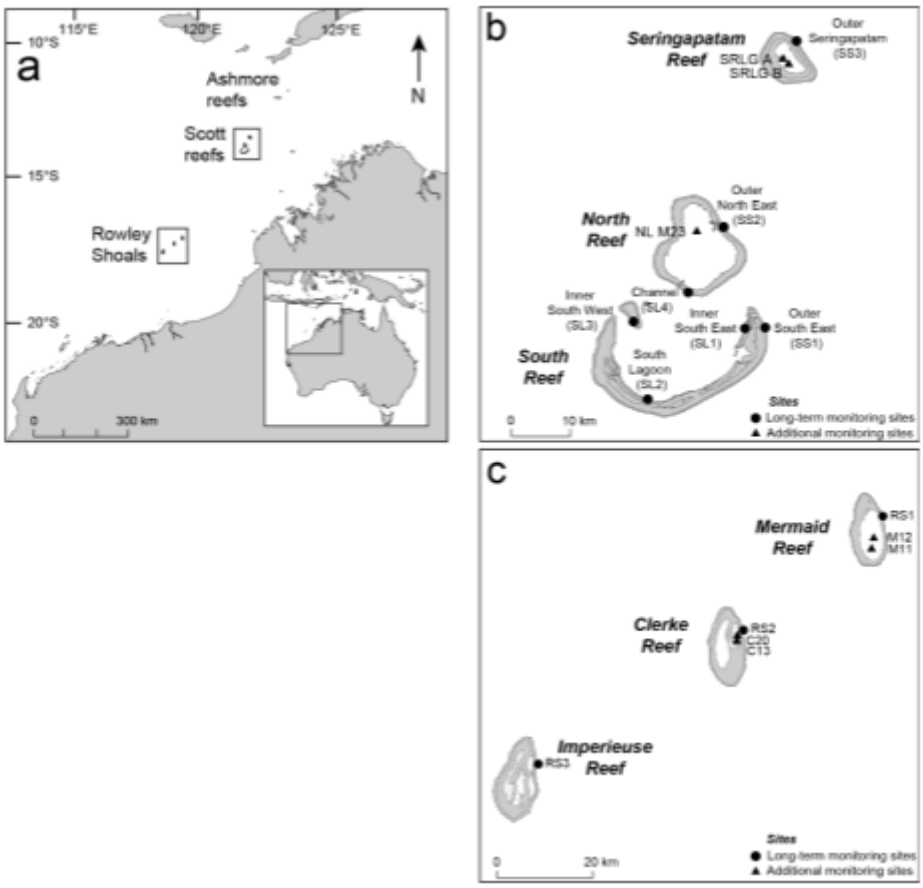


Figure 4-1. The position of Scott Reef, Ashmore and the Rowley Shoals off North-western Australia and location of permanent long-term monitoring sites (source: Gilmour et al., 2023)

Scott Reef is an annular reef approximately 17 km long and 16 km wide comprising two coral reef atolls rising steeply from depths of approximately 400-500 m. These atolls, referred to as South Scott Reef and North Scott Reef, are separated by a deep channel (**Figure 4-1**). North Scott Reef features an emergent reef flat, outer slope habitats and a shallow lagoon approximately 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, and to shallow to deep lagoonal coral dominated habitats (Gilmour et al., 2013). This in contrast to the deeper, more open lagoon of South Scott Reef described as an extensive, unique mesophotic (30-70 m depth) coral dominated habitat comprising hard corals, calcareous algae, soft corals, sponges, bryzoans 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).

Over the past 30 years the coral communities at Scott Reef have been extensively studied and the Scott Reef long-term monitoring program showed that from 1994-2021 the mean cover of hard and soft corals on the reef slopes was 36%, and ranged between 13% to 59%. Decreases in coral cover were caused by damaging waves, generated by storms and cyclones, and recurrent heat stress causing coral bleaching. The most severe heat stress and mass coral bleaching occurred in 1998 and 2016. Recovery from the first mass-bleaching event in 1998 took over a decade. By 2010, coral cover had reached pre-bleaching levels (45%). Despite moderate coral bleaching and cyclone disturbances, cover had increased by 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 following the 1998 mass bleaching (Gilmour et al. 2023). 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 approximately 30-40 km apart. Each atoll covers an area approximately 80-90 km^2 and extends almost vertically from seafloor depths of approximately 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 (1995-2019), 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 (11-30%) 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 (approximately 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).

The reefs of Seringapatam, Scott Reef, Ashmore Reef and Cartier Island are recognised as key ecological features (KEFs) within NWMR, refer to **Table 10-1**. Protected Area status (Australian Marine Parks and State Marine Parks and Reserves are listed and described in **Section 11** and includes: Commonwealth Marine Parks of Ashmore Reef, Cartier Island, Kimberley and Mermaid Reef, and State Marine Parks of the North Kimberley, the Rowley Shoals and Lalang-garram-horizontal falls and North Lalang-garram.

4.4.3 North-west Shelf / Scarborough

The NWS contains numerous submerged shoal features and as relatively recent surveys have revealed several of these features are of high biodiversity value comprising hard coral and macro-algae communities on upper reaches of the shoals and mesophotic filter-feeding benthic communities in deeper waters on and in proximity to the shoal features, namely, Rankin Bank and Glomar Shoal.

Rankin Bank

Rankin Bank comprises three main sedimentary banks rising steeply from between 80 and 120 m below sea level, reaching 20 – 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-south west) (Abdul Waheb et al., 2018), **Figure 4-1**.

Surveys of Rankin Bank were undertaken by the Australian Institute of Marine Science (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 (SBRUVS) 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).

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).

Glomar Shoal

Glomar Shoal is a large (215 km^2) and complex bathymetrical feature situated on the outer continental shelf off the Pilbara. 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 4-1**.

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 (i.e. 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 60-80 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 Key Ecological Feature (KEF) within NWMR, refer to **Table 10-1**. Protected Area status (Australian Marine Parks and State Marine Parks and Reserves) are described in **Section 11** and includes: Commonwealth Marine Parks of Montebello and State Marine Parks Montebello Islands and Barrow Island and the Barrow Island marine management area.

4.4.4 North-west Cape

Ningaloo Reef and Shark Bay are among Australia's iconic marine areas, and the significance of these ecosystems is recognised through their 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 and is host to over 200 coral species and more than 500 reef fish species. 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. Ningaloo Reef is one of the longest (approximately 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 in close proximity resulting in a huge array of internationally significant marine life coexisting. More than 200 hard coral species, 500 fish, 650 mollusc, 600 crustacean, 1000 marine algae, 155 sponge and 25 echinoderm species have been recorded from the shelf, slope and deep-water habitats[2]. Refer to the CSIRO Ningaloo Outlook program for further information and publications relating to the shallow and deep-water 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 and much of the area was allocated as shallow, flat lagoons intersected by narrow, deeper channels that facilitate water circulation. Five distinct geomorphic/benthic classes of coral-algae mosaics in different topographic settings: coral and algal communities (reef flat and very shallow areas), coral and algal communities (backreef and shallow forereef), coral and algal

[2] https://www.dbca.wa.gov.au/management/world-heritage-areas/ningaloo-coast-world-heritage-area#:~:text=One%20of%20the%20longest%20and,life%20coexisting%20in%20one%20area.[accessed on 18/08/2024]

[3] https://research.csiro.au/ningaloo/outlook/research-outputs/publications/

communities (deep forereef and other deep areas), sand or limestone pavement (lagoonal slopes and flat lagoon areas) (Kobryn et al., 2022).

Ningaloo and the Muiron Islands fringing reef habitat supports benthic communities dominated by algae and consolidated reef in the shallow reef environment. Surveys conducted by AIMS in 2024 documented hard coral cover averaged approximately 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, 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 that 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 is the recurrent deoxygenation events at Bills Bay (Coral Bay) following coral spawning events. In March 2022, the deoxygenation event was triggered by a combination of weather and oceanographic conditions that led to a prolonged trapping of coral spawn in Bills Bay and this 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).

The Shark Bay region is renowned for its terrestrial and marine biodiversity including seagrass cover extending over 4,000 km^2 of the bay and the 1.030 km^2 Wooramel Seagrass Bank is the largest structure of its type in the world. Baseline surveys conducted in 2014 by AIMS specifically targeted the outer Shark Bay area and the habitats and benthic communities surrounding the barrier islands of Dirk Hartog, Bernier and Dorre. Sand was a dominant feature of the benthos (>60%), particularly in areas inside the bay and in deep water outside the bay. Benthic communities in relatively sheltered areas of outer Shark Bay were characterised by seagrass and turf algae, whereas in more exposed locations, benthos was dominated by macroalgal and turf algal communities. 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 surveyed. Observations of patchy but high coral cover in shallow parts of some towed video transects suggests 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 (Miler et al., 2015).

Commonwealth waters adjacent to Ningaloo Reef is recognised as a Key Ecological Feature (KEF) within NWMR, refer to **Table 10-1**. Protected Area status (Australian Marine Parks and State Marine Parks and Reserves) are described in **Section 11** and includes: Commonwealth Marine Parks of Ningaloo and Shark Bay and State Marine Parks of the Ningaloo Reef and the Muiron Island marine management area and Shark Bay marine park and Hamelin Pool nature reserve.

4.4.5 Shoreline, coastal habitats and biological communities

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 like NingaloolikeNingaloo), sandy beaches, and smaller areas of rocky shores. Each of these shoreline types has the potential to support different flora and fauna assemblages due to the different physical factors (e.g. waves, tides, light, etc.) influencing the habitat.

[4] https://www.csiro.au/en/research/environmental-impacts/climate-change/state-of-the-climate

The key shoreline habitats representative of the broader NWMR are summarised in **Table 4-1**.

The key shoreline habitats representative of the broader SWMR and NMR are summarised in **Table** 4-2 and **Table 4-3**.

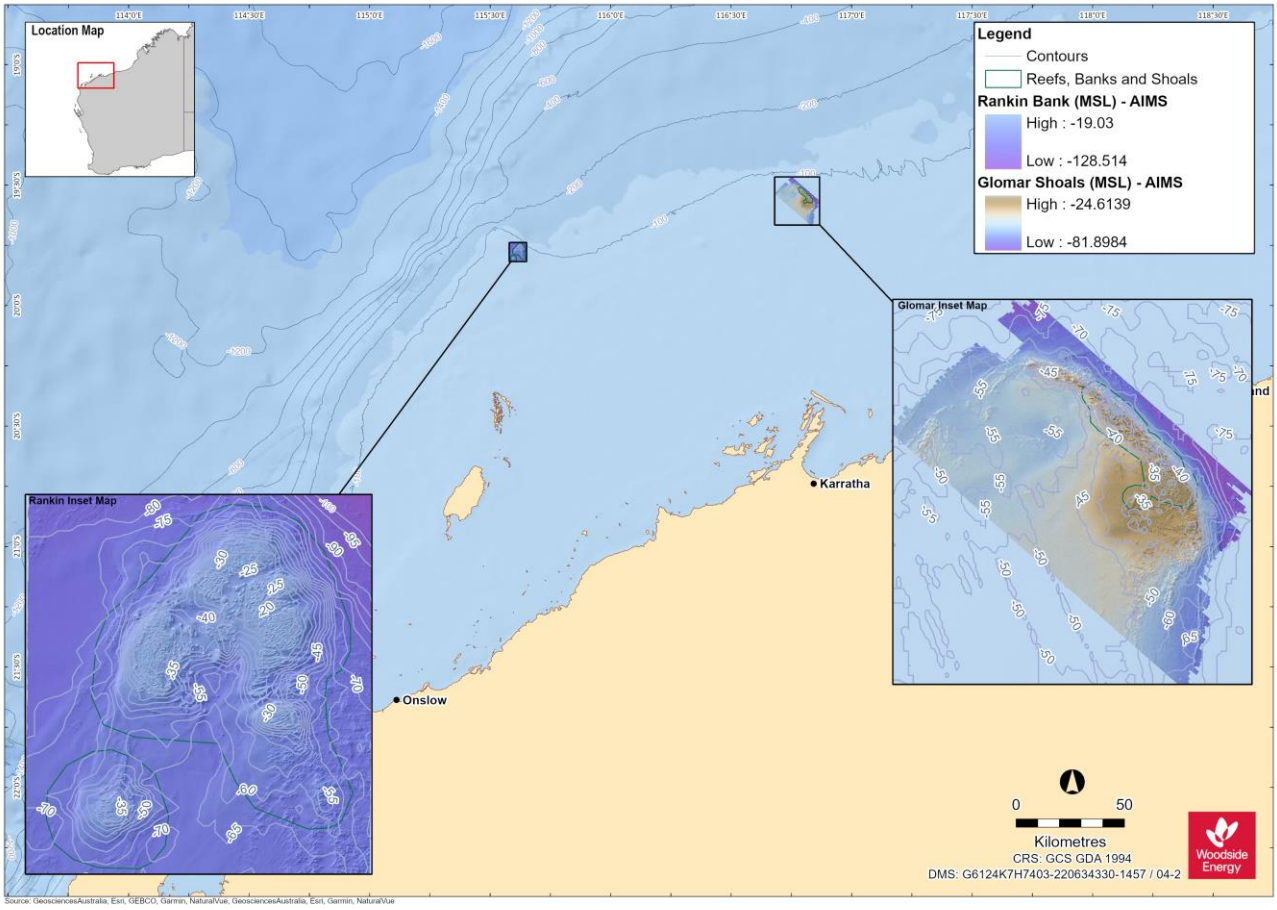


Figure 4-2. Habitat maps of Rankin Bank and Glomar Shoal (source: AIMS, 2014)

Table 4-1 Habitats and biological communities within the NWMR

Habitat/Community	Browse	NWS / Scarborough	North-west Cape	Reference
Offshore habitats and biological communities				
Soft sediment with infauna	The offshore environment of the NWMR comprises predominately 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 key ecological features such as the ancient coastline at 125 m depth contour KEF.			**Section 10**
	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	**Section 10**
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, 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		**Section 4.4.1** **Section 10** **Section 11**
Seagrass and Macroalgae communities	Seagrass beds and benthic macroalgae reefs are a main food source for many marine species and also provide key habitats and nursery grounds (Heck et al., 2003; Wilson et al., 2010). In the northern half of Western Australia, these habitats are restricted to sheltered and shallow waters, including around offshore reef systems, due to large tidal movement, high turbidity, large seasonal freshwater run-off and cyclones.			
	Scott Reef Seringapatam Reef Ashmore Reef	Rowley Shoals (including; Mermaid Reef, Clerke Reef, Imperieuse Reef)		**Section 11**
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, 2008). 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	Glomar Shoal Rankin Bank	Cape Range canyon system	**Section 4.4.1** **Section 10**

Habitat/Community	Browse	NWS / Scarborough	North-west Cape	Reference
	systems such as Scott Reef	Ancient coastline at 125 m depth contour KEF		**Section 11**
Sandy Beaches	Sandy beaches are dynamic environments, naturally fluctuating in response to external forcing factors (e.g. waves, currents, etc). 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 Islands Lowendal Islands Barrow Island	Muiron Islands	**Section 11**
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 Montebello, Lowendal and Barrow Island Groups	Ningaloo Reef Exmouth Gulf Shark Bay	**Section 11**
Seagrass and Macroalgae communities	Seagrass beds and benthic macroalgae reefs are a main food source for many marine species and also 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, large seasonal freshwater run-off and cyclones. These areas include in bays and sounds and around reef and island groups.			
	King Sound	Roebuck Bay Dampier Archipelago Montebello, Lowendal and Barrow Island Groups	Ningaloo Reef Exmouth Gulf Shark Bay	**Section 11**
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.			
		Deeper habitats of Rankin Bank and Glomar Shoal	Deeper habitats of Ningaloo Reef and the protected sponge zone in the South	

Habitat/Community	Browse	NWS / Scarborough	North-west Cape	Reference
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 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	**Section 11**
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.			
		Eighty Mile Beach Roebuck Bay	Shark Bay	**Section 11**
Sandy Beaches	Sandy beaches are dynamic environments, naturally fluctuating in response to external forcing factors (e.g. waves, currents, etc). 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 also 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	**Section 11**

Table 4-2 Habitats within the SWMR

	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, 2008b).
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 90-120 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 (DEWR, 2007). Filter feeders generally inhabit deeper habitat (below the photic zone) that have strong currents and hard substratum
	Ancient coastline at 90-120 m depth Diamantina Fracture Zone Naturaliste Plateau Perth Canyon Marine Park South-west Corner Marine Park
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 1000 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.
	Houtman Abrolhos Islands Jurien Marine Park Shoalwater Islands Marine Park Geographe Marine Park Cockburn Sound Rottnest Island

	Location
	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
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 also host breeding populations of the Australian sea lion. They are found along many coastlines of the nearshore environments of the SWMR. In addition to this, beaches in the SWMR provide a variety of socio-economic 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 4-3 Habitats and Biological Communities 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 present 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/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
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 provides 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

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 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
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

5. FISHES, SHARKS AND RAYS

5.1 Regional Context

Western Australian waters provide important habitat for listed fishes, sharks, and rays including areas that support key life stages such as breeding, foraging, and migration routes for fish species. Pelagic and demersal fishes occupy a range of habitats throughout each of the regions, 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.

The NWMR supports a wide diversity of global fish species. Of the approximately 500 shark species found worldwide, 94 are found in the region (DEWHA, 2008). Approximately 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 fish fauna of the SWMR includes more than 900 species occupying a large variety of habitats. However, only three species of bony fishes known to occur in the region are listed under the EPBC Act as threatened or marine species, and seven listed species of shark (DSEWPAC, 2012b).

The NMR is considered an important area for the sawfish and river shark species group, with five species of sawfishes and river sharks listed under the EPBC Act known to occur in the region (DSEWPAC, 2012c). Approximately 28 species of syngnathids and two species of solenostomids are listed marine and known to occur in the NMR, however there is a paucity of knowledge on the distribution, relative abundance and habitats of these species in the region (DEWHA, 2008).

The following sections focus on the fish species (including sharks and rays) listed as threatened or migratory that are known to occur within the NWMR. In addition, listed, conservation-dependent fish and shark species for the NWMR are described. A detailed account of commercial and recreational fisheries that operate in the region is provided in **Section 12**.

Table 5-1 outlines the threatened and migratory fish species that may or are known to occur within the NWMR, with their conservation status and relevant recovery plans and/or conservation advice. **Table 5-2** includes fish species listed as conservation dependent that may occur within the NWMR, NMR and SWMR.

Table 5-1 Fish species (including sharks and rays) identified by the EPBC Act PMST that may occur within the NWMR

Species Name	Common Name	*Environment Protection and Biodiversity Conservation Act 1999* (Cth) (as per PMST report Appendix A)			*Biodiversity Conservation Act 2016* (WA)[5]	IUCN Red List of Threatened Species (non-statutory)[6]	EPBC Act Part 13 Statutory Instrument
		Threatened Status	Migratory Status	Listed	Conservation Status	Global Status	
Rhincodon typus	Whale shark	Vulnerable	Migratory	Marine	Migratory	Endangered	Conservation Advice *Rhincodon typus* whale shark. (Threatened Species Scientific Committee, 2015d)
Carcharias taurus	Grey nurse shark (West-coast population)	Vulnerable	N/A	Marine	Vulnerable	Critically Endangered	Recovery Plan for the Grey Nurse Shark (*Carcharias taurus*) (DOE, 2014)
Carcharodon carcharias	White shark	Vulnerable	Migratory	Marine	Vulnerable	Vulnerable	Recovery Plan for the White Shark (*Carcharodon carcharias*) (DSEWPAC, 2013b)
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
Carcharhinus longimanus	Oceanic whitetip shark	N/A	Migratory	Marine	N/A	Critically Endangered	N/A
Anoxypristis cuspidata	Narrow sawfish	N/A	Migratory	Marine	Migratory	Critically Endangered	N/A
Pristis clavata	Dwarf sawfish	Vulnerable	Migratory	Marine	Priority	Critically Endangered	Sawfish and River Sharks Multispecies Recovery Plan (Commonwealth of Australia, 2015b)
Pristis pristis	Largetooth (freshwater) sawfish	Vulnerable	Migratory	Marine	Priority	Critically Endangered	
Pristis zijsron	Green sawfish	Vulnerable	Migratory	Marine	Vulnerable	Critically Endangered	
Glyphis garricki	Northern river shark	Endangered	N/A	Marine	Priority	Vulnerable	
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

[5] Threatened and Priority Fauna List – April 2024 - https://www.dbca.wa.gov.au/management/threatened-species-and-communities (accessed on 13/08/2024)
[6] IUCN. 2024. The IUCN Red List of Threatened Species. Version 2024-1. https://www.iucnredlist.org (accessed on 13/08/2024)

Table 5-2 EPBC Act listed Conservation Dependent species of fishes and sharks that may occur in the NWMR, NMR and SWMR

Species Name	Common Name	Likely Occurrence / Distribution	Listing Advice
Hoplostethus atlanticus	Orange roughy, Deep-sea perch, Red roughy	SWMR	No conservation listing advice for this species. Refer to the Marine bioregional plan for the SWMR (DSEWPAC, 2012b) for further information. Managed under AFMA's Orange Roughy Stock Rebuilding Strategy (AFMA, 2014)
Sphyrna lewini	Scalloped hammerhead	NWMR, NMR and SWMR[7]	Threatened Species Scientific Committee (2018)
Galeorhinus galeus	School shark, Eastern school shark, Snapper shark, Tope, Soupfin shark	SWMR	Threatened Species Scientific Committee (2009)
Centrophorus uyato	Little gulper shark	NWMR and SWMR	No conservation listing advice for this species. Refer to listing advice (Threatened Species Scientific Committee, 2013)

[7] A recurrent aggregation of scalloped hammerheads has been recorded within the Shoalwater Islands Marine Park (32° S; 115° E), 240 km south of Jurien Bay, observed from drone footage collected during the 2019 and 2020 Austral summers. The species has rarely been recorded south of Jurien Bay previously (López et al., 2022).

5.2 Protected Sharks, Sawfishes and Rays in the NWMR

The EPBC Act Protected Matters search (**APPENDIX A**. Protected Matter Search Reports for NWMR, SWMR and NMR) identified seven species of shark and five species of river shark or sawfish listed as threatened and/or migratory within the NWMR. In addition, two species of ray (the reef manta ray and giant manta ray) are listed as migratory within the region (refer **Table 5-3**).

5.2.1 Sharks and Sawfishes

The shark species that may or are known to occur within the NWMR include: the whale shark, grey nurse shark, white shark, shortfin mako, and longfin mako (**Table 5-3**).

Five species of river shark or sawfish that may or are known to occur in the NWMR include: the narrow sawfish, northern river shark, freshwater sawfish, green sawfish and dwarf sawfish (**Table 5-3**Error! Reference source not found.).

There are identified biologically important areas (BIAs) within the NWMR for the whale shark, freshwater sawfish, green sawfish, and dwarf sawfish (**Table 5-5**).

Table 5-3 Information on the EPBC-listed threatened shark, fish and sawfish species that may or are known to occur within the NWMR.

Species	Preferred Habitat and Diet	Habitat Location
Whale shark	Preferred habitat: They have a widespread distribution in tropical and warm temperate seas, throughout oceanic and coastal Australian waters (Last and Stevens, 2009). Diet: Whale shark are planktivorous and feed on a variety of planktonic species including krill, jellyfish, and crab larvae (Last and Stevens, 2009).	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). Acoustically tagged whale sharks have been detected on the North-west Shelf in June, July and October-January (Thomson et al. 2021). Satellite tagging and sightings of whale sharks off the Western Australian coast indicate that whilst whale sharks aggregate in higher numbers at Ningaloo Reef seasonally, they may be present year-round (Norman et al., 2017). Refer **Table 5-5** for the BIA summary for the whale shark.
Grey nurse shark (West-coast population)	Preferred habitat: Most found in temperate waters on, or close to, the bottom of the continental shelf, from close inshore to depths of about 200 m (McAuley, 2004; Kyne et al., 2021). Diet: A variety of teleost and elasmobranch fishes and some cephalopods (Gelsleichter et al., 1999; Smale, 2005).	Details of movement patterns of the western sub-population are unclear (McAuley, 2004) and key aggregation sites have not been formally identified within the NWMR (Chidlow et al., 2006). 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 - December (Hoschke et al., 2023).
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 1000 m (Bruce et al., 2006; Bruce, 2008). Diet: Smaller white sharks (less than 3 m length) feed primarily on teleost and elasmobranch fishes,	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 the migratory nature of the species, it most likely has a broad

Species	Preferred Habitat and Diet	Habitat Location
	broadening their diet as larger sharks to include marine mammals (Last and Stevens, 2009).	distribution within the NWMR. No BIAs identified for NWMR.
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 data suggest 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 the migratory nature of the species, it most likely has a broad distribution within the NWMR. No BIAs identified for NWMR.
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 0–1,752 m (Kyne et al., 2021). Diet: Primarily teleost fishes and cephalopods (primarily squid) (Last and Stevens, 2009).	Records on 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 NWMR.
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 1300 m (Campana et al., 2010; Saunders et al., 2011). Depth range records are 0-370 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 (ALA)).
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 sub-tropical 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 1000 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 and 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 long line fisheries.	Given the migratory nature of the species, it most likely has a broad distribution within the NWMR. No BIAs identified for NWMR.
Narrow sawfish	Preferred habitat[1]: Shallow coastal, estuarine, and riverine habitats, however it may occur in waters up to 40 m deep (D'Anastasi et al., 2013).	Shallow coastal waters of the Pilbara and Kimberly coasts (Last and Stevens, 2009).

Species	Preferred Habitat and Diet	Habitat Location
	Diet: Shoaling fishes, such as mullet, as well as molluscs and small crustaceans (Cliff and Wilson, 1994).	
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: Variety of fish and crustaceans (Stevens et al., 2005).	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 also 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).
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).	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). Refer to **Table 5-5** for the BIA summary for the Largetooth (freshwater) 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).	An aggregation of green sawfish (*Pristis zijsron*) has been identified in the Garig Gunak Barlu National Park (Cobourg Peninsula, NMR). Davies et al., 2022) suggests 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). Refer **Table** 5-5 for the BIA summary for the green sawfish.
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).	Literature indicates the most southern range for the dwarf sawfish is Port Hedland (Bateman et al., 2024). Refer **Table 5-5** for the BIA summary for the dwarf sawfish.

1 Preferred habitat as described within the Sawfish and River Sharks Multispecies Recovery Plan (Commonwealth of Australia, 2015b).

5.2.2 Rays

Rays are commonly found in the NWMR. Two listed and migratory species of ray are known to occur within the NWMR: 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 5-4 Information on 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 0-432 m (Kyne et al., 2021). Diet: Feed 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 NWMR.
Giant manta ray	Preferred habitat: The species primarily inhabits near-shore 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 1000 m (Kyne et al., 2021). Diet: Feed 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 NWMR.

5.3 Fish, Shark and Sawfish Biological Important Areas in the NWMR

A review of The Australian Marine Spatial Information System (GA, 2024) identified Biologically Important Areas (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. These are described in **Table 5-5**.

Table 5-5 Fish, whale shark and sawfish BIAs within the NWMR (source: AMSIS, accessed 14/08/2024)

	Woodside Activity Area			BIAs			
	Browse	NWS/S	NWC	Reproduction - Pupping	Reproduction - Nursing	Juvenile	Foraging
Whale shark	✓	✓	✓	No pupping BIA identified within the NWMR	No nursing BIA identified within the NWMR	N/A	Foraging (high density) in Ningaloo Marine Park and adjacent Commonwealth waters (March–July) Foraging northward from Ningaloo along the 200 m isobath (July – Nov).
Green sawfish	✓	✓	-	Pupping in Cape Keraudren (pupping occurs in summer in a narrow area adjacent to 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	No juvenile BIA identified within the NWMR.	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 (January to May) Roebuck Bay (Jan – May) Pupping likely in waters adjacent to Eighty Mile Beach (Jan- May)	Nursing (likely) in King Sound	Waters adjacent to Eighty Mile Beach Roebuck Bay	Foraging in the mouth of the Fitzroy River (January to May) Foraging in King Sound Roebuck Bay (Jan – 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

	Woodside Activity Area			BIAs			
	Browse	**NWS/S**	**NWC**	**Reproduction - Pupping**	**Reproduction - Nursing**	**Juvenile**	**Foraging**
							Foraging in waters adjacent to Eighty Mile Beach

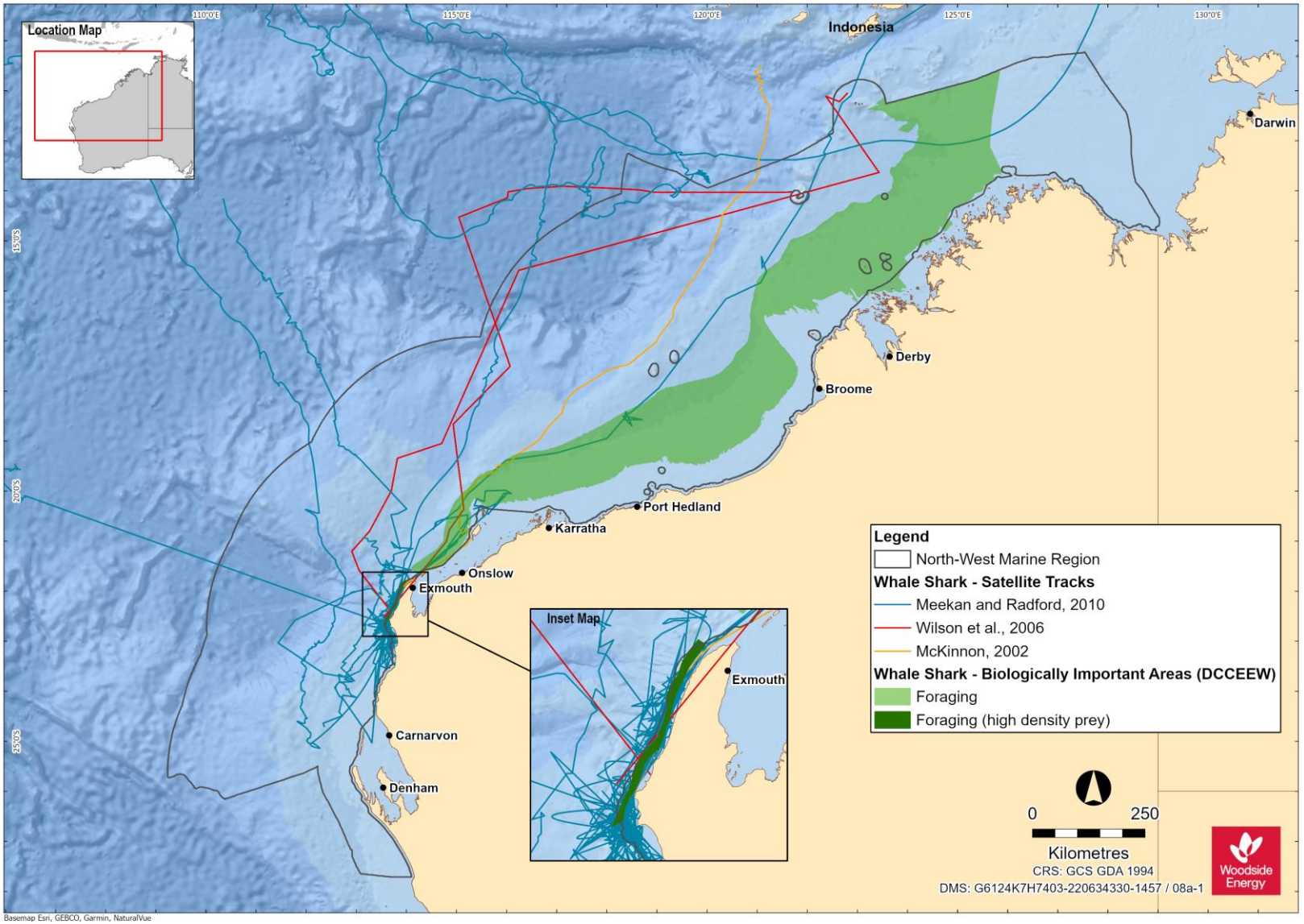


Figure 5-1 Whale shark BIAs for the NWMR and tagged whale shark satellite tracks (data source for BIAs: DCCEEW, 2024b)

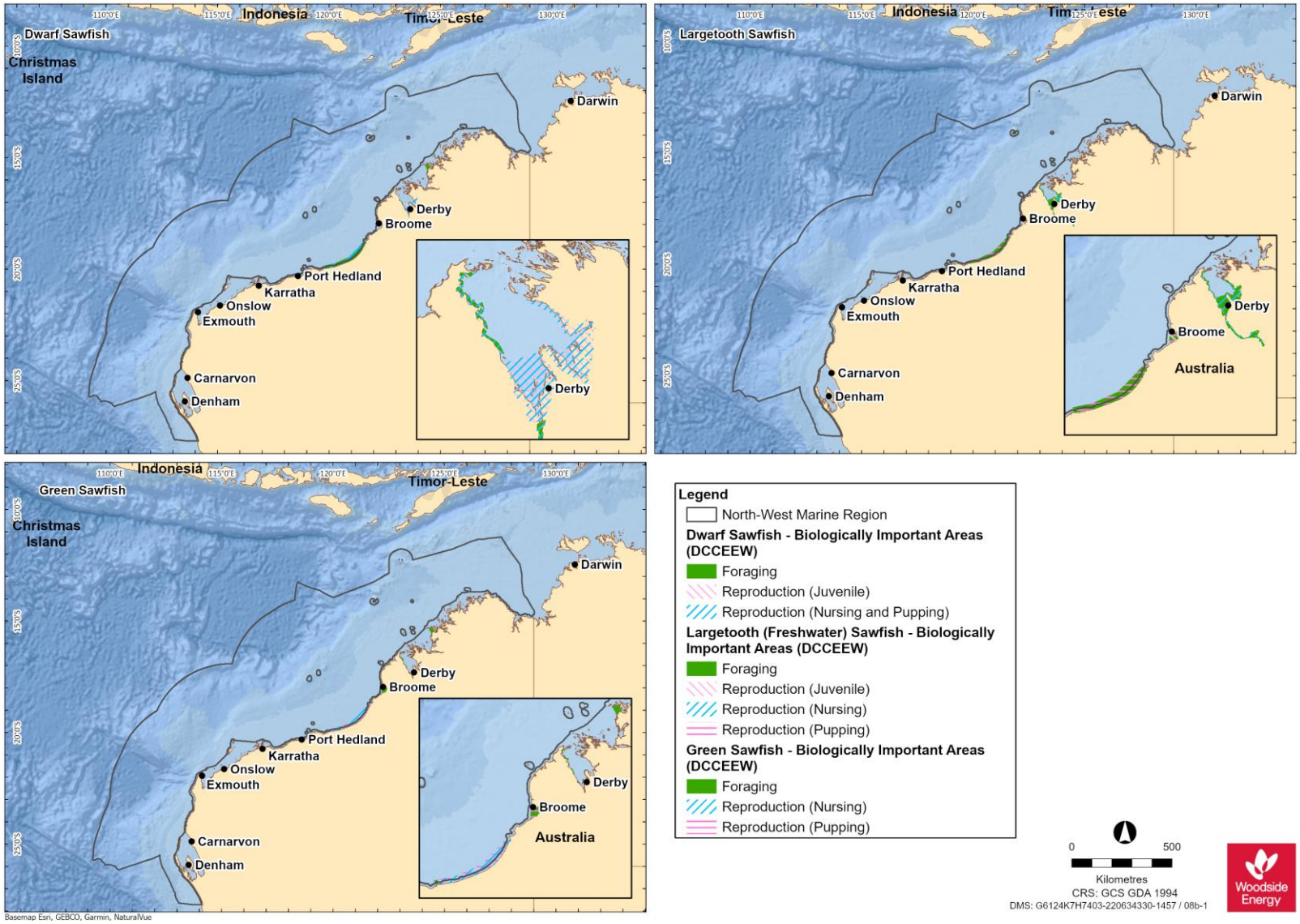


Figure 5-2 Sawfish BIAs for the NWMR (data source: DCCEEW, 2024b)

5.4 Fish Assemblages of the NWMR

5.4.1 Regional Context for Fish Assemblages of 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, whilst also acknowledging some information gaps. A study of fish assemblages of the Dampier Archipelago found habitat type and complexity influenced fish abundance, with significantly higher abundance in mangrove and coral habitats (Moustaka, et al. 2024).

The NWMR is known for its demersal slope fish assemblages; the continental slope of the Timor Province and the North-west Transition supports 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 withonly 26 possibly being endemic. The continental slope demersal fish assemblages of the NWMR have been identified as a KEF (DEWHA, 2008), as described in **Section 10**.

The ancient coastline at 125m 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 that fish communities along the ancient coastline 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 1000 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, 2008).

5.4.2 Listed Fish Species in the NWMR

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).

There are 55 solenostomid and syngnathid species that are listed marine species that may occur within the NWMR, although no species is currently listed as threatened or migratory, according to the PMST report (**APPENDIX A**. Protected Matter Search Reports for NWMR, SWMR and NMR).

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 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 Protected Matters search of 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.

5.4.3 Browse

The proposed Browse activity area includes biologically important habitat for the whale shark and three sawfish species:

- whale shark (foraging northward from Ningaloo along the 200 m isobath (July - November) (**Table 9-1**)
- Largetooth (freshwater) sawfish (pupping, nursing and foraging areas),
- green sawfish (pupping, nursing and foraging areas); and
- dwarf sawfish (pupping, nursing and foraging areas).

BIAs for the shark and sawfish species are outlined in **Table 5-5** and **Figure 5-**.

The proposed Browse activity area has partial overlap with the continental slope demersal fish communities KEF.

5.4.4 NWS / Scarborough

The NWS / Scarborough activity area includes biologically important habitat for the whale shark and three sawfish species:

- whale shark (foraging northward from Ningaloo along the 200 m isobath (July - November) (**Table 9-1**)
- freshwater sawfish (pupping, nursing and foraging areas),
- green sawfish (pupping, nursing and foraging areas); and
- dwarf sawfish (pupping, nursing and foraging areas).

BIAs for the whale shark and sawfish species are outlined in **Table 5-5** and **Figure 5-**.

The NWS / Scarborough activity area has partial overlap with 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).

5.4.5 North-west Cape

The North-west Cape activity area includes biologically important foraging habitat for the whale shark:

  - Foraging (high density) in Ningaloo Marine Park and adjacent Commonwealth waters (March- July) (**Table 9-1**); and
- Foraging northward from Ningaloo along the 200 m isobath (July- November) (**Table 9-1**)
  - BIAs for the whale shark are outlined in **Table 5-5** and **Figure 5-**.

The North-west Cape activity area coincides with part of the continental slope demersal fish communities KEF.

6. MARINE REPTILES

6.1 Regional Context for Marine Reptiles

The NWMR contains 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 and crocodile populations.

Six of the seven marine turtle species occur in Australian waters, and all six (the green turtle, hawksbill turtle, loggerhead turtle, flatback turtle, leatherback turtle and olive ridley turtle) occur in the NWMR and NMR, with four species of marine turtles occurring in the SWMR (see Protected Matters reports in APPENDIX A. Protected Matter Search Reports for NWMR, SWMR and NMR).

There are 25 listed species of sea snake reported within or adjacent to the NWMR (Guinea, 2007a; Udyawer et al., 2016), of which four are endemic to reef habitats in the remote parts of the region (see NWMR Protected Matters report in **APPENDIX A**. Protected Matter Search Reports for NWMR, SWMR and NMR).

There are significantly fewer marine reptile species that frequently occur within the SWMR and presently include four species of listed marine turtle and six sea snake species. Other species of sea snake may occur because of the southward-flowing Leeuwin Current as vagrants in the region (DSEWPAC, 2012b) (see SWMR Protected Matters report in **APPENDIX A**. Protected Matter Search Reports for NWMR, SWMR and NMR).

28 listed sea snake species ‘may’ occur in the NMR, as reported in the Protected Matters report in APPENDIX A. Protected Matter Search Reports for NWMR, SWMR and NMR.

The following sections focus on the listed marine reptile species known to occur within the NWMR.

Table 6-1 outlines the threatened and migratory marine reptile species that may or are known to occur within the NWMR, with their conservation status and relevant recovery plans and/or conservation advice.

Table 6-1 Marine reptile species identified by the EPBC Act PMST that may occur within or utilise habitats in the NWMR for key life cycle stages

Species Name	Common Name	*Environment Protection and Biodiversity Conservation Act 1999* (Cth) (as per PMST report Appendix A)			*Biodiversity Conservation Act 2016* (WA)[8]	IUCN[1] Red List of Threatened Species (non-statutory)[9]	EPBC Act Part 13 Statutory Instrument
		Threatened Status	Migratory Status	Listed	Conservation Status	Global Status	
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	Endangered	
Dermochelys coriacea	Leatherback turtle	Endangered	Migratory	Marine	Vulnerable	Vulnerable	
Eretmochelys imbricata	Hawksbill turtle	Vulnerable	Migratory	Marine	Vulnerable	Critically Endangered	
Natator depressus	Flatback turtle	Vulnerable	Migratory	Marine	Vulnerable	Data Deficient	
Lepidochelys olivacea	Olive Ridley turtle	Endangered	Migratory	Marine	Endangered	Vulnerable	
Varanus mitchelli	Mitchell's water monitor	Critically endangered	N/A	N/A	N/A	Critically Endangered	Conservation Advice for *Varanus mitchelli* (Mitchell's water monitor) (DCCEEW, 2023c)
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	Under listing assessment [10]	N/A	Marine	N/A	Endangered	Conservation Advice for *Aipysurus fuscus* (dusky sea snake) (DCCEEW, 2023e)[7]
Crocodylus porosus	Salt-water crocodile	N/A	Migratory	Marine	Migratory	Least Concern	N/A

[8] Threatened and Priority Fauna List – April 2024 - https://www.dbca.wa.gov.au/management/threatened-species-and-communities (accessed on 13/08/2024)
[9] IUCN. 2024. The IUCN Red List of Threatened Species. Version 2024-1. https://www.iucnredlist.org (accessed on 13/08/2024)
[10] At time of writing (August 2024), Dusky sea snake proposed for inclusion on the EPBC Act threatened species list in the Endangered category (DCCEEW, 2023e).

6.2 Marine Turtles in the NMWR, SWMR and NMR Bioregions

According to the Protected Matters search (**APPENDIX A**. Protected Matter Search Reports for NWMR, SWMR and NMR) six species of marine turtle known to occur within the NWMR are listed as threatened and migratory (three Vulnerable and three Endangered) under the EPBC Act—the green (*Chelonia mydas*), hawksbill (*Eretmochelys imbricata*), flatback (*Natator depressus*), loggerhead (*Caretta caretta*), leatherback (*Dermochelys coriacea*) and olive ridley (*Lepidochelys olivacea*) turtles (DSEWPAC, 2012a) (refer **Table 6-1**).

The NWMR supports globally significant breeding populations of four marine turtle species: the green, hawksbill, flatback and loggerhead turtle. 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).

The six marine turtle species reported for the NWMR also occur within the NMR.

Four marine turtle species; the green, loggerhead, flatback, and leatherback turtle, have presumed feeding areas within the SWMR; however, no known nesting areas exist within the region (DSEWPAC, 2012b).

Discrete genetic stocks have evolved within each marine turtle species. This is the result of marine turtles returning to the location 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 17 genetic stocks, nine are known to occur within Woodside's three areas of activity (**Table 6-2**).

6.2.1 Life Cycle Stages

Marine turtles are highly migratory during non-reproductive life phases and have high site fidelity during breeding and nesting life phases. The majority of their lives are spent 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 6-1** 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).

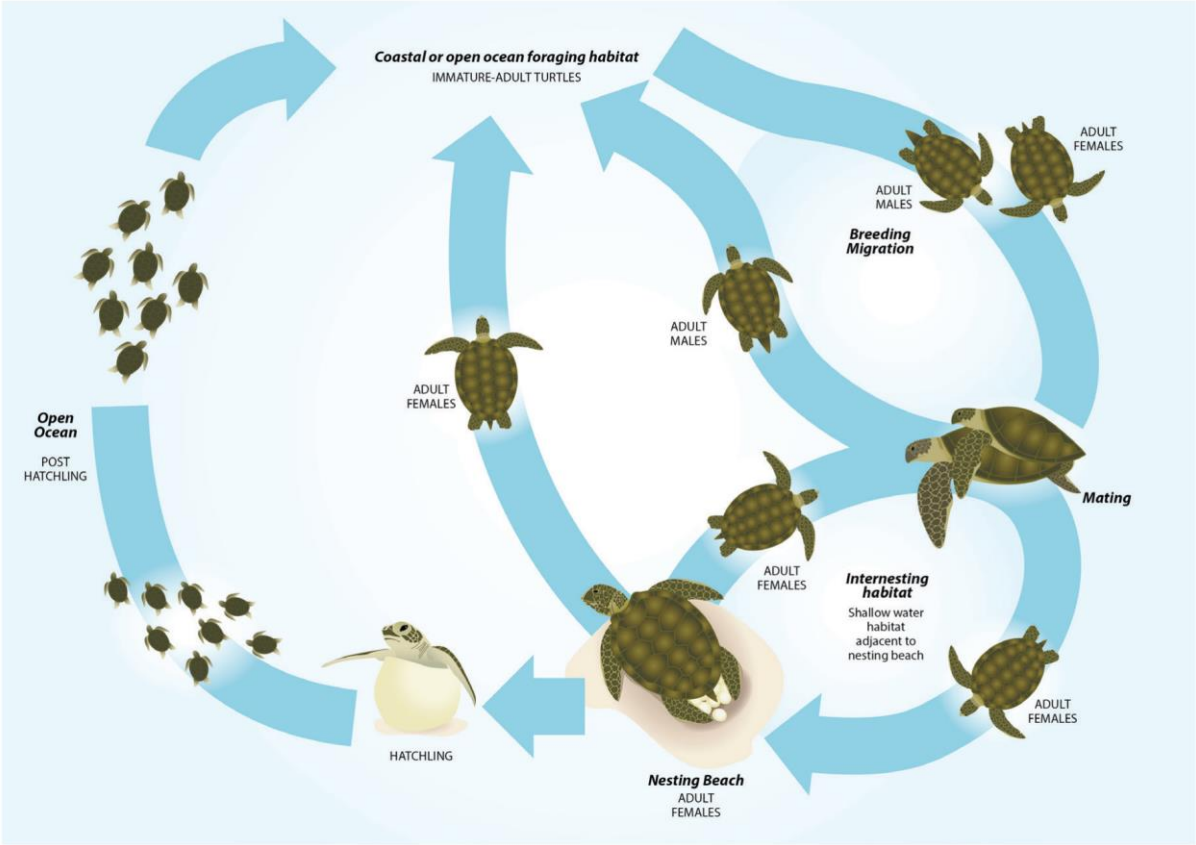


Figure 6-1 Generalised life cycle of marine turtles (Commonwealth of Australia, 2017)

6.2.2 Habitat Critical to Survival for Marine Turtles in the NWMR

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 the maintenance of species essential to the survival of the species);
- to maintain genetic diversity and long-term evolutionary development; and
- 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 four marine turtle species within the NWMR and these are identified, described and mapped in **Table 6-2** and **Figure 6-2**. No habitat critical to survival has been identified within the NWMR for olive ridley or leatherback turtles.

Table 6-2 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.

Table 6-2 Genetic stock, habitat critical to survival and key life cycle stage seasonality of the four species of marine turtles within the NWMR

Species	Woodside Activity Area			Habitat Critical to Survival			
	Browse	NWS/S	NWC	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 Northwest Cape* Ningaloo Coast	20 km radius	Nov-Mar	Nearshore reef habitats in the photic zone.
Ashmore Reef Stock (G-AR)	✓	-	-	Ashmore Reef* Cartier Reef*		All year (peak: Dec-Jan)	
Scott Reef-Browse Island Stock (G-ScBr)	✓	-	-	Scott Reef (Sandy Islet)* Browse Island*		Nov-Mar	
Hawksbill Turtle							
Western Australia 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	Oct-Feb	Nearshore and offshore reef habitats.

Species	Woodside Activity Area			Habitat Critical to Survival			
	Browse	NWS/S	NWC	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	All year (peak: Jul-Sep)	Nearshore and offshore sub-tidal and soft bottomed habitats of offshore islands.
South-west Kimberley Stock (F-swKim)	-	✓	-	Eighty Mile Beach* Eco Beach* Lacepede Islands		Oct-Mar	
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-Mar	
Unknown genetic stock Kimberley, Western Australia	✓	✓	-	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-July	

Species	Woodside Activity Area			Habitat Critical to Survival			
	Browse	NWS/S	NWC	Nesting (*Major Rookery[1])	Internesting Buffer	Seasonality-Nesting	Preferred Habitat[2]
Loggerhead Turtle							
Western Australia Stock (LH-WA)	-	-	✓	Dirk Hartog Island* Muiron Islands* Gnaraloo Bay* Ningaloo Coast	20 km radius	Nov-May	Nearshore and island coral reefs, bays and estuaries in tropical and warm temperate latitudes.

[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)*

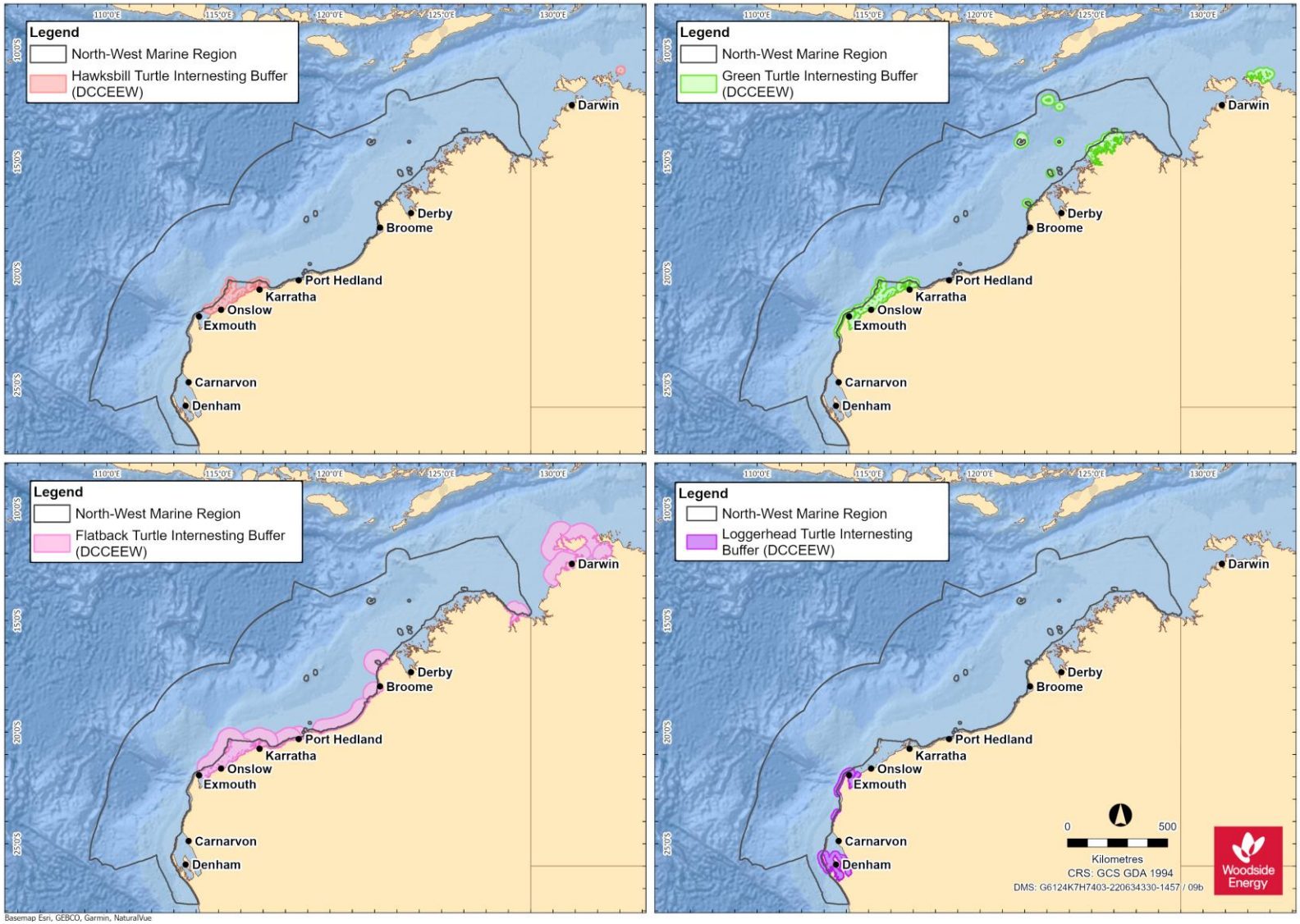


Figure 6-2 Marine turtle species habitat critical to survival (nesting beaches and internesting buffers) for the NWMR (data source: DCCEEW, 2024b)

6.3 Marine Turtle Biological Important Areas in the NWMR

A review of the Australian Marine Spatial Information System (GA, 2024), the Marine Bioregional Plan for the North-west Marine Region (DSEWPAC, 2012a) and the Recovery Plan for Marine Turtles in Australia (CoA, 2017) identified BIAs for the four marine turtle species that occur within the NWMR. These are described in **Table** 6-3**.**

Table 6-3 Marine turtle BIAs within the NWMR

Species	Woodside Activity Area			BIAs				
	Browse	NWS/S	NWC	Mating	Nesting	Internesting	Foraging	Migration[11]
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 to the 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 Cassini 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 located around nesting sites. Habitat critical to survival internesting buffer (**Table 6-2**) is the legally recognised area of protection under the EPBC Act	Foraging inshore areas of Barrow Island Foraging at Montgomery Reef Foraging at Montebello Islands Foraging at Dixon Island Foraging around Ashmore Reef Foraging at Seringapatam Reef and Scott Reef Foraging in the De Grey River area to Bedout Island Foraging around the Islands between Cape Preston and Onslow and inshore of Barrow Island Foraging around Dampier Archipelago (islands to the west of the Burrup Peninsula) Foraging at Legendre Island and Huay Island Foraging around Delambre Island Foraging in the Joseph Bonaparte Gulf	Migration corridor at Dampier Archipelago (islands to the west of the Burrup Peninsula). Green turtles can migrate more than 2600 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 stock-Pilbara and another used by the NWS stock-Kimberley and the Scott-Browse stock with some overlap at the northern and southern extents respectively. This study showed that the foraging distribution of green turtles from two stocks in WA expands throughout North-west and northern Australian coastal waters, including the NT and Queensland.

[11] Migration BIA included in AMSIS (GA, 2024). General information for migratory behaviours also provided.

Species	Woodside Activity Area			BIAs				
	Browse	NWS/S	NWC	Mating	Nesting	Internesting	Foraging	Migration[11]
							Foraging in waters adjacent to James Price Point	
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 (to the west of the Burrup Peninsula) Ningaloo Coast and Jurabi coast Sandy Islet at Scott Reef	Locations of 20 km internesting buffer BIAs for hawskbill 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 located around nesting sites. Habitat critical to survival internesting buffer (**Table 6-2**) is the legally recognised area of protection under the EPBC Act	Recent data shows foraging ranges from the north of Exmouth Gulf to offshore Broome (Fossette et al., 2021a). Foraging around the Lowendal Island group Foraging at Delambre Island Foraging around Dixon Island Foraging in the De Grey River area to Bedout Island Foraging around the islands between Cape Preston and Onslow and inshore of Barrow Island Foraging around the islands of the Dampier Archipelago (to the west of the Burrup Peninsula) Foraging at Ashmore Reef	Migration corridor at Dampier Archipelago (islands to the West of the Burrup Peninsula). Individuals may migrate up to 2400 km between their nesting and foraging grounds (DSEWPAC, 2012a), although reproductive migration distances over 1000 km appear less common in Hawksbill turtles than other species (Fossette et al., 2021a). Recent satellite tracking data shows turtles migrating from WA rookeries remained on the continental shelf, with the majority following the coastline and dispersing in a North-easterly direction, with some turtles from the Montebello Archipelago and Lowendals moving in a South-westerly direction and some fstopping around Barrow Island. A migratory corridor was

Species	Woodside Activity Area			BIAs				
	Browse	NWS/S	NWC	Mating	Nesting	Internesting	Foraging	Migration[11]
								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	Thevenard Island - South coast (summer) high use on beaches with high dune height Barrow Island Montebello Islands (including Hermite Island, North West Island, Trimouille Island) Dampier Archipelago (islands to the 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 80 Mile Beach	Locations of 80 km internesting buffer BIAs for flatback turtles are described in the Marine Bioregional Plan for the North-west Marine Region (DSEWPAC, 2012a). Year-round and seasonal internesting buffer BIAs of 80 km are located around nesting sites, extending 20 km further than the habitat critical to survival. Habitat critical to survival internesting buffer (**Table 6-2**) is the legally recognised area of protection under the EPBC Act	Foraging at the islands between Cape Preston and Onslow and inshore of Barrow Island. Foraging at Montebello Islands Foraging at Dampier Archipelago (islands to the West of the Burrup Peninsula) Foraging at Legendre Island and Huay Island Foraging at Delambre Island Foraging in the Joseph Bonaparte Depression Foraging in waters adjacent to James Price Point	Migration corridor at Dampier Archipelago (islands to the 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 that some flatback turtles undertake long-distance migrations between breeding and feeding grounds (Limpus et al., 1983). However, flatback turtles generally do not have a pelagic phase to their lifecycle. Instead, hatchlings grow to maturity in shallow coastal waters thought to be close to their natal beaches (DSEWPAC, 2012a). A study predicting the dispersal of flatback turtle hatchlings found

Species	Woodside Activity Area			BIAs				
	Browse	NWS/S	NWC	Mating	Nesting	Internesting	Foraging	Migration[11]
					Lacepede Islands			that core areas were predominantly on the continental shelf (<200 m depth contour) during all dispersal phases, indicating that flatback turtles remain in neritic areas (Wilson et al., 2023).
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). Year-round and seasonal 20 km internesting buffer BIAs are located around nesting sites. Habitat critical to survival internesting buffer (**Table 6-2**) is the legally recognised area of protection under the EPBC Act	Foraging in the De Grey River area to Bedout Island Foraging on the Western Joseph Bonaparte Depression Foraging in the 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)
Olive ridley turtle	✓	✓	-	No mating BIA identified within the NWMR	No nesting BIA identified within the NWMR	No internesting BIA identified within the NWMR	No foraging BIA identified within the NWMR, however may forage at the following locations: The 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

Species	Woodside Activity Area			BIAs				
	Browse	NWS/S	NWC	Mating	Nesting	Internesting	Foraging	Migration[11]
							Dampier Archipelago (islands to the West of the Burrup Peninsula)	known for Australian olive ridley turtles

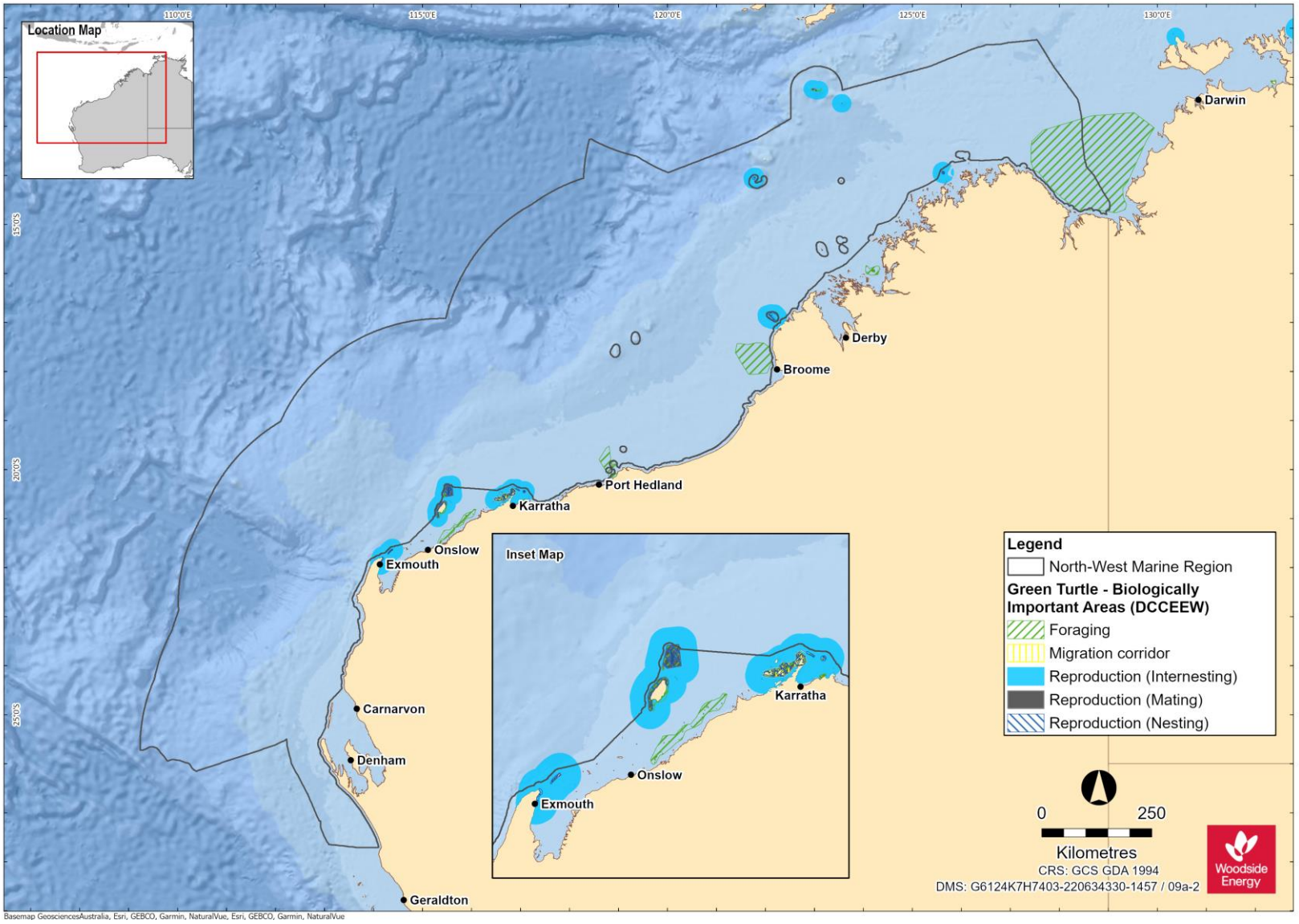


Figure 6-3 Green turtle BIAs within the NWMR (data source: DCCEEW, 2024b)

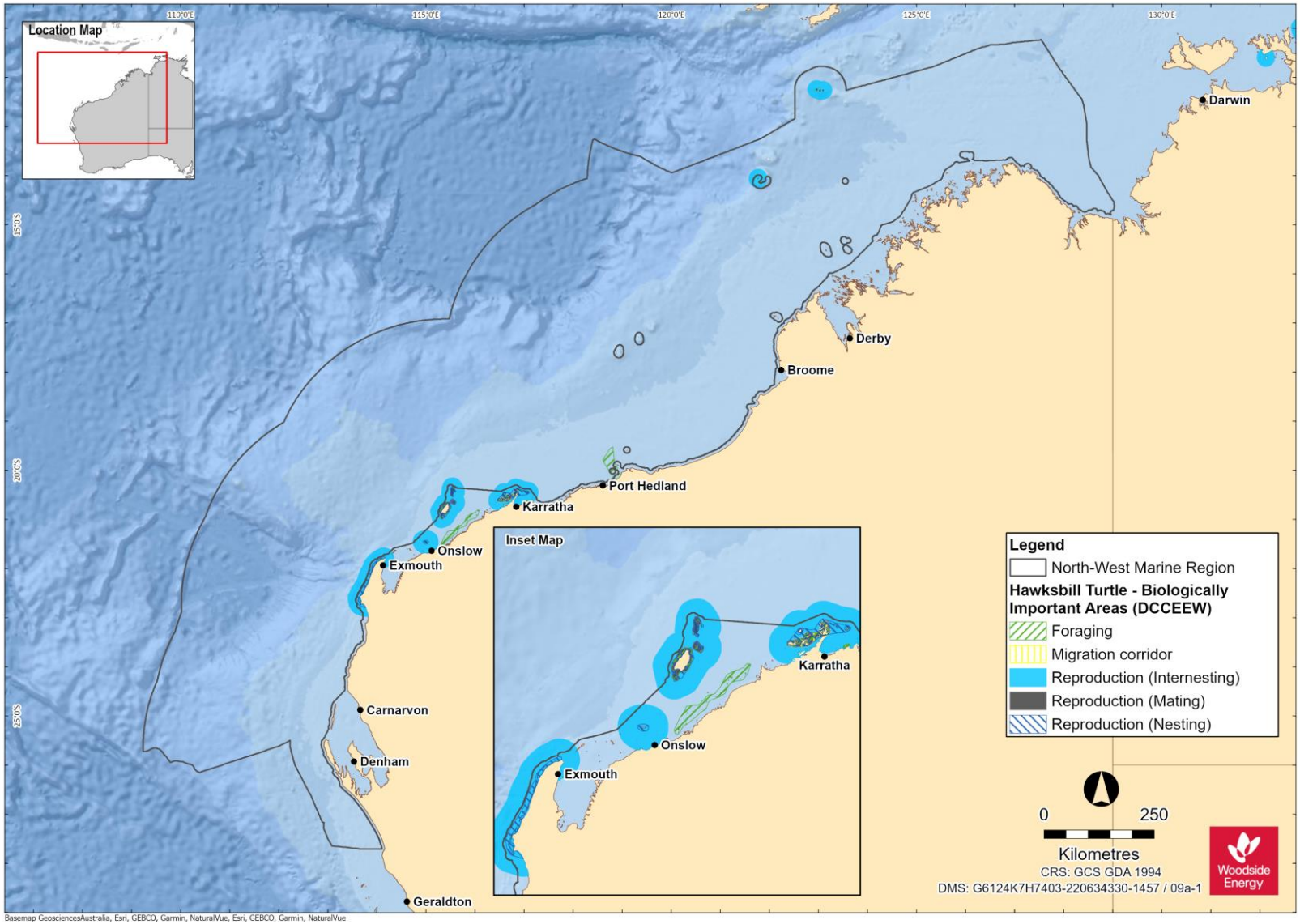


Figure - Hawksbill turtle BIAs within the NWMR (data source: DCCEEW, 2024b)

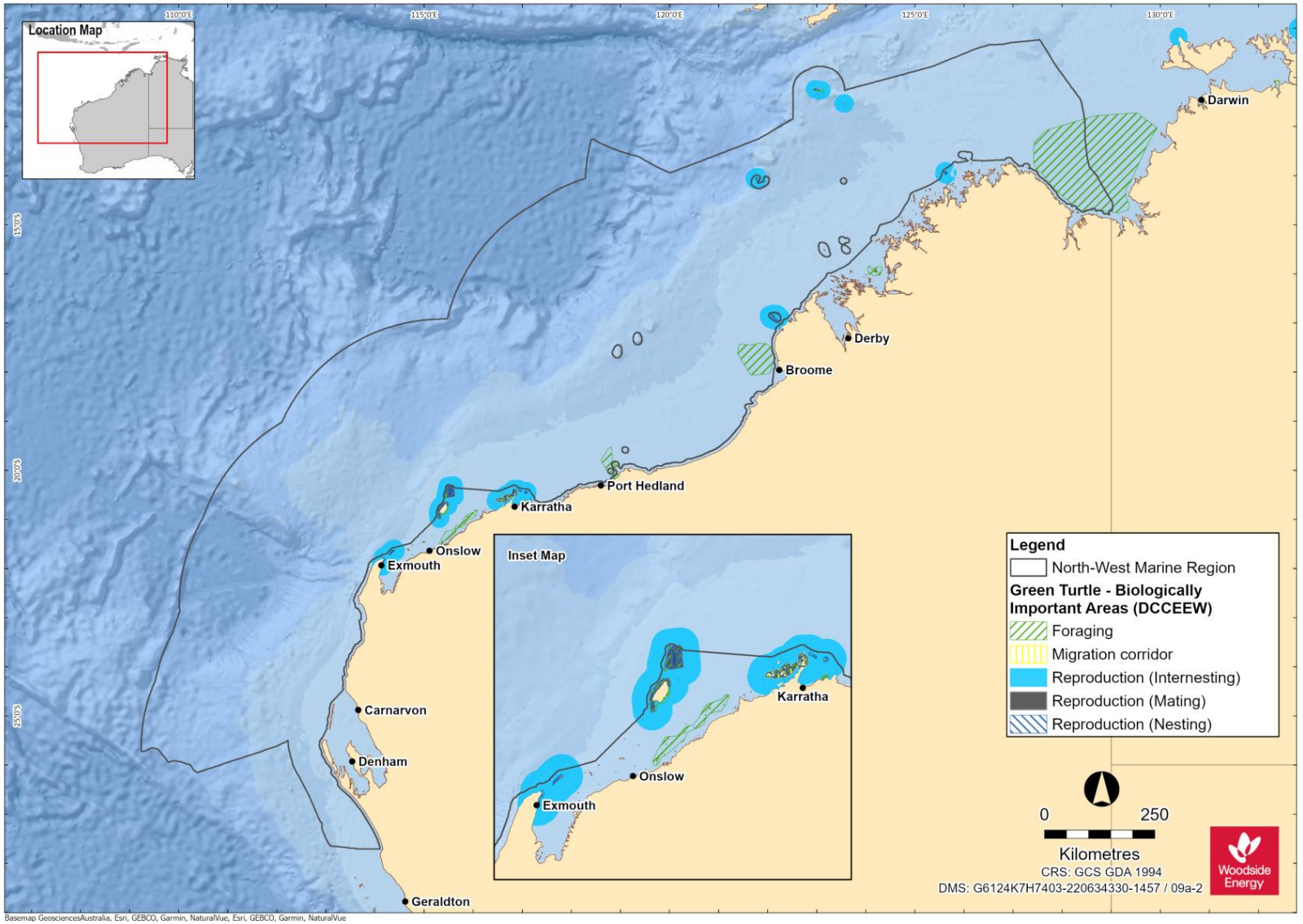


Figure 6-4 Flatback turtle BIAs within the NWMR (data source: DCCEEW, 2024b)

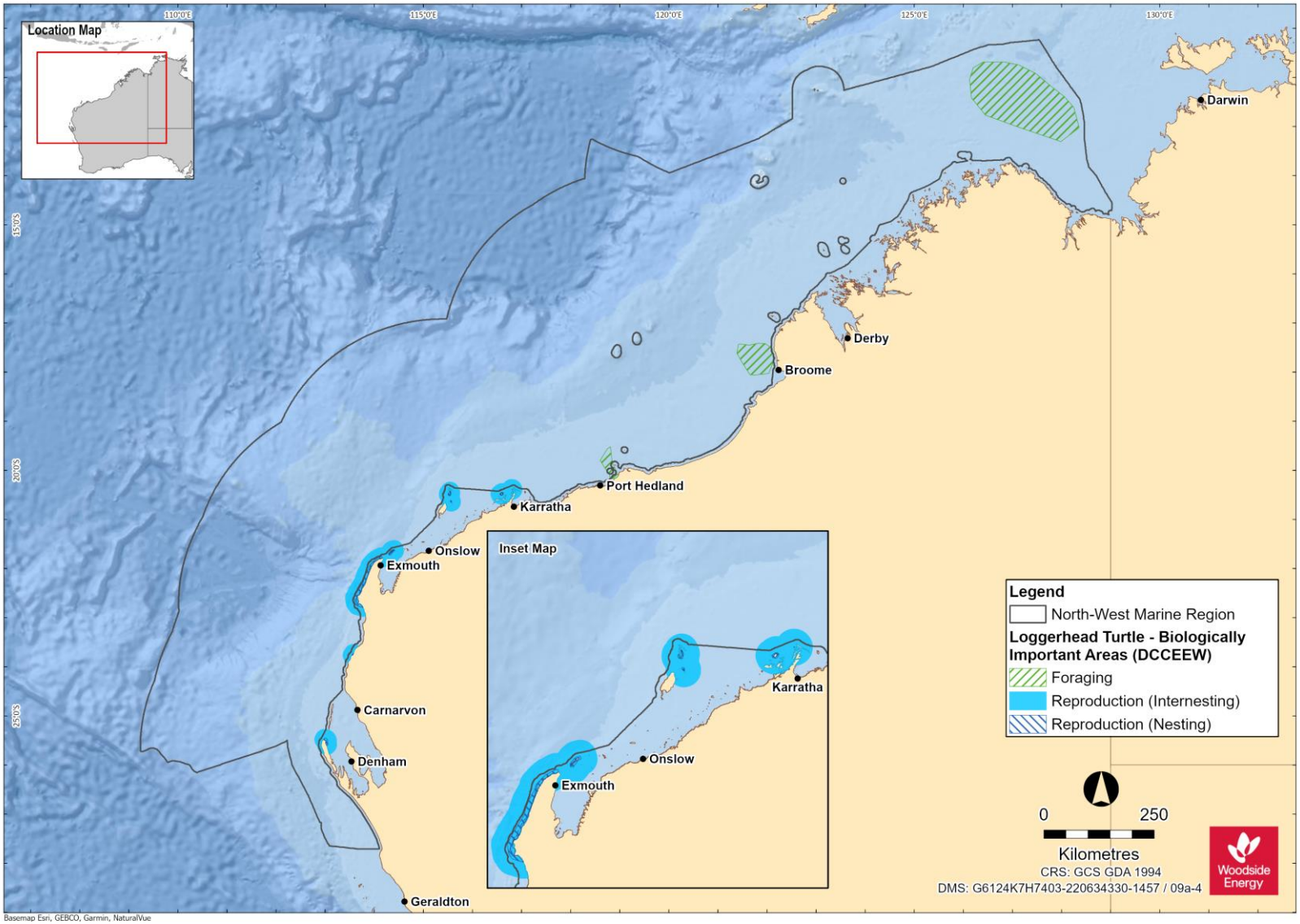


Figure 6-5 Loggerhead turtle BIAs within the NWMR (data source: DCCEEW, 2024b)

6.4 Marine Turtle Summary for NWMR

Six of the seven marine turtle species occur within the Woodside activity areas. Across all three areas, globally significant breeding populations of four marine turtle species; the green, hawksbill, flatback and loggerhead turtle, have been recorded.

However, offshore waters do not represent biologically important habitat for marine turtles in any of the three Woodside activity areas. Isolated records of transient individuals (on post-nesting migration) are expected, but there is no evidence of important habitat or behaviours for marine turtles in the offshore, open water environment of the NWS, in general.

6.4.1 Browse

The proposed Browse activity area includes major nesting areas that support globally significant breeding populations of two marine turtle species:

- the green turtle, including two distinct genetic stocks (Ashmore Reef and Scott Reef-Browse Island); and
- the flatback turtle, Cape Domett genetic stock.

Locations of habitat critical for each of the two species are outlined in **Table 6-2** and **Figure 6-2**.

BIAs for the green and flatback turtle are outlined in **Table 6-3** and **Figure 6-3** Green turtle BIAs within the NWMR (data source: DCCEEW, 2024b)

Figure -.

Table 6-4 Marine turtle key information for Browse activity area.

Species / Genetic Stock	Key Information
Green Turtle	
Ashmore Reef Stock (G-AR)	The G-AR stock nests in a localised area of the Indian Ocean in the Ashmore Reef and Cartier Island Australian Marine Park (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/sub-tidal habitats of offshore islands and coastal waters with coral reef, mangrove, sand, rocky reefs, and mudflats where there are algal turfs or seagrass meadows present (Commonwealth of Australia, 2017).
Scott Reef-Browse Island Stock (G-ScBr)	The G-ScBr stock is a discrete unit known to nest at only two locations within the North-east Indian Ocean—Sandy Islet and Browse Island. There is currently very limited data available for the G-ScBr stock, therefore population numbers are not known. 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 (refer Table 6 of the Recovery Plan). Surveys conducted at Scott Reef in 2006, 2008 and 2009 indicate that 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 Western Australian mainland via two distinct post-nesting migration pathways; travelling east and north toward the Bonaparte Archipelago and then north along the coast to foraging areas in NT waters or travelling south to Cape Leveque and 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).

Species / Genetic Stock	Key Information
Flatback Turtle	
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 July to September. Extending further than the habitat critical internesting buffer, an internesting buffer BIA of 80 km is located at Cape Domett and Lacrosse Island.

6.4.2 North-west Shelf / Scarborough

The NWS / Scarborough activity area includes major nesting areas that support globally significant breeding populations of three marine turtle species, representing four discreet genetic stocks:

- the green turtle, NWS genetic stock;
- the hawksbill turtle, WA genetic stock; and
- the flatback turtle, South-west Kimberley stock and Pilbara genetic stock.

Locations of habitat critical for each of the four species are outlined in **Table 6-2** and **Figure 6-2**.

BIAs for the green, hawksbill, and flatback turtles are outlined in **Table 6-3** and **Figure 6-3** Green turtle BIAs within the NWMR (data source: DCCEEW, 2024b)

Figure -.

Table 6-5 Marine turtle key information for NWS / Scarborough activity area

Species / Genetic Stock	Key Information
Green Turtle	
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 approximately 20,000 individuals (DSEWPAC, 2012a) and the trend for the stock is reported as stable (Commonwealth of Australia, 2017). Major rookeries of the NWS stock within the NWS / Scarborough activity area are located at Lacepede Islands, Montebello Islands, Barrow Island (Tucker *et.al.*, 2021), Bells Beach, Delambre Island, Mundabullangana, Port Hedland, and Thevenard Island. These areas are designated habitat critical for survival of the stock and include an internesting buffer of 20 km radius around these rookeries fromNovember to March.
Hawksbill Turtle	
Western Australia Stock (H-WA)	The H-WA stock is the largest in the Indian Ocean. The majority of the nesting for this stock is located in the Pilbara. The Dampier Archipelago has the largest nesting aggregation recorded. In particular, Rosemary Island supports the most significant hawksbill turtle rookery in the WA region and one of the largest in the Indian Ocean; approximately 500-1000 females nest on the island annually, more than at any other WA rookery (Pendoley, 2005; Pendoley et al., 2016). Major rookeries of the H-WA stock within the NWS / Scarborough activity area are located at Rosemary Island, Delambre Island and the Montebello Islands. These areas are designated habitat critical for the stock and include an internesting buffer of 20 km radius around these rookeries fromOctober to February.
Flatback Turtle	
South-west Kimberley Stock (F-swKim)	The genetic relationship between this nesting aggregation and the Cape Domett and Pilbara stocks is currently under review. Population numbers of the F-swKim stock are unknown. Major rookeries of the F-swKim stock are located at Eighty Mile Beach and Eco Beach. 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.
Pilbara Stock (F-Pil)	The extent of genetic relatedness of flatback turtles along the WA coast is currently under review. Population numbers of the F-Pil stock are unknown.

Species / Genetic Stock	Key Information
	This stock nests on many islands in the Pilbara and southern Kimberley, with major rookeries at Mundabullangana Beach, Delambre Island, Rosemary Island and Barrow Island. These areas are designated habitat critical for the F-Pil stock and include an internesting buffer of 60 km radius around these rookeries fromOctober to March. A study using aerial photogrammetry showed nesting beaches were spread across the Pilbara from Y Island (Exmouth Gulf) in the southwest, to Bedout Island in the north and Mulla Mulla Downs Creek in the east (Fossete et al., 2021b). Other large flatback rookeries include Legendre Island and Thevenard Island. The Dampier Archipelago has been identified as a high-use area for flatback nesting (i.e., > 50% of the stock) (Fossete et al., 2021b). Extending further than the habitat critical internesting buffer, a year-round internesting buffer BIA of 80 km is located north and north-west of the Montebello Islands. However, use level for this BIA has been defined as very low (Commonwealth of Australia, 2017) and the habitat critical internesting buffer is the legally recognised area of protection under the EPBC Act *Significant Impact Guidelines 1.1 – Matters of National Environmental Significance*. 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). Flatbacks exhibit high fidelity to nesting beaches during periods of nesting attempts (Peel et al., 2024).

6.4.3 North-west Cape

The North-west Cape activity area includes major nesting areas that support globally significant breeding populations of two marine turtle species, representing two discreet genetic stocks:

- the green turtle, NWS genetic stock; and
- the loggerhead turtle, Western Australia genetic stock.

Locations of habitat critical for each of the two species are outlined in **Table 6-2** and **Figure 6-2**.

BIAs for the green and loggerhead turtles are outlined in **Table 6-3** and **Figure 6-3** Green turtle BIAs within the NWMR (data source: DCCEEW, 2024b)

Figure -.

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 and loggerhead turtles, as identified in the Recovery Plan (Commonwealth of Australia, 2017).

Table 6-6 Marine turtle key information for North-west Cape activity area

Species / Genetic Stock	Key Information
Green Turtle	
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 approximately 20,000 individuals (DSEWPAC, 2012a) and the trend for the stock is reported as stable (Commonwealth of Australia, 2017). There is one major rookery of the G-NWS stock located within the North-west Cape activity area. Located on the mainland coast of 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. For the 2022-23 Ningaloo Turtle Program season, green turtles were the most active species in the NW Cape division, with 91.2% of total turtle activity (DBCA, 2023a). The number of green turtle nests has varied largely among years since commencement of the program in 2002 (range of 1.06 to 18.13 nests per subsection per day) with an average of 5.69. The average number of green turtle nests in the 2022-23 peak season were below average, with 4.07 nests per subsection per day (DBCA, 2023a). There have been two clear peaks (2011-12 and 2020-21) in activity since the beginning of the Ningaloo Turtle Program, where activity has been approximately 2.5 to 11 times greater than other seasons (DBCA, 2023a). Both seasons coincided with La Niña weather patterns (DBCA, 2021a).
Loggerhead Turtle	
Western Australia Stock (LH-WA)	The LH-WA stock is one of the largest in the world (Limpus, 2009). The trend for the stock is reported as stable (Commonwealth of Australia, 2017). Major rookeries of the LH-WA stock are located at Dirk Hartog Island, Muiron Islands and Gnaraloo Bay. These areas are designated habitat critical for the stock and include an internesting buffer of 20 km radius around these rookeries fromNovember to May. 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). 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, 2021a).

6.5 Sea Snakes

Sea snakes are commonly found in the NWMR and NMR, but less so in the SWMR, and 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).

There are 25 listed species of sea snake reported within or adjacent to the NWMR (Guinea, 2007a; Udyawer et al., 2016), of which four are endemic to reef habitats in the remote parts of the region:

- dusky sea snake (*Aipysurus fuscus*);
- large headed sea snake (*Hydrophis pacificus*);
- short-nosed sea snake (*Aipysurus apraefrontalis*); and
- leaf-scaled sea snake (*Aipysurus foliosquama*).

The short-nosed sea snake and the leaf-scaled sea snake are listed threatened species (Critically Endangered) under the EPBC Act and the dusky sea snake is currently under assessment for inclusion on the EPBC Act threatened species list as Endangered (**Table 6-7**).

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 of 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 on 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 km^2 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 (refer **Table 6-6**).

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.

Table 6-7 Information on the two 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).

6.6 Crocodiles

The salt-water crocodile (*Crocodylus porosus*) is a listed migratory species under the EPBC Act known to occur within 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. No BIAs for salt-water crocodile have been identified in the NWMR.

6.7 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 Northern Territory 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 however includes all areas where the species persists following the establishment of cane toads 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.

7. MARINE MAMMALS

7.1 Regional Context

The offshore waters of WA include important habitat for marine mammals, including areas that support key life stages such as breeding, calving, foraging, and migration. Of the 45 species of cetacean occurring in Australian waters, 27 species occur regularly in the waters of the NWMR, nine species in the waters of the NMR and 33 species in the SWMR. The waters of the NWMR and the NMR support globally significant dugong populations (DSEWPAC, 2012a, 2012c).

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, in particular the humpback whale, are known to utilise the region for migration and calving, and the pygmy blue whale is known to utilise the region for foraging and as a migration pathway between southern feeding and northern breeding/feeding areas north of the equator.

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 cetacean, 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).

Table 7-1 outlines the threatened and migratory marine mammal species that may occur within the NWMR, with their conservation status and relevant recovery plans and/or conservation advice.

Table 7-1 Marine mammal species identified by the EPBC Act PMST that may occur within the NWMR.

Species Name	Common Name	*Environment Protection and Biodiversity Conservation Act 1999* (Cth) (as per PMST report APPENDIX A. Protected Matter Search Reports for NWMR, SWMR and NMR)			*Biodiversity Conservation Act 2016* (WA)[12]	IUCN Red List of Threatened Species (non-statutory)[13]	EPBC Act Part 13 Statutory Instrument
		Threatened Status	Migratory Status	Listed	Conservation Status	Global Status	
Cetaceans - Mysticeti							
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)
Eubalaena australis	Southern right whale	Endangered	Migratory	Cetacean	Vulnerable	Least Concern	National Recovery Plan for the Southern Right Whale *Eubalaena australis* (DCCEEW, 2024a)
Balaenoptera borealis	Sei whale	Vulnerable	Migratory	Cetacean	Endangered	Endangered	Conservation Advice *Balaenoptera borealis* sei whale (Threatened Species Scientific Committee, 2015a)
Megaptera novaeangliae	Humpback whale	N/A	Migratory	Cetacean	Conservation dependent	Least Concern	Listing Advice *Megaptera novaeangliae* Humpback Whale (DAWE, 2022)
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 omurai	Omura's whale	N/A	N/A	Cetacean	N/A	Data Deficient	N/A
Cetaceans - Odontoceti							
Physeter macrocephalus	Sperm whale	N/A	Migratory	Cetacean	Vulnerable	Vulnerable	N/A
Orcinus orca	Killer whale	N/A	Migratory	Cetacean	Migratory	Data Deficient	N/A

[12] Threatened and Priority Fauna List – April 2024 - https://www.dbca.wa.gov.au/management/threatened-species-and-communities (accessed on 13/08/2024)

[13] IUCN. 2024. The IUCN Red List of Threatened Species. Version 2024-1. https://www.iucnredlist.org (accessed on 13/08/2024)

Species Name	Common Name	*Environment Protection and Biodiversity Conservation Act 1999* (Cth) (as per PMST report APPENDIX A. Protected Matter Search Reports for NWMR, SWMR and NMR)			*Biodiversity Conservation Act 2016* (WA)[12]	IUCN Red List of Threatened Species (non-statutory)[13]	EPBC Act Part 13 Statutory Instrument
		Threatened Status	Migratory Status	Listed	Conservation Status	Global Status	
Orcaella heinsohni	Australian snubfin dolphin	N/A	Migratory	Cetacean	Priority	Vulnerable	N/A
Sousa chinensis	Indo-Pacific humpback dolphin (Australian humpback dolphin)	N/A	Migratory	Cetacean	Priority	Vulnerable	N/A
Tursiops aduncus	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
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, 2020a) (in effect under the EPBC Act from 23-Dec-2020)

7.2 Cetaceans in the NWMR

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).

From the Protected Matters search, 34 EPBC Act listed species were recorded as potentially occurring or having habitat within the NWMR (**APPENDIX A**. Protected Matter Search Reports for NWMR, SWMR and NMR). Of those, 12 cetacean species are listed as threatened and/or migratory, including baleen whales, toothed whales and dolphins that occur within the NWMR (**Table 7-2**).

7.3 Dugongs in the NWMR

The dugong is listed as migratory under the EPBC Act. Dugongs inhabit seagrass meadows in coastal waters, estuarine creeks and streams, and reef systems (DSEWPAC, 2012a).

Some of the coastal waters adjacent to the NWMR support significant populations of dugongs, including Shark Bay, Exmouth Gulf, in and adjacent to Ningaloo Reef, in coastal waters along the Kimberley coast, and on the edge of the continental shelf at Ashmore Reef (DEWHA, 2008).

Although the patterns of dugong movement in WA are not well understood, it is thought that dugongs move in response to availability of seagrass (Marsh et al., 1994; Preen et al., 1997) and water temperature. Cleguer and Marsh (2023) present the most contemporary data on dugongs and population estimates via an inventory of dugong aerial surveys of Australia, including northwest Australia (Shark Bay, Ningaloo, Exmouth Gulf and Pilbara, the Kimberley Region).

There are a number of BIAs for dugong within and adjacent to waters of the NWMR (refer **Section 7.5**).

7.4 Pinnipeds in the NWMR

The Australian sea lion is listed as a species that may occur or may have habitat within the NWMR (Protected Matters search - **APPENDIX A**. Protected Matter Search Reports for NWMR, SWMR and NMR). It is included here as the Australian sea lion is the only pinniped endemic to Australia (Strahan, 1983) and has been recorded within the southern extent of the NWMR at Shark Bay, WA (Kirkwood et al., 1992). The most northern known breeding colony is at the Houtman Abrolhos Islands in the SWMR. The Australian sea lion's breeding range extends from the Houtman Abrolhos Islands, WA to The Pages Island, east of Kangaroo Island, SA. The Australian sea lion was listed as endangered in 2020 (Threatened Species Scientific Committee, 2020a). 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 that the species meets IUCN endangered criteria.

There are no BIAs for the Australian sea lion in the NWMR.

7.5 Marine Mammals in the NWMR

Marine mammal descriptions within the NWMR including baleen whales, toothed whales and dolphins and dugongs are presented in **Table 7-2**.

Table 7-2 Information on the threatened/migratory marine mammal species within the NWMR

Species	Key Information
Baleen whales (Mysticeti) – Low Frequency hearing	
Humpback whale	In Australian waters, there are two genetically distinct populations of humpback whales that migrate annually along the west (Group IV/ Group 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 Western Australia 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 West Australian sub-population is considerably variable (DAWE, 2022). The population has been increasing in size at a rate of approximately 10% per annum since the cessation of whaling in Western Australian waters by 1963 (Thums et al., 2018) and population numbers have increased from approximately 2,000 to 3,000 individuals in 1991 to between 19,200–33,850 individuals in 2008 (Bannister and Hedley, 2001; Bejder et al., 2019; Hedley et al., 2011). Aerial surveys off the WA coast undertaken between 2000 and 2008 produced a population estimate for the Group IV population 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 Western Australian subpopulation had recovered to 90% (74-98% 90% PI) of its pre-whaling levels and projected that by 2020 it would have reached 98% (88-100% PI) (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, 2022) 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 there 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. In particular, 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 that 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 463–603 in 2013 and 557–725 in 2015 (Irvine et al*.*, 2018). The majority of calves sighted in both years (85% in 2013; 94% in 2015) were neonates, and these observations indicate that a minimum of approximately 20% of the expected number of calves of this population are born near, or south of the North-west Cape. Thus, the calving grounds for the Group IV population extend south from Camden Sound to at least North-west Cape, 1000 km South-west of the currently recognized calving area (Irvine et al*.*, 2018) and further south, as reported for Geographe Bay and Flinders Bay (in July and August) in south-west, Western Australia (Jolliffe et al. 2024). The seasonal presence of humpback whales is presented in **Table 9-1**. Migration, breeding and calving BIAs for the humpback whale within the NWMR are presented in **Table 7-3**and **Figure 7-2**.
Blue whale	There are two recognised sub-species 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 (i.e, not in the Antarctic). On this basis, it is reasonably assumed all blue whales sighted in the NWMR are likely to be pygmy blue whales. The migratory population, known as the East Indian Ocean (EIO) pygmy blue whale population, migrate 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 and McCauley et al*.* (2018)). Migration seems to be variable, with some individuals appearing as resident to areas of high productivity and others undertaking migrations across long distances (Commonwealth of Australia, 2015a). McCauley et al*.* (2018) describe three migratory stages around Australia for the EIO pygmy blue whale population, based on collated passive acoustic

Species	Key Information
	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 following 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 conducted 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. • Northbound migration between mid-April and early August and southbound migration between October to December and possibly into January for the Scott Reef area 2006-2009 (McCauley 2011) (noting the absence of any southbound detection in 2007). • Noise loggers deployed for a full year period in 2019 detected pygmy blue whales on their northern and southern migration. The noise loggers were located at various locations ~40–50 km west of the project area, and in ~ 1300 m water depth. The majority of pygmy blue whales detected on their northern migration occurred from mid-April to the end 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 to the northwest of the 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 ALTO lander (900 m depth) to the 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 recording 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 (DAS) 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 (commencement 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 Western Australia 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 South Australia in 2015 showed that most of the tagged whales remained in South Australian waters during the tracking period but one documented the migration to Indonesia via Western Australian waters and a return journey (albeit via intermittent data) of the southbound migration to the southern coast of Western Australia (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 Western Australia 2019-2022) 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 migrationThe tag tracking results highlighted extensive use of slope habitat off Western Australia and minimal use of shelf habitat by pygmy blue whales. Additionally, pygmy blue whales off Western Australia 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-June, and November-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 whilst 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 from South Australia through Western Australia 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

Species	Key Information
	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 Western Australia towards Heard and McDonalds Islands covering a distance of 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). 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 EIO pygmy blue whale for WA. McCauley and Jenner (2010) calculated the population to be between 662 and 1559 individuals in 2004 based on passive acoustics (whale vocalisations), and Jenner et al. (2008) (based on photographic mark and recapture) calculated between 712 and 1754 individuals, but both estimates did not account for animals travelling further west into the Indian Ocean (McCauley et al., 2018). More recent passive acoustic data estimates a 4.3% growth rate that applies to the proportion of EIO pygmy blue whales seasonally present in offshore water off south-eastern Australia and may not reflect the full population but does imply an increasing population (McCauley et al., 2018). Thums et al., (2022) identified the most important foraging (and/ or resting/ 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 approx. 25ºS; and (4) the Banda Sea. The Foraging BIA off the South-west of Western Australia encompassed 83% of the most important areas in that region (Thums et al., 2022). The pygmy blue whale is typically present 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 (200–500 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). The seasonal presence of pygmy blue whales is presented in **Table 9-1.** Refer **Table 7-3** and **Figure 7-4** for 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.
Bryde's whale	The Bryde's whale is the least migratory of its genus and is restricted geographically from the equator to approximately 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 both 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 suggests offshore whales migrate seasonally, heading towards warmer tropical waters during the winter; however, 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 (< 10m depth) within 1 km of the coastline (Charlton et al., 2019 and Smith et al., 2022; 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 2 to 3 months between June and September (DCCEEW, 2024a). For the western population, breeding occurs in Exmouth Gulf and in calving areas along the south coast of WA outside of the NWMR (DCCEEW, 2023). A stranding record exists for the far north Kimberley coast (ALA, 2006). Known females have rarely been observed on the Australian coastline in the year prior to

Species	Key Information
	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 (i.e. last trimester) and calf growth rate has been found to be dependent 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 a population increase of 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). There is a reproduction BIA and habitat critical to survival (HCTS) for the southern right whale located within Exmouth Gulf (DCCEEW, 2024a). A migration BIA extends 3 nautical miles out from the coastline from Ningaloo and spans down the Western Australian coastline and across the south and south-east coast of Australia (DCCEEW, 2024a). Nursing and calving behaviours are known to occur within reproductive BIAs. HCTS for the southern right whale has been identified as all reproductive BIAs across the species range (DCCEEW, 2024a). Refer Figure 7-1 and **Section 7.6** for HCTS for southern right whale in the NWMR. Refer to **Table 7-3** and **Figure 7-5** for BIAs for southern right whales in the NWMR
Antarctic minke whale	The Antarctic minke whale have 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 (refer to DCCEWE 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 that the Antarctic minke whale migrates through offshore waters of Western Australia 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, 2011) 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 and is 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 has a preference for 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 there are 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 over-wintering 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 10 individuals, as well as in pairs and alone (Threatened Species Scientific Committee, 2015c). Accurate distribution patterns are not known within Australian waters and the majority of data is 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

Species	Key Information
	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; however, 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, however 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 that the range of Omura's whale was restricted to the eastern Indo-Pacific, however 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 conducted by Cerchio et al. (2019) concluded that Omura's whale can primarily be found in tropical and warm-temperate waters and is currently known from all 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, the majority of which were on the continental shelf and within shallow seas throughout the documented range (Cerchio et al, 2019). Omura's whales were detected by passive acoustic monitoring: • 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 ALTO 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 recording 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 present primary in December, however this lander malfunctioned and stopped recording in mid-January 2022. • An offshore trial of Distributed Acoustic Sensing (DAS) using fibre optic cables (submarine telecommunications cable) to detect low-frequency whales recorded vocalising Omura's whales within 12 km detection range along a 50 km long area on the outer edge of NWS (Debens et al. 2024). Omura's whale detections were made from at the beginning of December 2023 through to mid-January 2024 (and the end of the trial). Currently little is known about the ecology and lifestyle 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, however, they are usually found in deep offshore waters, with more dense populations close to 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 round, 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. 23 sightings of sperm whales (variable pod sizes, ranging from one to six animals) were recorded by marine mammal observers (MMOs) during the North-west Cape MC3D marine seismic survey (December 2016 to April 2017) (Woodside, 2020). These animals were observed in deep, continental slope

Species	Key Information
	waters of the Montebello Saddle (maximum distance of approximately 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 the 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 prior to 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. There are no identified BIAs for this species in the NWMR.
Orca (killer whale)	The preferred habitat of killer whales 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; however, they have been observed along the continental slope and shelf, particularly near seal colonies, as well as 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, however, it may be that the total number of mature animals within waters around the continent is 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. Killer whales are top-level carnivores, and 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 are known to target humpback whales, particularly calves, off Ningaloo Reef during the humpback southern migration season (Pitman et al., 2015). Overall, observations suggest that 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. Additionally, there are records of killer whales attacking dugongs in Shark Bay (Anderson and Prince, 1985). However, 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 that Australian snubfin dolphins occur only in waters off northern Australia, from approximately Broome on the west coast to the Brisbane River on the east coast (Parra et al., 2002). Aerial and boat-based surveys indicate that Australian snubfin dolphins occur mostly in protected shallow waters close to the coast, and close to 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, 2008). 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, the 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 Western Australia (Bouchet et al. 2021) and documented that snubfin dolphins are consistently encountered in shallow water (<21 m depth) close to (<15 km) freshwater inputs with high detection rates in known hotspots such as Roebuck Bay and Cygnet Bay as well as suitable coastal habitat in the wider Kimberley region. Refer **Table 7-3** and **Figure 7-6** for the location and type of BIAs for Australian snubfin dolphins in the NWMR.
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

Species	Key Information
	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 south-west to Shark Bay (Hanf et al., 2016). Allen et al. (2012) suggested that humpback dolphins use a range of inshore habitats, including both 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 out 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 ~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, North-west Cape is clearly an important habitat toward the south-western limit of this species' range (Hunt et al., 2017). Humpback dolphins do not appear to undergo large-scale seasonal migrations, although seasonal shifts in abundance have been observed (Parra & Cagnazzi 2016 cited in DCCEEW, 2023a). Aerial transect surveys conducted in the Kimberley region show the abundance for humpback dolphins was estimated to be 1,546 in 2016 and 2,690 in 2017 (Raudino et al., 2023). Dolphin densities were greatest in inshore waters, with greatest densities in Exmouth Gulf, Dampier Archipelago, and Great Sandy Islets (Raudino et al., 2023). Aerial surveys targeting dugongs over the western Pilbara have recorded humpback dolphins more than 60 km from the mainland in shallow shelf waters (i.e. <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). Over the past ten years a number of studies have focused on populations of humpback dolphins along the Kimberley coast, including Roebuck Bay, the Dampier Peninsula, Cone Bay, Yampi Sound, Prince Regent River and the Cambridge Gulf (Brown et al., 2016). Refer **Table 7-3** and **Figure 7-7** for the location and type of BIAs for Indo-Pacific humpback dolphins in the NWMR.
Indo-Pacific bottlenose dolphin (Spotted bottlenose dolphin)	There are four known sub-populations 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/breeding areas include the shallow coastal waters and estuaries along the Kimberley coast and Roebuck Bay. Aerial transect surveys conducted in the Kimberley region showed the abundance for the bottlenose dolphins has been declining with estimated abundance of 3,713 in 2015, 2,638 in 2016 and 1,635 in 2017. Dolphin densities were greatest in inshore waters, with greatest densities in Exmouth Gulf, Dampier Archipelago, and Great Sandy Islets (Raudino et al., 2023). A study at North-west Cape (NWC) found that during Winter months, presence in coastal lagoons west of the NWC was more likely than other seasons. In spring, probability of spotted bottlenose dolphin occurrence was higher outside of the Ningaloo Marine Park (noting summer data was not included in this study) (Haughey et al. 2021). Refer **Table 7-3** and **Figure -** the location and type of BIAs for spotted bottlenose dolphins in the NWMR.
Sirenians	
Dugong	Dugongs are distributed along the WA coast throughout the Gascoyne, Pilbara and Kimberley. Specific areas supporting dugong populations include: Shark Bay; Ningaloo and Exmouth Gulf; the Pilbara coast (Exmouth Gulf to De Grey River [Marsh et al., 2002]); and Eighty Mile Beach and the Kimberley coast, including Roebuck Bay (Brown et al., 2014). 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). 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). Abundance aerial surveys have been conducted in Australian dugong habitat areas since the early 1980s. These surveys indicate that dugong populations are now stable at a regional scale in Shark Bay and in the Exmouth and Ningaloo Reef area. The entire Kimberley region has only been surveyed in 2015 and 2017, so only baseline information on dugong distribution and abundance is available for this area (Cleguer & Marsh, 2023). Refer **Table 7-3** and **Figure 7-8** for the location and type of BIAs for dugong in the NWMR.

Species	Key Information
Pinnipeds	
Australian sea lion	The Australian sea lion is the only endemic pinniped (true seals, fur seals and sea lions) in Australian waters. It is a member of the Otariidae (eared seals) family. The birth interval in Australian sea lions is around 17–18 months. 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, 2020a). This means the breeding period (copulation and birthing) in one colony will occur at different times to breeding in another colony. The Australian sea lion is a specialised benthic forager—that is, it feeds primarily on the sea floor. Studies have shown that 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, 2020a). The Australian sea lion feeds on the continental shelf, most commonly in depths of 20–100 m, and they typically travel up to about 60 km from their colony on each foraging trip, with a maximum distance of around 190 km when over shelf waters. The current breeding distribution of the Australian sea lion extends from the Houtman Abrolhos Islands on the west coast of WA to the Pages Islands in SA. Sites for the 58 breeding colonies occurring in WA and SA are designated as habitat critical to the survival of the species under the Recovery Plan for the Australian sea lion (DSEWPAC, 2013a). Of these, four are located in the SWMR along the west coast of WA: Abrolhos Islands (Easter Group), Beagle Island, North Fisherman Island and Buller Island. There are also a number of foraging BIAs for both males and females along the west coast, extending from the Abrolhos Islands south to Rockingham. There is no designated habitat critical to survival or identified BIAs for this species in the NWMR. **Figure 7-9** shows the foraging BIAs for the Australian sea lion to the south of the NWMR in the northern extent of the SWMR.

7.6 Habitat Critical to the Survival for Marine Mammals in the NWMR

The southern right whale is the only marine mammal which has habitat critical to the survival (HCTS) of a species defined.

The National Recovery Plan for the Southern Right Whale (DCCEEW, 2024a) identifies HCTS under the EPBC Act. 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." The definition of HCTS for a species are 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 the reintroduction of populations or recovery of the species or ecological community.

HCTS for the southern right whale has been identified as all reproductive BIAs across the species range (**Figure 7-1**). The identification of HCTS reflects that southern right whales display strong site fidelity to calving areas in Australian coastal waters, within and between years, over decadal time spans (Bannister, 2001; Charlton et al. 2021 and Watson et al. 2021 cited in DCCEEW, 2024a). Reproductive areas have been identified as HCTS for the species: [:

- they meet the species' essential life cycle requirements for reproduction (e.g., 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, and
- 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 (DCCEEW, 2024a).

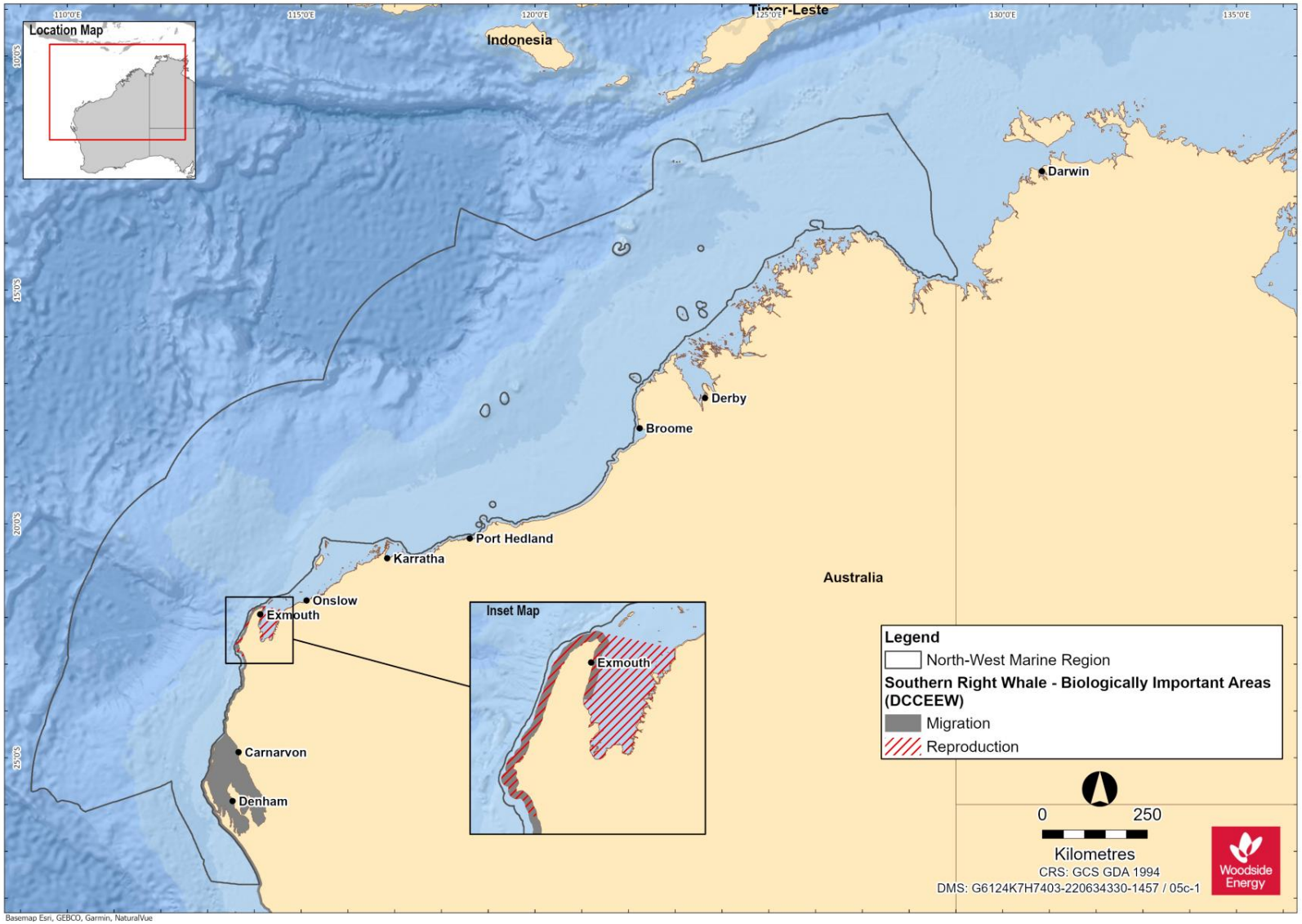


Figure 7-1 Habitat critical to the survival for the southern right whale in the NWMR (DCCEEW, 2024a)

7.7 Biological Important Areas in the NWMR

A review of the Australian Marine Spatial Information System (GA, 2024) identified BIAs representing important life cycle stages and behaviours for six species of marine mammal in the NWMR: the humpback whale, the pygmy blue whale, Australian snubfin dolphin, Australian humpback dolphin, spotted bottlenose dolphin and dugong, are presented in **Table 7-3**.

Table 7-3 Marine mammal BIAs within the NWMR.

Species	Woodside Activity Area			BIAs				
	Browse	NWS/S	NWC	Resting	Foraging[14]	Reproduction		Migration
						Breeding	Calving	
Humpback whale[12]	✓	✓	✓	Shark Bay Exmouth Gulf (north migration – early June) (south migration – late Aug to Oct) Southern Kimberley region	No foraging BIA identified within the NWMR	Nursing Kimberley coast from the Lacepede Islands to north of Camden Sound (mid Aug – early Sept)	Core calving in waters off the Kimberley coast from the Lacepede Islands to north of Camden Sound (mid Aug – early Sept)	Southern border of the NWMR to north of the Kimberley (arrive June)
Blue whale and pygmy blue whale [15 16]	✓	✓	✓	No resting BIA identified within the NWMR	Possible foraging areas off Ningaloo and 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 1000 m; appear close to Ningaloo Coast Montebello Islands area on southern migration (north: April – Aug) (south: Oct – late Dec). Potentially still present January (McCauley et al., 2018).
Southern right whale[17]	-	-	✓	No resting BIA identified within the NWMR	No foraging BIA identified within the NWMR	Exmouth Gulf	No calving BIA identified within the NWMR	Migration along Australian coastline between April to October extending up to the Exmouth Gulf breeding BIA

[14] Includes areas defined as 'foraging', 'foraging likely' and 'foraging (high density prey) as per AMSIS (GA, 2024). These areas are shown in the BIA figures.
[15] DSEWPAC (2012a)
[16] Commonwealth of Australia (2015a)
[17] Revised BIAs (October 2023) - https://www.dcceew.gov.au/environment/marine/bias

Species	Woodside Activity Area			BIAs				
	Browse	NWS/S	NWC	Resting	Foraging[14]	Reproduction		Migration
						Breeding	Calving	
Australian snubfin dolphin [12]	✓	✓	-	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 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 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 Prince Regent River King George River Cape Londonderry Ord River	No migration BIA identified within the NWMR
Indo-Pacific humpback dolphin	✓	✓	-	No resting BIA identified within the NWMR	Roebuck Bay Willie Creek Prince Regent River King Sound (north) Yampi Sound	Roebuck Bay Willie Creek Prince Regent River King Sound (north) Yampi Sound Talbot Bay Walcott Inlet	Roebuck Bay Willie Creek Prince Regent River	No migration BIA identified within the NWMR

Species	Woodside Activity Area			BIAs				
	Browse	NWS/S	NWC	Resting	Foraging[14]	Reproduction		Migration
						Breeding	Calving	
					Talbot Bay Walcott Inlet Doubtful Bay Deception Bay Augustus Island Maret Islands Bigge Island King Sound, southern sector Vansittart Bay, Anjo Peninsula	Doubtful Bay Deception Bay Augustus Island		
Spotted bottlenose dolphin	✓	✓	✓	No resting BIA identified within the NWMR	Roebuck Bay Camden Sound area King Sound (south) King Sound (north) Yampi Sound	Roebuck Bay King Sound (south) King Sound (north) Yampi Sound	Roebuck Bay Camden Sound area King Sound (south) King Sound (north) Yampi Sound	Dampier Peninsula
Dugong[12]	✓	✓	✓	No resting BIA identified within the NWMR	Exmouth Gulf Ningaloo Reef Shark Bay Roebuck Bay Dampier Peninsula	Eastern side of Dirk Hartog Island May - September Exmouth Gulf and Ningaloo year-round	Exmouth Gulf Ningaloo Reef Shark Bay	Within Shark Bay June - November and within Roebuck Bay year-round

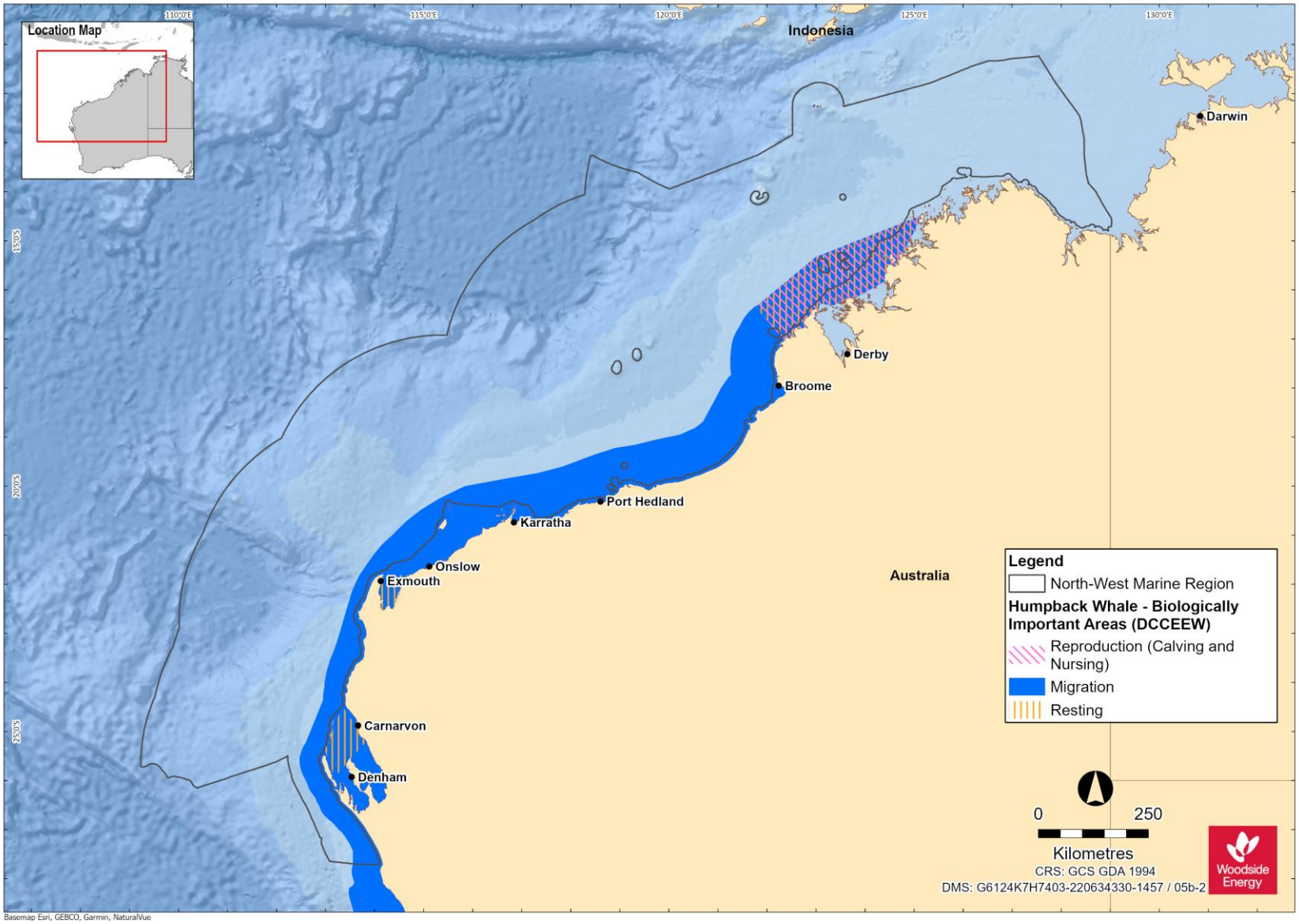


Figure 7-2 Humpback whale BIAs for the NWMR (data source: DCCEEW, 2024b)

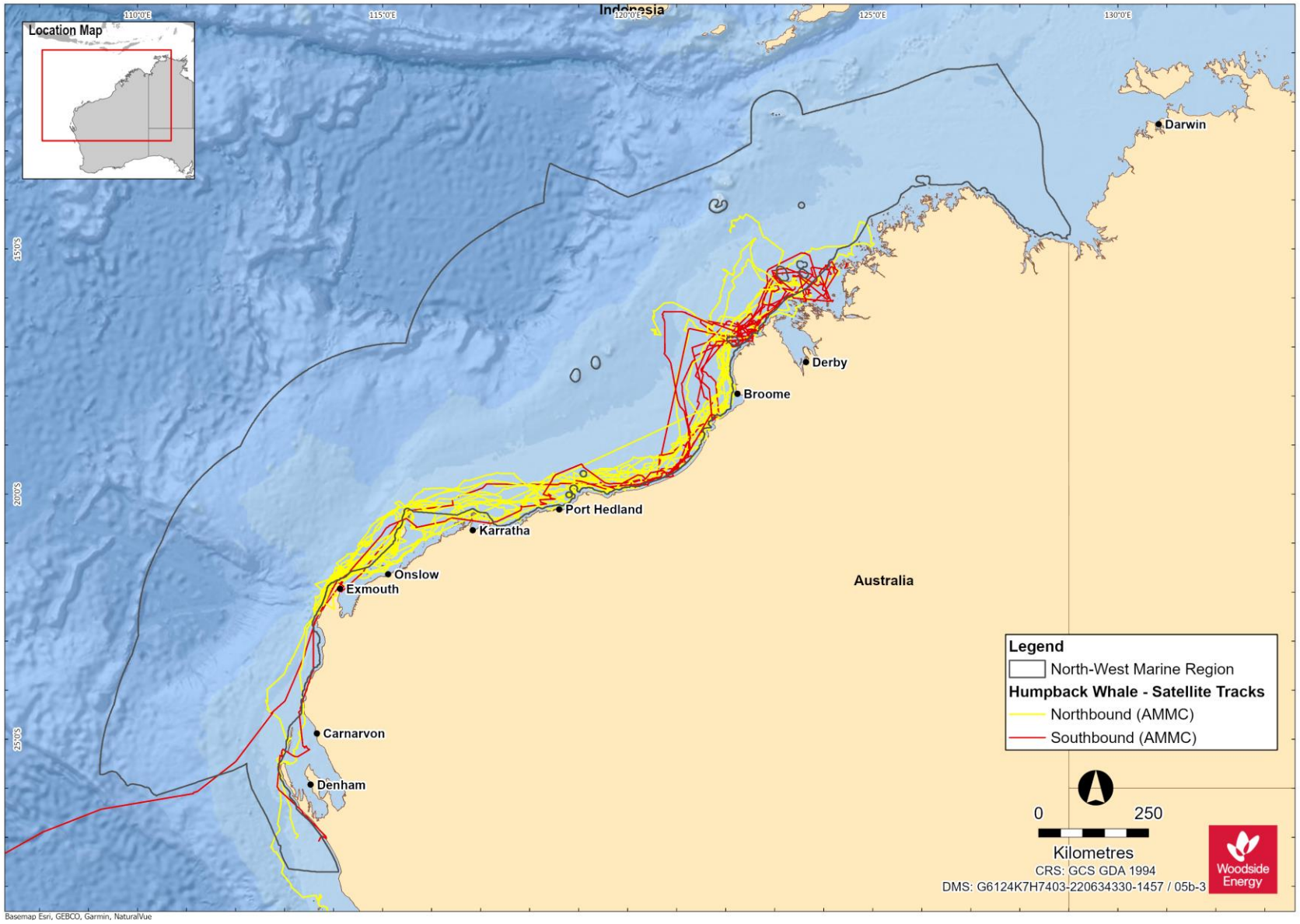


Figure 7-3 Humpback whale tagged tracks for north and south bound migrations (AMMC as published in Double et al. 2010 and 2012)

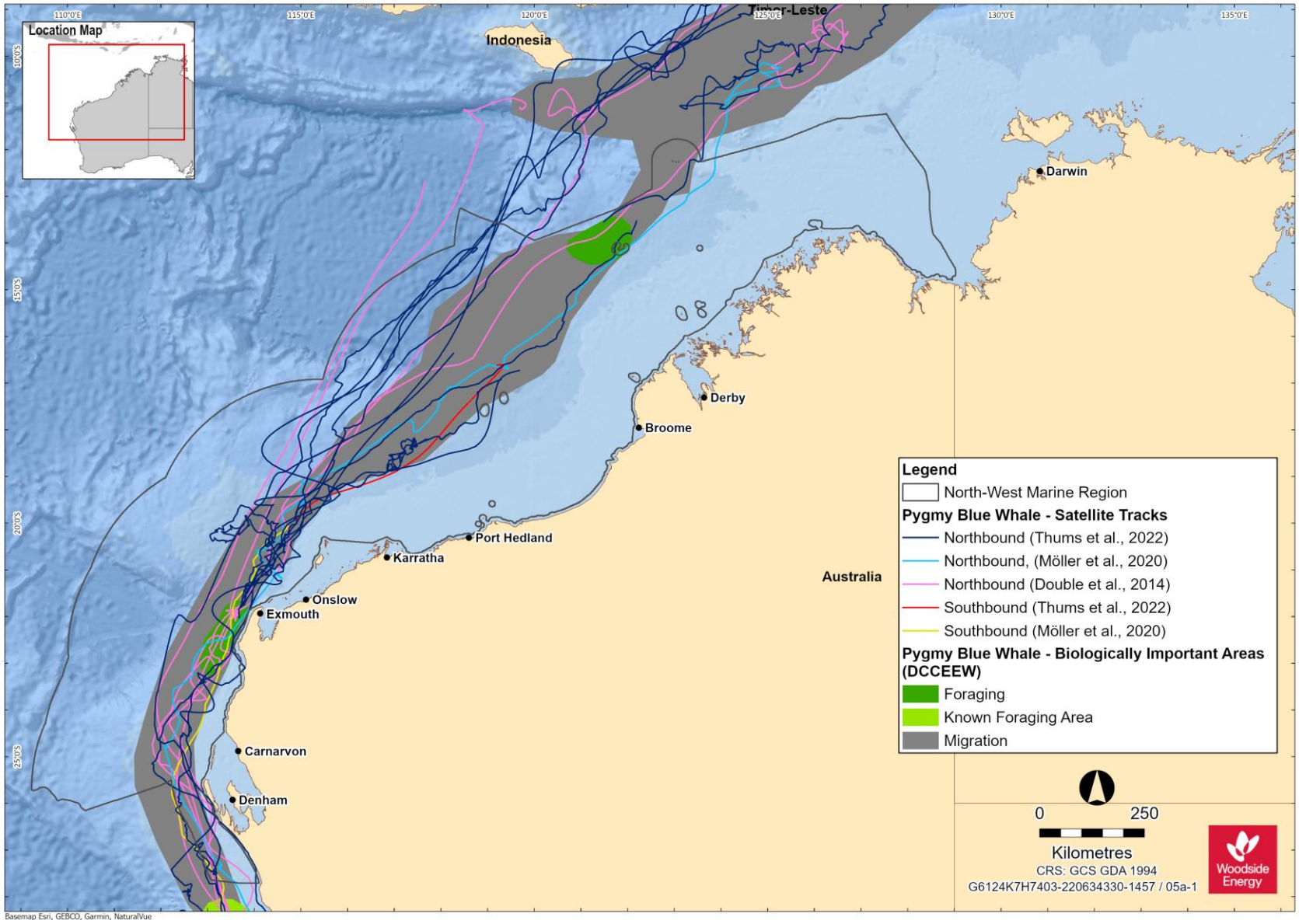


Figure 7-4 Pygmy blue whale BIAs for the NWMR and tagged whale tracks for northbound migration (data source for BIAs: DCCEEW, 2024b)

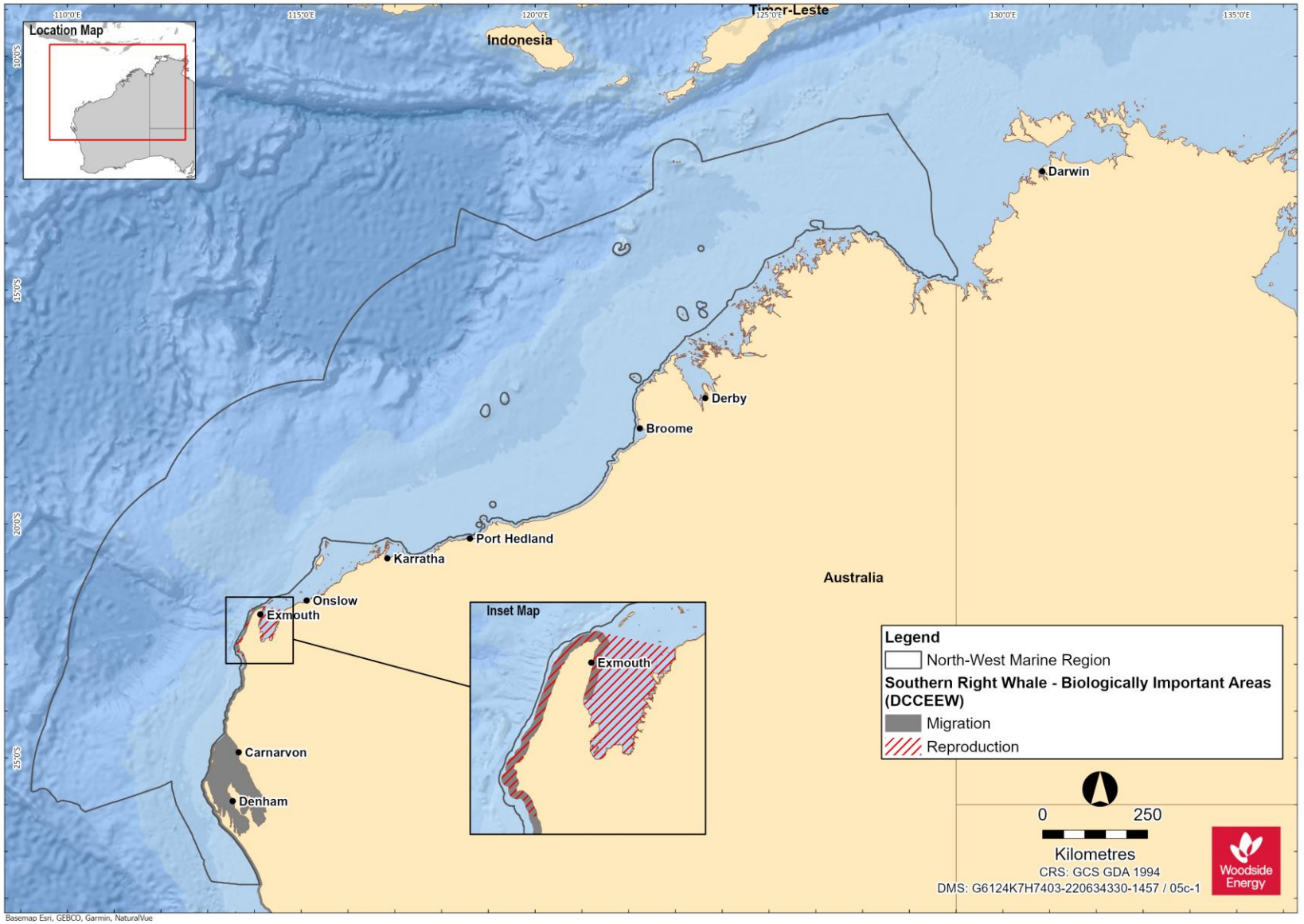


Figure 7-5 Southern right whale BIAs for the NWMR. Migration and reproduction BIAs along the coast extend to 3 nm (data source: DCCEEW, 2024b)

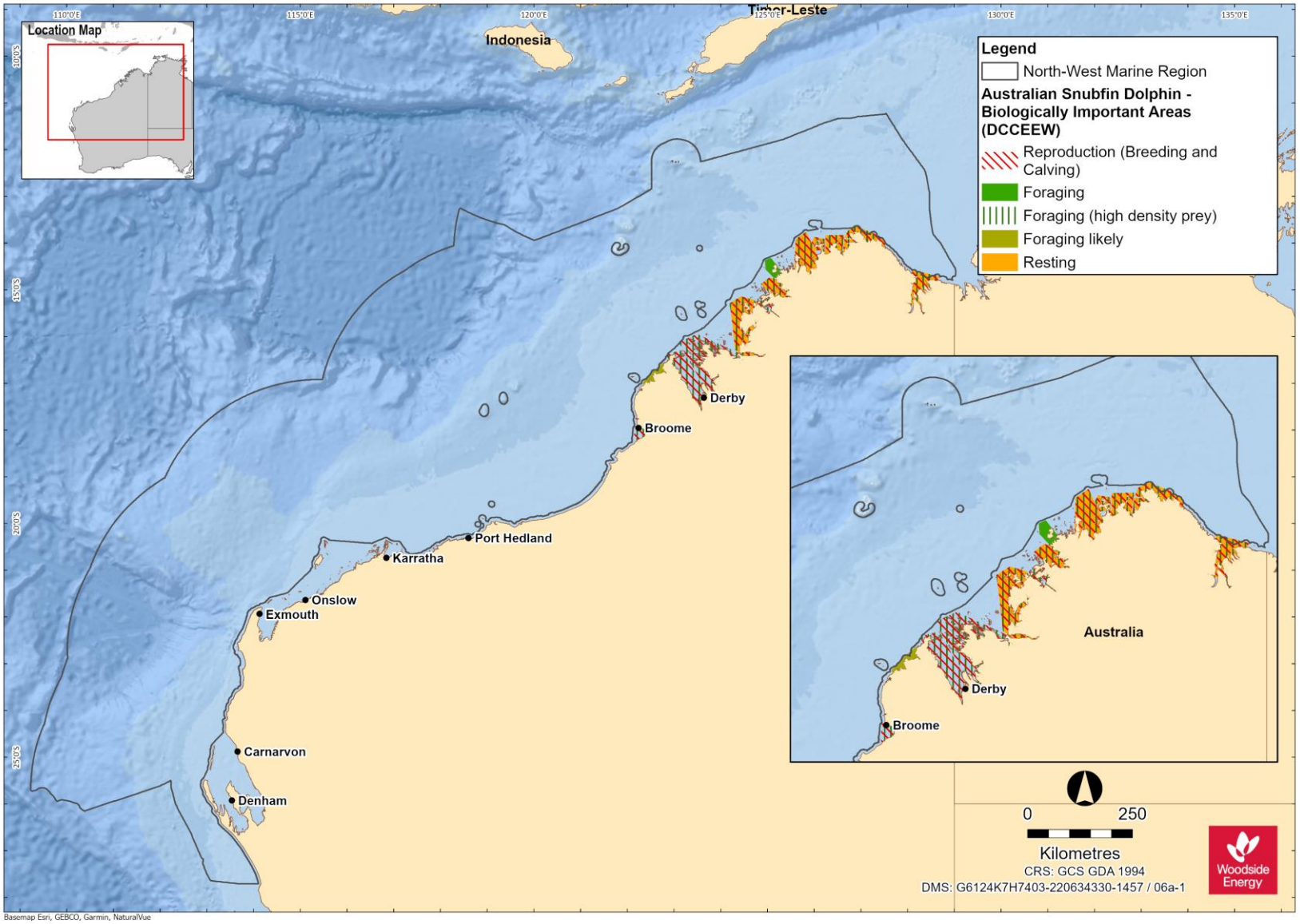


Figure 7-6 Australian snubfin dolphin BIAs for the NWMR (data source: DCCEEW, 2024b)

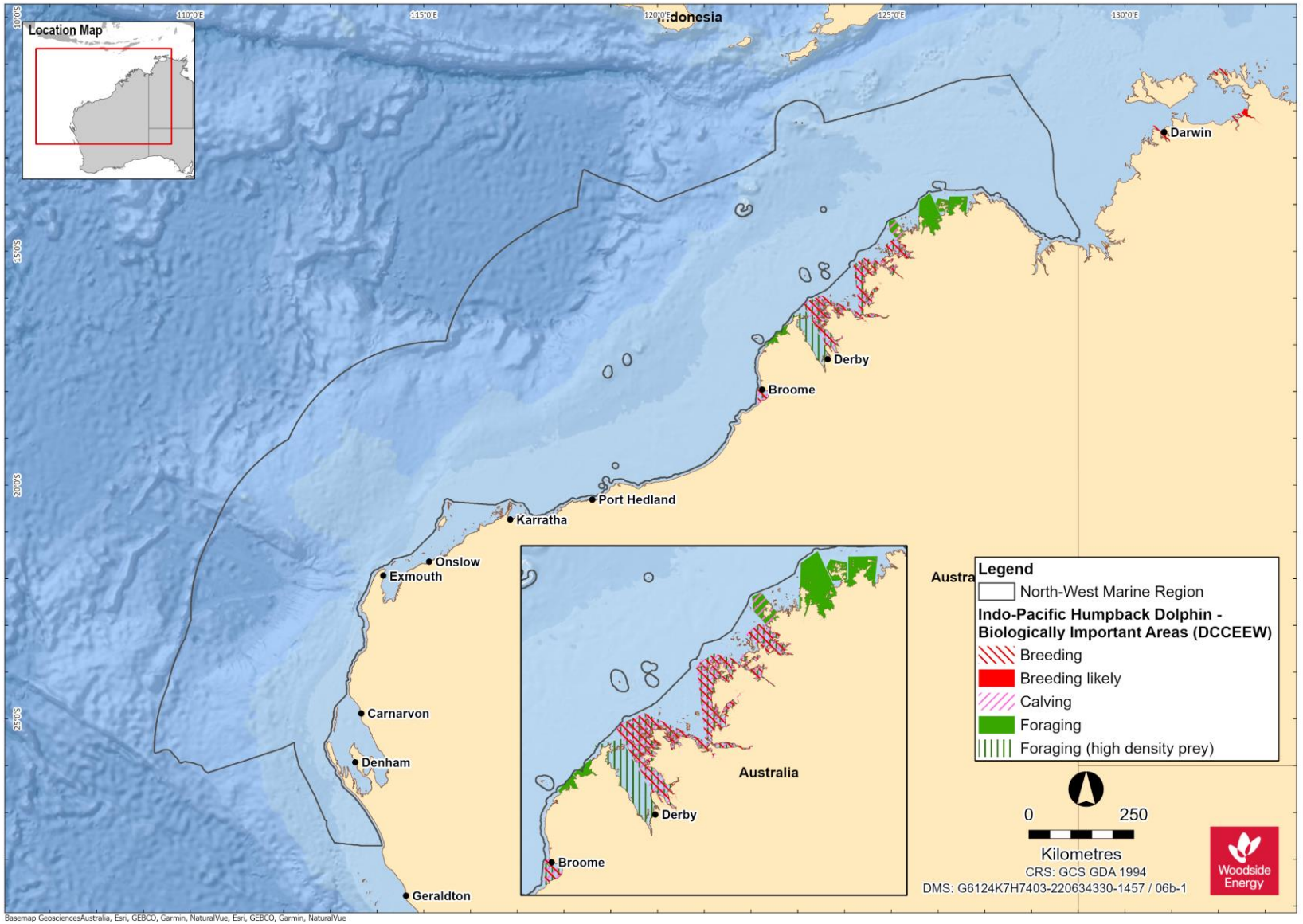


Figure 7-7 Indo-Pacific humpback dolphin BIAs for the NWMR (data source: DCCEEW, 2024b)

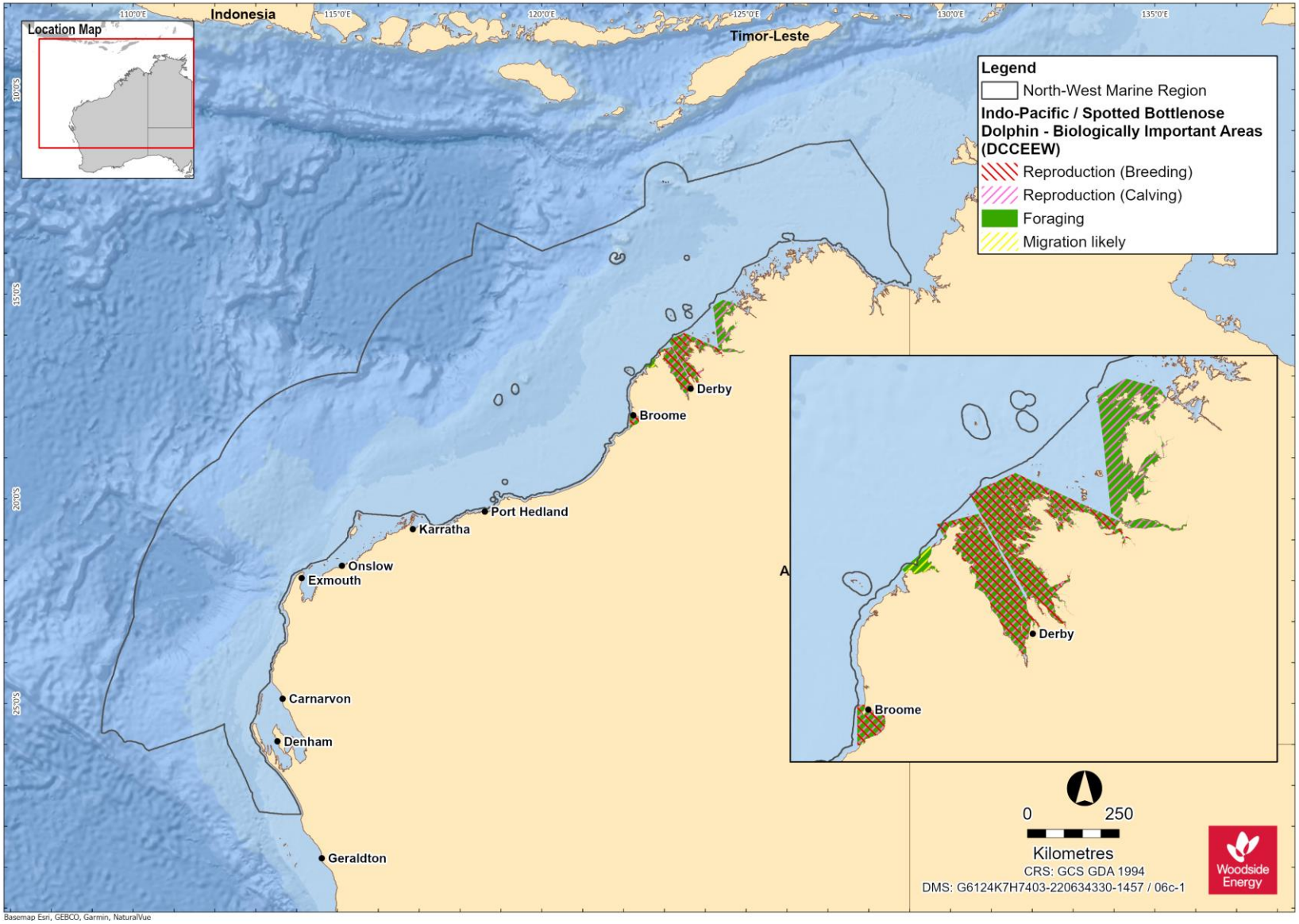


Figure - Spotted bottlenose dolphin BIAs for the NWMR (data source: DCCEEW, 2024b)

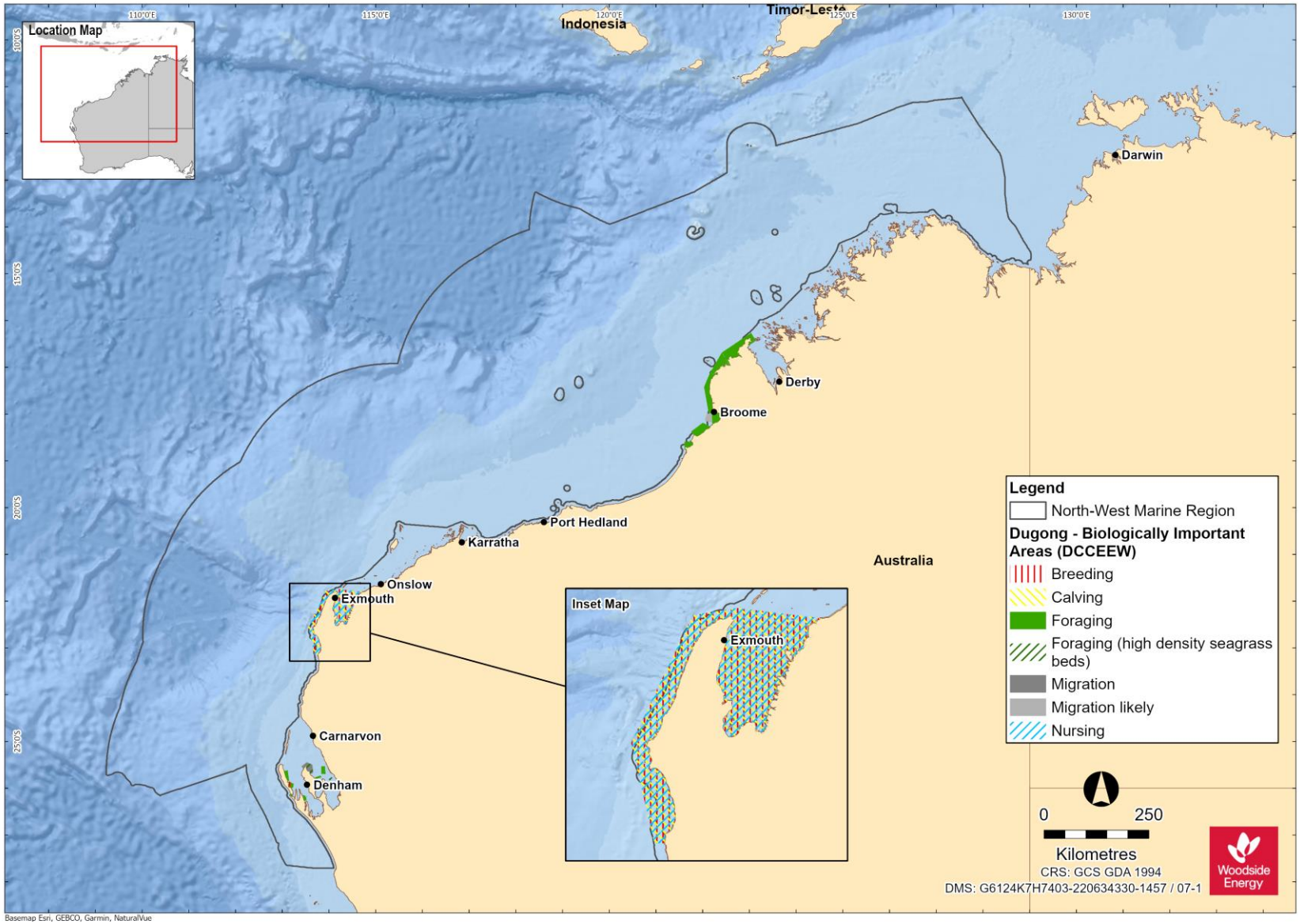


Figure 7-8 Dugong BIAs for the NWMR (data source: DCCEEW, 2024b)

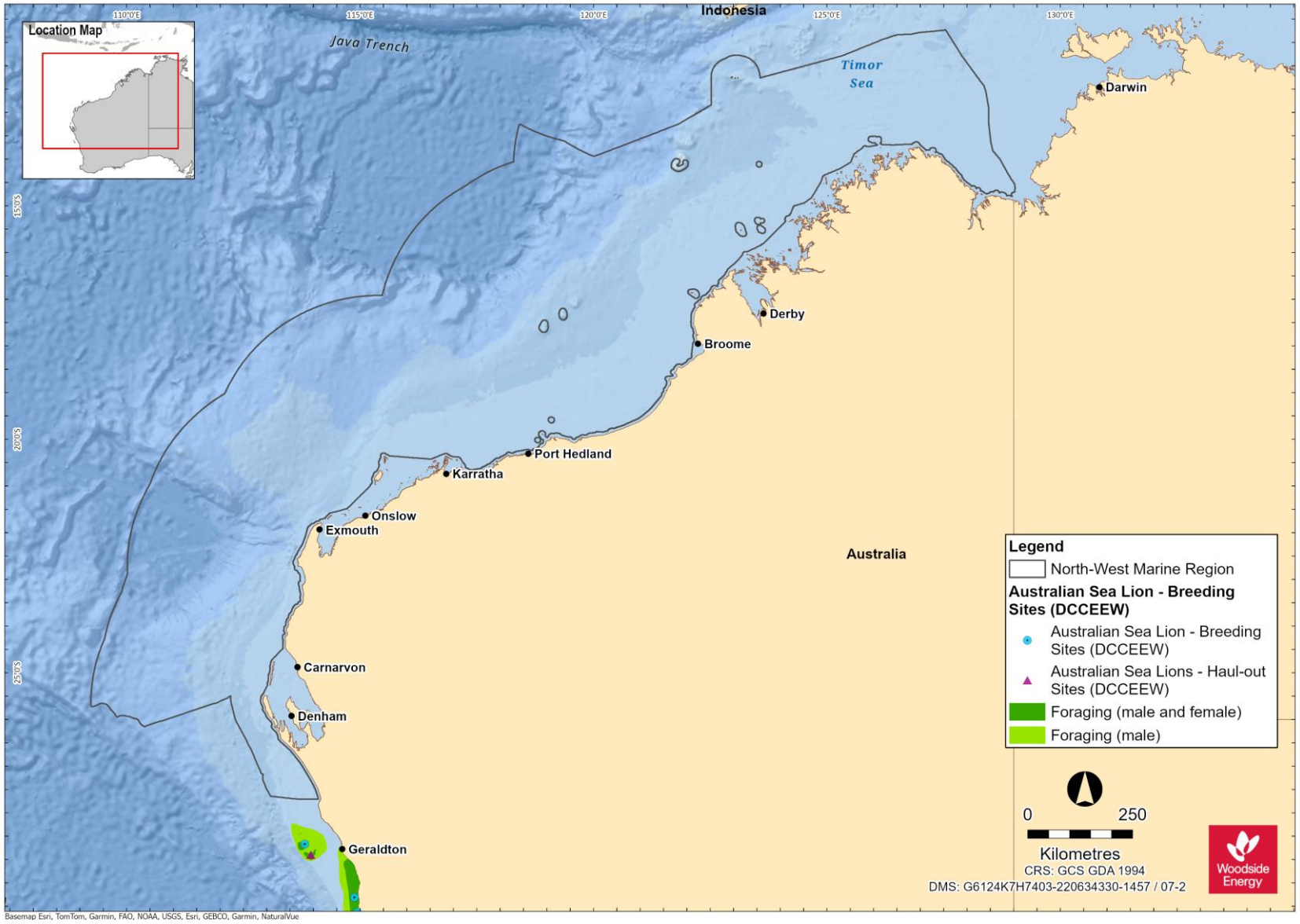


Figure 7-9 Australian sea lion BIAs in the northern extent of the SWMR closest to the NWMR (data source: DCCEEW, 2024b)

7.8 Marine Mammal Summary for the NWMR

7.8.1 Browse

The Browse activity area includes biologically important habitat for six threatened and/or migratory marine mammal species:

- blue whale and pygmy blue whale (foraging and migration areas);
- humpback whale (breeding, calving and migration areas);
- Indo-Pacific humpback dolphin (foraging, breeding and calving areas);
- Australian snubfin dolphin (foraging, breeding and calving areas);
- spotted bottlenose dolphin (foraging, breeding and calving areas); and
- dugong (foraging).

BIAs for the marine mammal species are outlined in **Table 7-3**.

7.8.2 North-west Shelf / Scarborough

The NWS / Scarborough activity area includes biologically important habitat for six threatened and/or migratory marine mammal species:

- blue whale and pygmy blue whale (foraging and migration areas);
- humpback whale (resting and migration areas);
- Indo-Pacific humpback dolphin (foraging, breeding and calving areas);
- Australian snubfin dolphin (foraging, breeding and calving areas);
- spotted bottlenose dolphin (present but no BIAs); and
- dugong (foraging and calving areas).

BIAs for the marine mammal species are outlined in **Table 7-3**.

7.8.3 North-west Cape

The North-west Cape activity area includes biologically important habitat for four threatened and/or migratory marine mammal species:

- blue whale and pygmy blue whale (foraging and migration areas);
- southern right whale (reproduction area);
- humpback whale (resting and migration areas);
- spotted bottlenose dolphin (present but no BIAs); and
- dugong (foraging and breeding/ calving areas).

BIAs for the marine mammal species are outlined in **Table 7-3**.

8. SEABIRDS AND MIGRATORY SHOREBIRDS OF THE NWMR

8.1 Regional Context

The NWMR supports high numbers and species diversity of seabirds and migratory shorebirds including many that are EPBC Act listed, threatened and migratory. The NWMR marine bioregional plan reported 34 seabird species (listed as threatened, migratory and/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 (Advisian, 2024). The high and moderate occurrence species for the NWMR were informed from this report, as well as from 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 8-1 includes those considered key species, i.e., high or moderate occurrence (Worley, 2024), and listed threatened and/or migratory under the EPBC Act with a total of 56 key species identified (comprising 22 seabirds and 34 shorebirds).

Many migratory seabirds and shorebirds are protected through bilateral agreements between Australia and Japan (JAMBA), China (CAMBA) and the Republic of Korea (ROKAMBA), 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 (IBAs) for the NWMR, which are also recognised as global Key Biodiversity Areas (KBAs) (BirdLife Australia[18]), 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 8-1 presents a list of 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/or conservation advice.

18 https://www.birdlife.org.au/projects/KBA#:~:text=The%20Key%20Biodiversity%20Areas%20(KBAs,of%20advocacy%20for%20protected%20areas. [Accessed April, 2021]

Table 8-1. 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	*Environment Protection and Biodiversity Conservation Act 1999* (Cth) (as per PMST report APPENDIX A. Protected Matter Search Reports for NWMR, SWMR and NMR)			*Biodiversity Conservation Act 2016* (WA)[19]	IUCN Red List of Threatened Species (non-statutory)[20]	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)
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 hectares (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)
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)
Ardenna pacifica	Wedge-tailed shearwater	N/A	Migratory	Marine	Migratory	Least Concern	

[19] Threatened and Priority Fauna List – April 2024 - https://www.dbca.wa.gov.au/management/threatened-species-and-communities (accessed on 13/08/2024)

[20] IUCN. 2024. *The IUCN Red List of Threatened Species. Version 2024-1*. https://www.iucnredlist.org (accessed on 13/08/2024)

Species Name	Common Name	*Environment Protection and Biodiversity Conservation Act 1999* (Cth) (as per PMST report APPENDIX A. Protected Matter Search Reports for NWMR, SWMR and NMR)			*Biodiversity Conservation Act 2016* (WA)[19]	IUCN Red List of Threatened Species (non-statutory)[20]	EPBC Act Part 13 Statutory Instrument
		Threatened Status	Migratory Status	Listed	Conservation Status	Global Status	
Ardenna carneipes	Flesh-footed shearwater	N/A	Migratory	Marine	Vulnerable	Near Threatened	
Oceanites oceanicus	Wilson's storm petrel	N/A	Migratory	Marine	Migratory	Least Concern	
Anous stolidus	Common noddy	N/A	Migratory	Marine	Migratory	Least Concern	EPBC Act Threat Abatement Plan for predation by feral cats (DoE, 2015c)
Fregata ariel	Lesser frigatebird	N/A	Migratory	Marine	Migratory	Least Concern	
Fregata minor	Great frigatebird	N/A	Migratory	Marine	Migratory	Least Concern	
Sula sula	Red-footed booby	N/A	Migratory	Marine	Migratory	Least Concern	
Phaethon rubricauda	Red-tailed tropicbird	N/A	Migratory	Marine	Migratory	Least Concern	
Onychiprion anaethetus (listed as *Sterna anaethetus)*	Bridled tern	N/A	Migratory	Marine	Migratory	Least Concern	
Thalasseus bergii	Greater crested tern	N/A	Migratory	Marine	Migratory	Least Concern	
Sternula albifrons	Little tern	N/A	Migratory	Marine	Migratory	Least Concern	
Sterna dougallii	Roseate tern	N/A	Migratory	Marine	Migratory	Least Concern	
Sterna hirundo	Common 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	
Sula dactylatra	Masked booby	N/A	Migratory	Marine	Migratory	Least Concern	

Species Name	Common Name	*Environment Protection and Biodiversity Conservation Act 1999* (Cth) (as per PMST report APPENDIX A. Protected Matter Search Reports for NWMR, SWMR and NMR)			*Biodiversity Conservation Act 2016* (WA)[19]	IUCN Red List of Threatened Species (non-statutory)[20]	EPBC Act Part 13 Statutory Instrument
		Threatened Status	Migratory Status	Listed	Conservation Status	Global Status	
Phaethon lepturus	White-tailed tropicbird	N/A	Migratory	Marine	Migratory	Least Concern	
All seabird species							Wildlife Conservation Plan for Seabirds (Commonwealth of Australia, 2020a) National Light Pollution Guidelines for Wildlife (DCCEEW, 2023d)
	Migratory shorebirds						
Numenius madagascariensis	Eastern curlew, Far Eastern curlew	Critically endangered	Migratory	Marine	Critically endangered	Endangered	Conservation Advice *Numenius madagascariensis* Far eastern curlew (DCCEW, 2023f)
Calidris ferruginea	Curlew sandpiper	Critically endangered	Migratory	Marine	Critically endangered	Near Threatened	Conservation Advice *Calidris ferruginea* Curlew sandpiper (DCCEEW, 2023g)
Limosa lapponica menzbieri	Bar-tailed godwit (*menzbieri*)	Endangered	Migratory	Marine	Critically endangered	Near Threatened	Conservation Advice *Limosa lapponica menzbieri* Bar-tailed godwit (northern Siberia) (DCCEEW, 2024e)
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, 2013a)
Calidris canutus	Red knot	Vulnerable	Migratory	Marine	Endangered	Near Threatened	Conservation Advice *Calidris canutus* Red knot (DCCEEW, 2024f)
Calidris tenuirostris	Great knot	Vulnerable	Migratory	Marine	Critically endangered	Endangered	Conservation Advice *Calidris tenuirostris* Great knot (DCCEEW, 2024g)
Charadrius leschenaultii	Greater sand plover	Vulnerable	Migratory	Marine	Vulnerable	Least Concern	Conservation Advice *Charadrius leschenaultia* Greater sand plover (DCCEEW, 2023h)
Limosa limosa	Black-tailed godwit	Endangered	Migratory	Marine	Migratory	Near Threatened	Conservation Advice for *Limosa limosa* black-tailed godwit (DCCEEW, 2024h)

Species Name	Common Name	*Environment Protection and Biodiversity Conservation Act 1999* (Cth) (as per PMST report APPENDIX A. Protected Matter Search Reports for NWMR, SWMR and NMR)			*Biodiversity Conservation Act 2016* (WA)[19]	IUCN Red List of Threatened Species (non-statutory)[20]	EPBC Act Part 13 Statutory Instrument
		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, 2024j)
Tringa nebularia	Common greenshank	Endangered	Migratory	Marine	Migratory	Least Concern	Conservation Advice for *Tringa nebularia* Common greenshank (DCCEEW, 2024i).
Arenaria interpres	Ruddy turnstone	Vulnerable	Migratory	Marine	Migratory	Least Concern	Conservation Advice for *Arenaria interpres* Ruddy turnstone (DCCEEW, 2024k)
Calidris acuminata	Sharp-tailed sandpiper	Vulnerable	Migratory	Marine	Migratory	Vulnerable	Conservation Advice for *Calidris acuminata* Sharp-tailed sandpiper (DCCEEW, 2024l)
Xenus cinereus	Terek sandpiper	Vulnerable	Migratory	Marine	Migratory	Least Concern	Conservation Advice for *Xenus cinereus* Terek sandpiper (DCCEEW, 2024m)
Pluvialis squatarola	Grey plover	Vulnerable	Migratory	Marine	Migratory	Least Concern	Conservation Advice for *Pluvialis squatarola* Grey plover (DCCEEW, 2024n)
Pluvialis fulva	Pacific golden plover	N/A	Migratory	Marine	Migratory	Least Concern	
Tringa totanus	Common redshank	N/A	Migratory	Marine	Migratory	Least Concern	
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	
Tringa glareola	Wood sandpiper	N/A	Migratory	Marine	Migratory	Least Concern	
Limicola falcinellus	Broad billed sand piper	N/A	Migratory	Marine	Migratory	Least Concern	
Limosa lapponica	Bar-tailed godwit	N/A	Migratory	Marine	Migratory	Near Threatened	
Calidris ruficollis	Red-necked stint	N/A	Migratory	Marine	Migratory	Near Threatened	

Species Name	Common Name	*Environment Protection and Biodiversity Conservation Act 1999* (Cth) (as per PMST report APPENDIX A. Protected Matter Search Reports for NWMR, SWMR and NMR)			*Biodiversity Conservation Act 2016* (WA)[19]	IUCN Red List of Threatened Species (non-statutory)[20]	EPBC Act Part 13 Statutory Instrument
		Threatened Status	Migratory Status	Listed	Conservation Status	Global Status	
Calidris pugnax	Ruff	N/A	Migratory	Marine	Migratory	Least Concern	
Xenus cinereus	Terek sandpiper	N/A	Migratory	Marine	Migratory	Least Concern	
Numenius phaeopus	Whimbrel	N/A	Migratory	Marine	Migratory	Least Concern	
Numenius minutus	Little curlew	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, 2023)

Species Name	Common Name	*Environment Protection and Biodiversity Conservation Act 1999* (Cth) (as per PMST report APPENDIX A. Protected Matter Search Reports for NWMR, SWMR and NMR)			*Biodiversity Conservation Act 2016* (WA)[19]	IUCN Red List of Threatened Species (non-statutory)[20]	EPBC Act Part 13 Statutory Instrument
		Threatened Status	Migratory Status	Listed	Conservation Status	Global Status	
	Other marine birds						
Apus pacificus	Fork-tailed swift		Migratory	Marine	N/A	Least Concern	None
Pandion haliaetus	Osprey		Migratory	Marine	N/A	Least Concern	None

8.2 Seabirds in the NWMR

Seabirds are birds that are adapted to life within the marine environment (oceanic and coastal) and are generally long-lived, have delayed breeding and have fewer young than other bird species (Commonwealth of Australia, 2020a).

At least 22 key seabird species (high and moderate occurrence, listed as threatened and/ or migratory under the EPBC Act) are known to occur in the NWMR. These include a variety of species of terns, noddies, petrels, shearwaters, frigatebirds, and boobies.

Seabird species can be grouped into pelagic and nearshore seabirds, based on lifecycle 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 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/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 and this includes many seabird species that breed on the Houtman Abrolhos in the SWMR. Pelagic seabirds have been documented foraging at current boundaries and seasonal upwellings within the NWMR (refer to Sutton et al., 2019). The Houtman Abrolhos Islands National Park located in the SWMR is one of the most significant seabird breeding locations in the eastern Indian Ocean. 16 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 (refer to **Section 8.1**), EPBC Act Bioregional Biologically Important Areas and subject matter expert review, as presented in Worley (2024).

High occurrence key seabird species

Species descriptions for high occurrence key seabird species are provided below. High occurrence seabird species were defined as those with breeding and foraging aggregations within NWMR (Worley, 2024).

Wedge-tailed shearwater (pelagic seabird)

The wedge-tailed shearwater (*Ardenna pacifica*) is listed migratory under the EPBC Act and *Biodiversity Conservation Act 2016* (WA) (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, approximately 1 million pairs breed in Australia, most of which do so on islands in Western Australia 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 on Muiron Islands (300,000 pairs) and Serrurier Island (60,000 pairs) exist (Surman and Nicholson 2009, 2015).

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. 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 outside burrows.

Adults may not return to feed chicks each night; wedge-tailed shearwaters breeding on the Muiron Island (north) undertook extensive foraging trips during the incubation period (1,200 – 1400 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 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, Queensland, Lord Howe Island, Tasmania (Peck & 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 & Congdon, 2005; Weimerskirch et al., 2020).

While the presence of squid and lanternfish in their diet (Surman & Nicholson, 2009) suggests nocturnal foraging occurs in this species, GPS tracking studies found that 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 also the division of nocturnal and diurnal foraging. Wedge-tailed shearwaters 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, approximately 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 North-west Shelf between May - August (Surman pers obs.).

Foraging and breeding BIAs are located for the wedge-tailed shearwater across the NWMR (**Figure 8-1**). It is noted that both breeding and foraging BIAs represent foraging habitat utilised by adult (chick-rearing) wedge-tailed shearwaters during the breeding season.

Australian lesser noddy (pelagic seabird)

The Australian lesser noddy (*Anous tenuirostris melanops*), which is endemic to Australia, is listed 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 & Surman 2021). Possible colonisation of Cocos (Keeling) Island is reported; however, 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 ~50,000 breeding pairs (Surman et al., 2016). At this location, studies indicate that 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 & Wooller 1995). The incubation period averaged 34 days and the fledging period 40 days. (Surman & Wooller 1995).

Studies of foraging ecology of breeding Australian lesser noddies at the Houtman Abrolhos Islands found that they are largely diurnal, foraging between 04h00 and 20h40 and returning to their colony at night (Surman et al., 2017). From this study, the GPS tracks of 17 adults during incubation or chick provisioning revealed that most foraging trips lasted for between 2 and 4 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 populations breed during the Austral spring/summer (Surman and Wooller, 1995).

No BIAs for the Australian lesser noddy overlap the NWMR and tracking data suggests that 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 that 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, utilising habitats of the NWMR.

Brown booby (pelagic seabird)

The brown booby (*Sula leucogaster*) is listed 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 3000 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 10 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 & 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 seas surface and are known to form large aggregations on oil and gas platforms throughout the NWMR (Surman pers obs.), Woodside facilities indicating wider distribution of non-breeding individuals across the NWMR.

Breeding/foraging 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 8-3**). Breeding is reported as occurring between January and March, however 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).

Breeding/foraging 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 8-3**).

Red-footed booby (pelagic seabird)

The red-footed booby (*Sula sula*) is listed 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 & Herrod, 2016) and Adele Island (14 pairs, Botle et al*.,* 2004). At Ashmore Reef they have been recorded breeding year-round (Clarke & 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 & Herrod, 2016).

Red-footed boobies are diurnal foragers, plunge diving for flying fishes (predominately) across their range (Commonwealth of Australia, 2020a). Breeding/foraging BIAs for the red-footed booby are associated with breeding colonies at Ashmore Reef and Adele Island (**Figure 8-3**).

Masked booby (pelagic seabird)

The masked booby (*Sula dactylatra*) is listed migratory under the EBPC Act. Within the NWMR, the sub-species *Sula dactylatra bedouti* ranges from the Dampier Archipelago, along the entire coast into the NMR and across to Queensland (Merchant & Higgins, 1990). Individuals have also been recorded at Barrow Island.

Within the NWMR, Bedout and Adele Island represent the main breeding locations with 400 and 320 breeding pairs estimated at each respectively (Marchant & 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 & 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 Lacapede 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 relatively small number of areas to breed, any catastrophe at these sites (e.g. oil spills, or disturbance/vandalism of nests) could have a substantial impact on the population (Birds Australia August 2005).

Studies of foraging behaviour of individuals breeding within the NWMR are lacking, however studies at other locations indicate that 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.

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 Fazer Island (Johnstone et al*.,* 2013), and Ashmore Reef (Clark & Herrod, 2016). Breeding at Ashmore Reef has been recorded as occurring between April and November (Clark & 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 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 ~950 km north to the NWMR (Surman et al*.,* 2017). The species is often reported roosting on unmanned oil and gas platforms within the NWS and Timor Sea (Surman pers comm, 2021).

Although widespread across the NWMR during breeding and non-breeding, no BIAs for this species are located in the NWMR.

Bridled tern (pelagic seabird)

The bridled tern (*Onychiprion anaethetus* (listed as *Sterna anaethetus*) is listed 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–March (Johnstone et al 2013). Small breeding populations have also been recorded on East Island at Ashmore Reef between April-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 close to 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 their breeding colonies within the NWMR, on outer continental shelf waters (Nicholson 2002; Dunlop et al. 2001).

Although foraging may be concentrated around breeding colonies during the breeding season, no BIAs in the NWMR have been identified for this species.

Frigate birds (pelagic seabirds)

The lesser (*Fregata ariel*) and great frigatebirds (*Fregata minor*) are both listed 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 & Herrod, 2016). In addition to the 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 breed in the Austral winter (Clark & Herrod, 2016).

During breeding, 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 900-1400 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 in addition to the South China, Java and Sulu Seas and the Gulf of Thailand (Mott et al*.,* 2021). During the wet season in particular, 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 (8-30 cm, Surman pers. Obs.).

Breeding/foraging BIAs for the great frigatebird in the NWMR are associated with breeding colonies on Ashmore Reef and Adele Island. For the lesser frigatebird, breeding/foraging BIAs are associated with breeding colonies on Ashmore Reef, Adele Island, White Island, Lacepede Islands and Bedout Island (**Figure 8-4** Greater and lesser frigatebird BIAs for the NWMR (data source: DCCEEW, 2024b)).

White-tailed tropicbird (pelagic seabird)

The white-tailed tropicbird (*Phaethon lepturus*) is listed migratory under the EBC 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 sub species *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, (10 breeding pairs, Clark 2010 and up to three nesting pairs Burbidge et al. 1996, respectively). Breeding can occur year-round (Clarke & 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 1400-1600 km SE of Christmas Island.

This species regularly roosts on the seas surface, in 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 & Higgins 1990).

There are breeding BIAs associated with nesting occurring at the Rowley Shoals and Ashmore Reef within the NWMR (

Figure 8-5).

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 - 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 (17-24 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 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 concerning foraging range when breeding in Australia, but observations at sea in the Ashmore Reef region demonstrate they are capable of foraging 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.

Australian Fairy Tern (nearshore seabird)

The Australian fairy tern (*Sternula nereis nereis*) is listed vulnerable under the EPBC Act. The WA breeding population (approximately 5000-6000 mature individuals) is dispersed over approximately 2500km of coastline (Greenwell, 2021). Within Western Australia, 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 the winter months.

Within the NWMR breeding occurs in small colonies between June-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 South Australia. Here, species typically forages in inshore waters and has been reported to rarely travel beyond 2 km during the breeding season in South Australia (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 include species of sprats, hardy heads and larval prey of some demersal fish species. Unlike many other terns, fairy terns are not dependent upon large pelagic fishes to drive their prey to the surface.

Breeding and foraging BIAs are identified for the fairy tern in the NWMR, as presented in **Figure 8-2**.

Little tern (nearshore seabird)

The little tern (*Sternula albifrons*) is listed migratory under the EPBC Act and BC Act. There are three sub-populations of little tern in Australia and two of these occurring 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 that 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 close to 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, however BIAs for foraging and resting have been identified across the NWMR (**Figure 8-2**), with a peak in breeding activity between June and October.

Roseate tern (nearshore seabird)

The roseate tern (*Sterna dougallii*) is listed migratory under the EPBC Act and BC Act. This species is generally sub-tropical 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 Western Australia is in the Houtman Abrolhos Islands (Surman & Nicholson, 2009). Large colonies breed within the Lowendal Island and Montebello Island region where there is a stronghold for this species (Higgins & Davies 1996). A large breeding colony has also been recorded on Goodwyn Island on the Dampier Archipelago (Higgins & Davies 1996). Peak breeding times across the NWMR are between May to August.

Birds are known to usually move away from breeding colonies following breeding, but their non-breeding range is not well defined (Higgins & Davies 1996). Many non-breeding roseate terns have been observed at several remote locations in the Kimberley and there are high numbers also recorded at the Eighty Mile Beach Ramsar site (Surman pers obs).

Roseate terns will forage diurnally, up to 60 km from their colonies and always over deeper shelf waters, rather than shallow coastal areas (Surman & Wooller, 2003). Roseate terns will also readily raft (roost in flocks on the sea surface) after foraging episodes (Commonwealth of Australia, 2020).

Roseate terns predominately 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 8-2**).

Caspian tern

The Caspian tern (*Hydroprogne caspia*) is listed 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 the Northwest Cape, from late March to early November (Johnstone et al*.,* 2013).

During breeding, adults can forage up to 60 km from the colony during this period 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 & McNeill 2017).

Caspian tern 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.

Greater crested tern

The greater crested tern (*Thalasseus bergii*) is listed 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 amidst colonies of other species, such as silver gull (del Hoyo et al. 1996). Colonies are located 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 also 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 close (<40 km) to the colony (Surman & 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).

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 & Wooller, 2003), crustaceans and cephalopods using a plunge diving method (Commonwealth of Australia, 2020a).

Although there is known habitat use in the NWMR, there are no designated BIAs for the greater crested tern in the NWMR.

8.2.1 Moderate occurrence seabird species

Species descriptions for moderate occurrence key pelagic and nearshore seabird species are summarised in **Table 8-2.**

Table 8-2 Species summary for moderate occurrence pelagic and nearshore seabird species within the NWMR.

Species	NMWR 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 – Aug	Diurnal and nocturnal Pursuit-plunging, surface-seizing	Fish, cephalopods
Soft-plumaged petrel	Non-breeding, migration: Jan-June	Diurnal and nocturnal Dipping, surface-seizing	Crustaceans, fish
Streaked shearwater	Non-breeding: Dec – Apr	Diurnal and nocturnal Surface-seizing	Fish, squid, crustacean
Wilson's storm petrel	Non-breeding: June – Dec	Diurnal and nocturnal Dipping, surface-seizing	Crustaceans, fish
Common tern	Non-breeding: Aug – Mar	Diurnal	Fish

		Surface-plunging, dipping.	

8.2.2 Biologically Important Areas for seabirds in the NWMR

A review of the Australian Marine Spatial Information System (GA, 2024) identified BIAs representing important life cycle stages and behaviours for nine species of seabird in the NWMR. These are presented in **Table 8-3**.

Table 8-3 Seabird BIAs within the NWMR (source: AMSIS, 2024 [accessed on 12/08/24]

Seabird Species	Woodside Activity Area			BIAs			
	Browse	NWS/S	NWC	Breeding/foraging	Foraging	Breeding	Resting
Australia fairy tern	-	✓	✓	-	No foraging BIAs in the NWMR Foraging in high numbers: the BIA is located in the SWMR including the Houtman Abrolhos Islands	Dampier Archipelago, Montebello, Lowendal and Barrow Island Groups, south Ningaloo and Bernier Island of Shark Bay	-
Wedge-tailed shearwater	✓	✓	✓	Widespread area of the NWMR offshore and inshore waters	Foraging in high numbers: the BIA is located in the SWMR including the Houtman Abrolhos Islands	-	-
Great frigatebird	✓	-	-	Ashmore Reef, Adele Island	-	-	-
Lesser frigatebird	✓	✓	-	Off Eighty Mile Beach, Lacepedes, Adele Island, North Kimberley and Ashmore Reef	-	-	-
Brown booby	✓	✓	-	Off Eighty Mile Beach, Lacepedes, Adele Island, North Kimberley and Ashmore Reef	-	-	-
Red-footed booby	✓	-	-	Adele Island, Ashmore Reef	-	-	-
Little tern	✓	✓	-	Rowley Shoals, Adele Island	-	-	-
Roseate tern	✓	✓	✓	-	No foraging BIAs in the NWMR Foraging (provisioning young) and foraging BIAs located in the SWMR – Houtman Abrolhos Islands the	Dampier Archipelago, Montebello, Lowendal and Barrow Island Groups, south Ningaloo and barrier island of Shark Bay	Eighty Mile Beach

Seabird Species	Woodside Activity Area			BIAs			
	Browse	NWS/S	NWC	Breeding/foraging	Foraging	Breeding	Resting
					nearest BIA to the NWMR		
White-tailed tropicbird	✓	✓	-			Rowley Shoals Ashmore Reef	

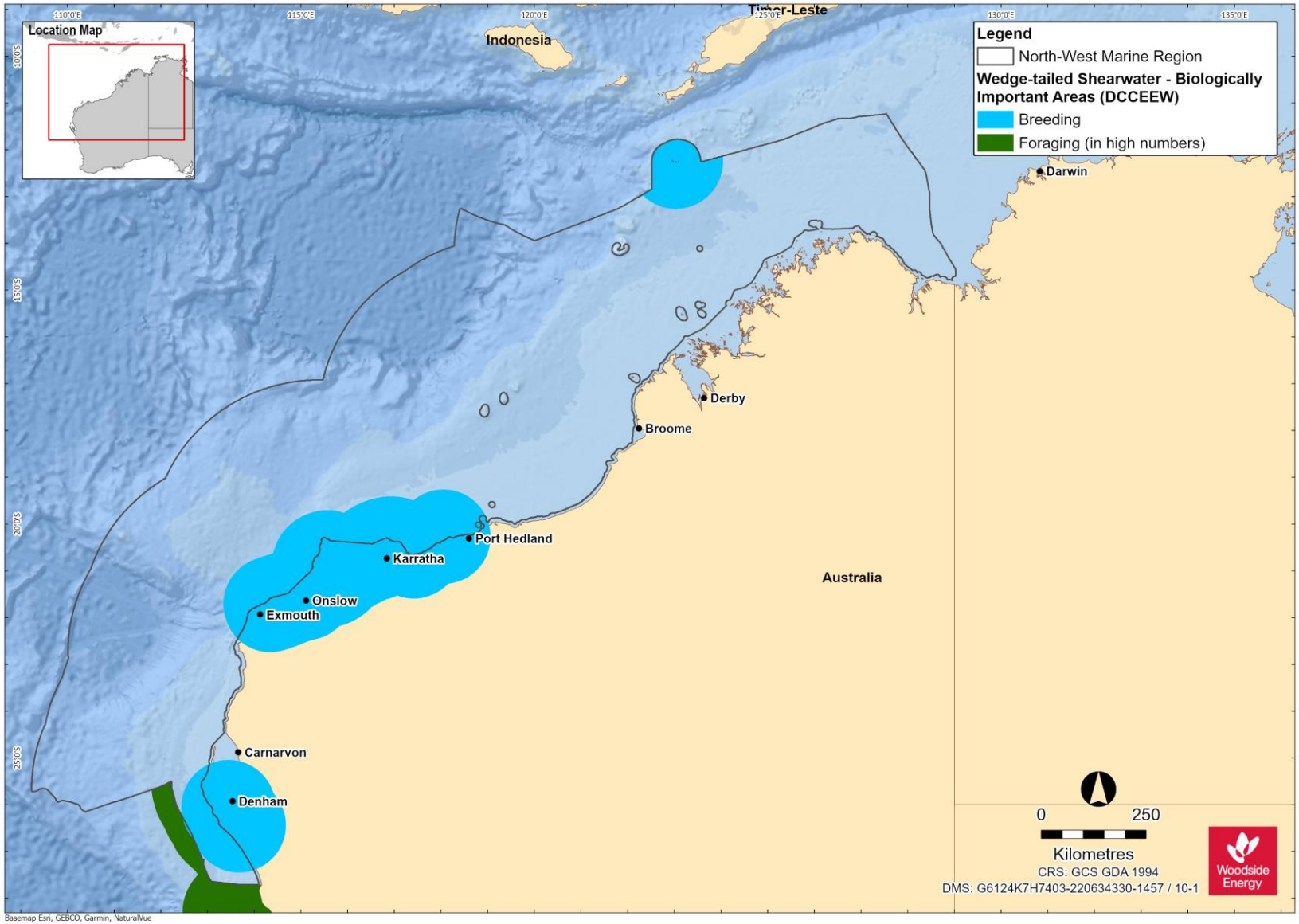


Figure 8-1 Wedge-tailed shearwater BIAs for the NWMR (data source: DCCEEW, 2024b)

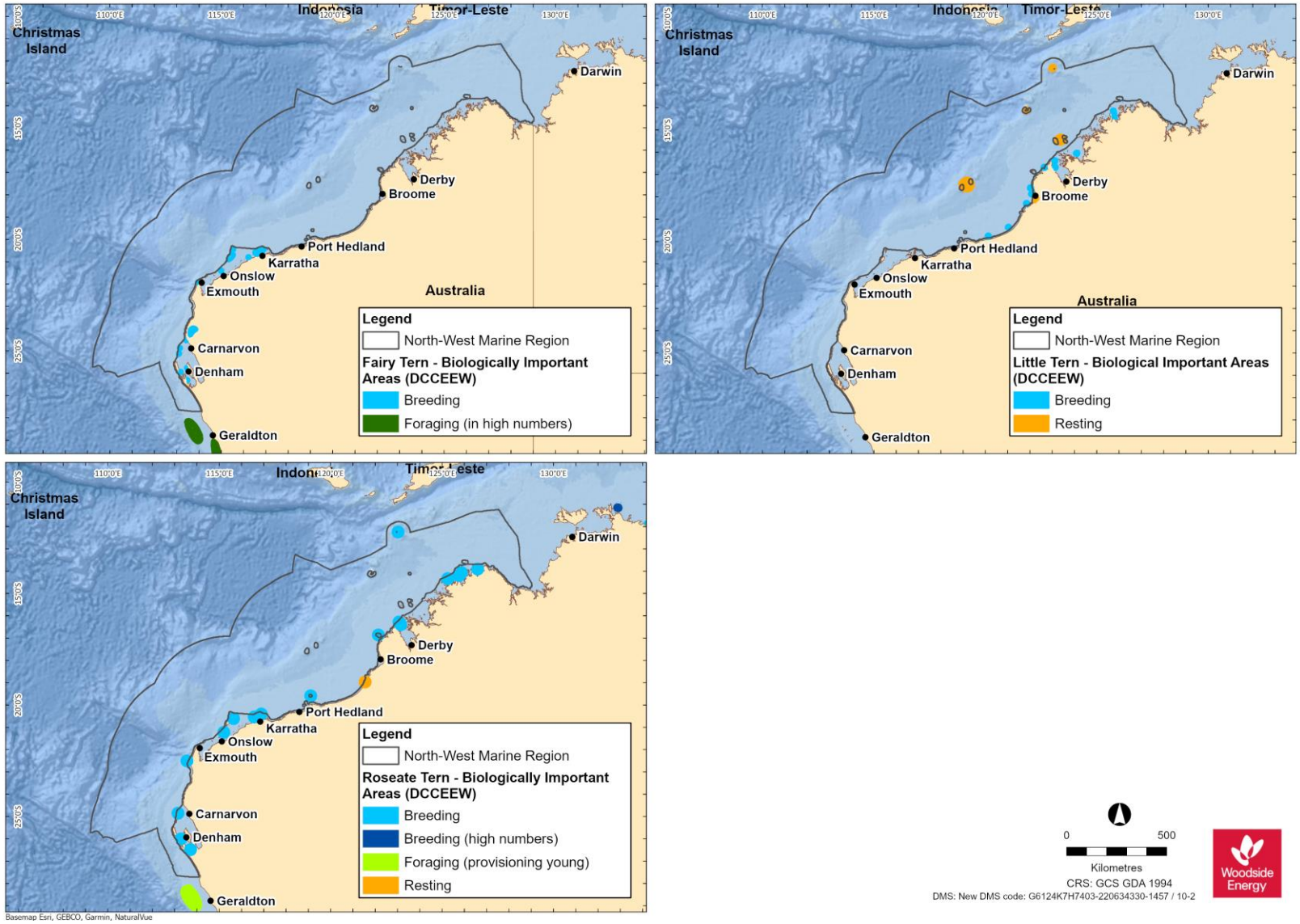


Figure 8-2 Tern species BIAs for the NWMR (data source: DCCEEW, 2024b)

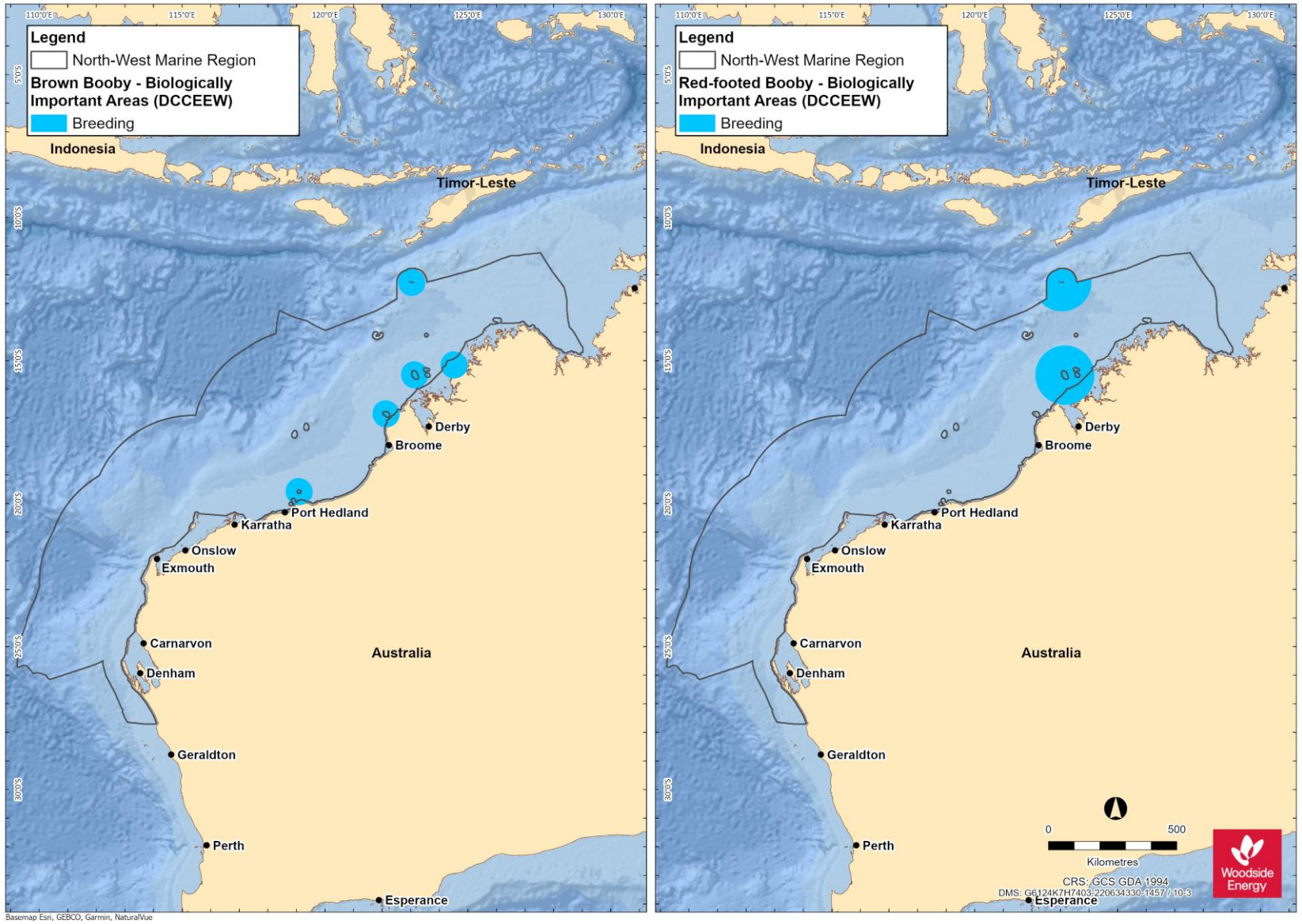


Figure 8-3 Red-footed and brown booby BIAs for the NWMR (data source: DCCEEW, 2024b)

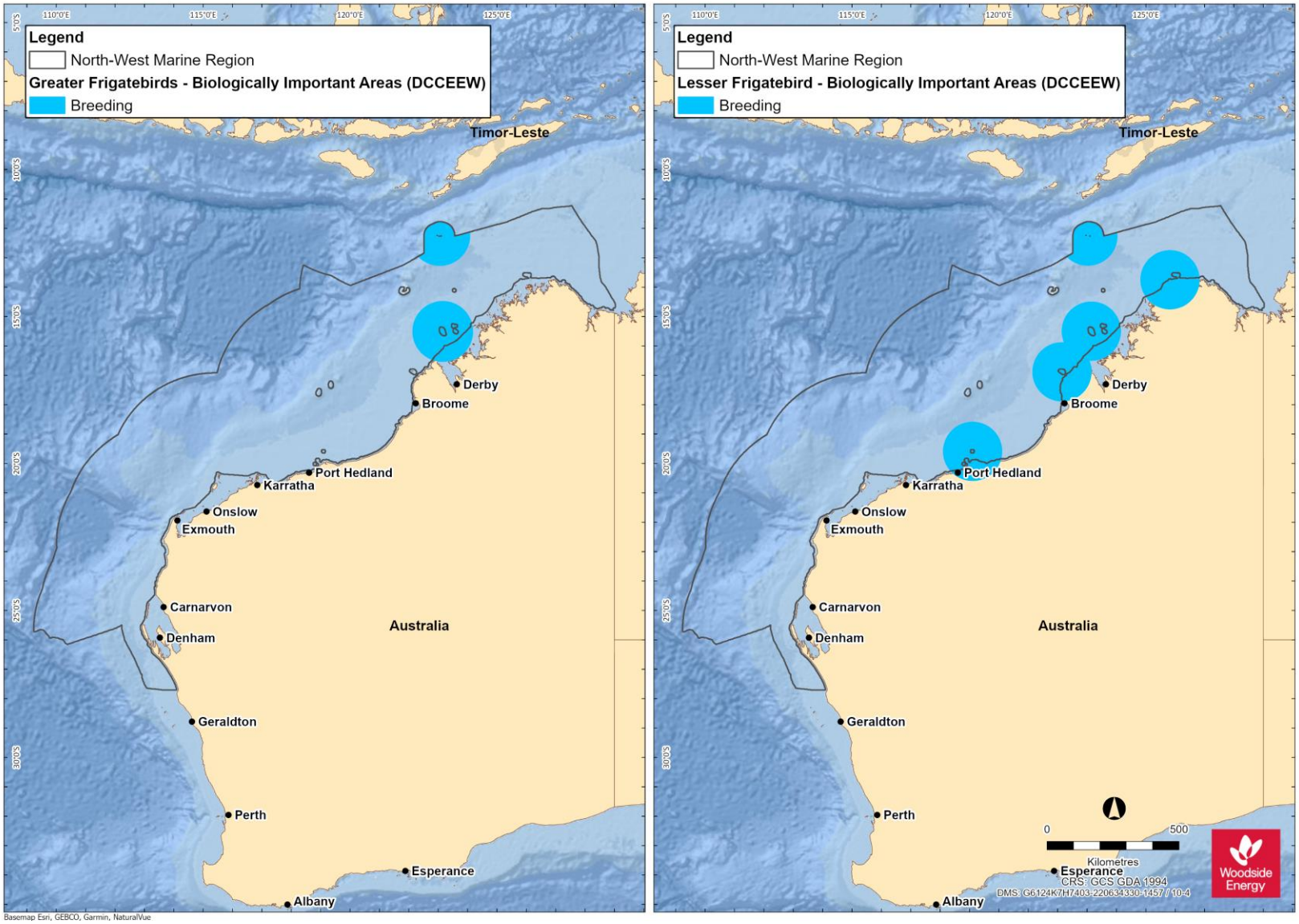


Figure 8-4 Greater and lesser frigatebird BIAs for the NWMR (data source: DCCEEW, 2024b)

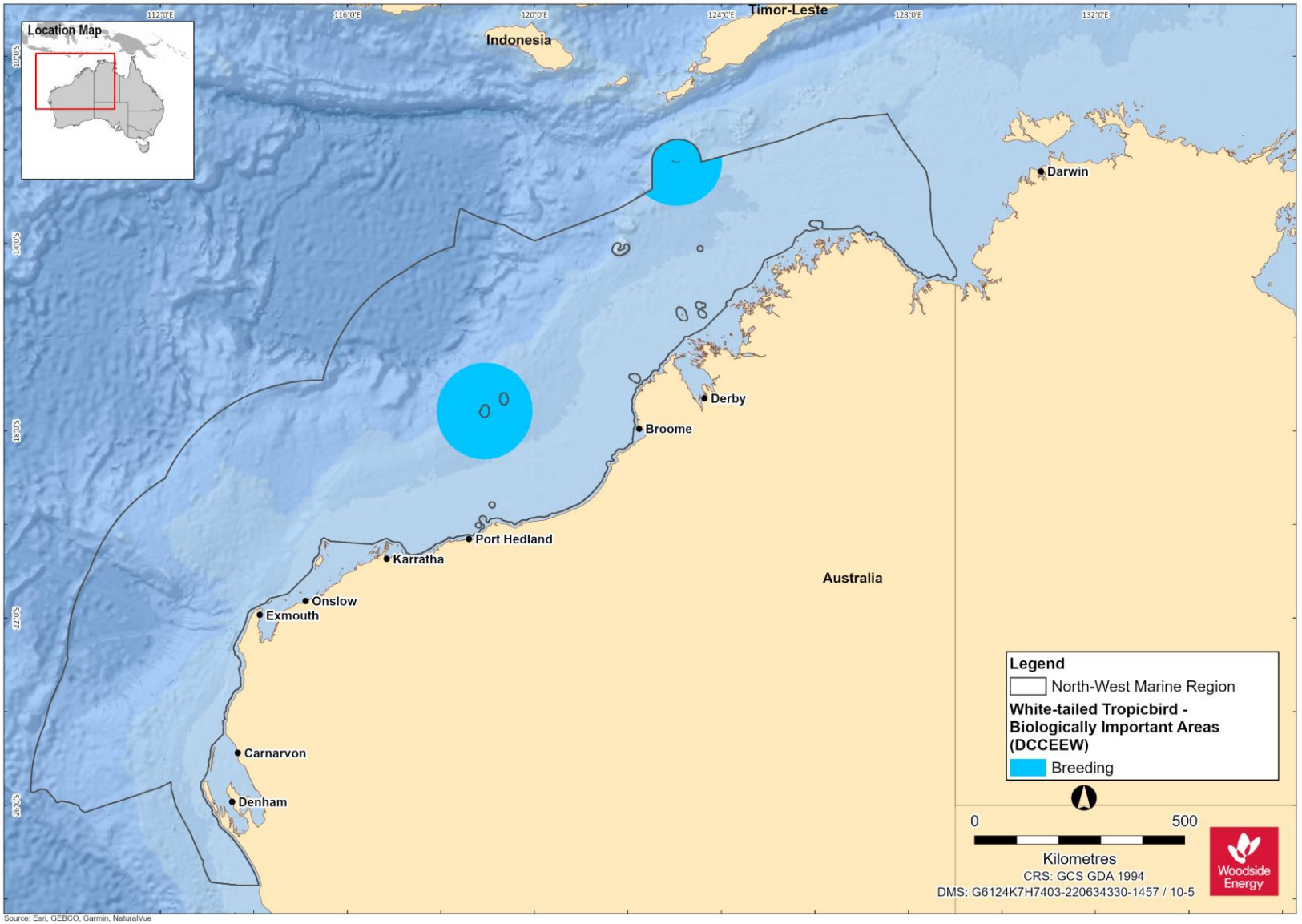


Figure 8-5 White-tailed tropicbird BIAs for the NWMR (data source: DCCEEW, 2024b)

8.2.3 Seabird Summary for NWMR

8.2.3.1 Browse

The Browse activity area includes biologically important habitat for seven threatened and/or migratory seabird species:

- wedge-tailed shearwater (breeding/foraging);
- great and lesser frigatebirds (breeding/foraging);
- brown booby (breeding/foraging);
- red-footed booby (breeding/foraging);
- little tern (breeding/foraging);
- roseate tern (breeding and resting); and,
- white-tailed tropicbird (breeding).

BIAs for the seabird species are outlined in **Table 8-3**.

8.2.3.2 NWS / Scarborough

The NWS / Scarborough activity area includes biologically important habitat for seven threatened and/or migratory seabird species:

- Australian fairy tern (breeding);
- wedge-tailed shearwater (breeding/foraging);
- lesser frigatebird (breeding/foraging);
- brown booby (breeding/foraging);
- white-tailed tropicbird (breeding);
- little tern (breeding/foraging); and
- roseate tern (breeding and resting).

BIAs for the seabird species are outlined in **Table 8-3**.

8.2.3.3 North-west Cape

The North-west Cape activity area includes biologically important habitat for three threatened and/or migratory seabird species:

- Australian fairy tern (breeding);
- wedge-tailed shearwater (breeding/foraging); and
- roseate tern (breeding and resting).

BIAs for the seabird species are listed and described in **Table 8-3**.

8.3 Shorebirds

Shorebirds (migratory and resident species) are generally associated with wetland or coastal environments, and the NWMR hosts many shorebird species, particularly in the Austral summer (refer to **APPENDIX A. Protected Matter Search Reports for NWMR, SWMR and** NMR 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.

The NWMR is situated within the East Asian – Australian Flyway (EAAF), a geographic region supporting populations of migratory shorebirds throughout their annual cycle. The EAAF extends from breeding grounds in the Russian tundra, Mongolia and Alaska southwards through east and south-east 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 may migrate through the offshore areas of the NWMR between overwinter 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). Migration routes of some migratory shorebird species have been characterised using band recoveries (Minton et al 2006), however the migration pathways taken between sightings are poorly understood.

Migratory shorebird species are present in Australia during the non-breeding period (December to February), in coastal and inland habitats where adult birds build up 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 (Commonwealth of Australia, 2015c). The high energy demands of migration means that both foraging and resting during the non-breeding period are vital for individual fitness and survival.

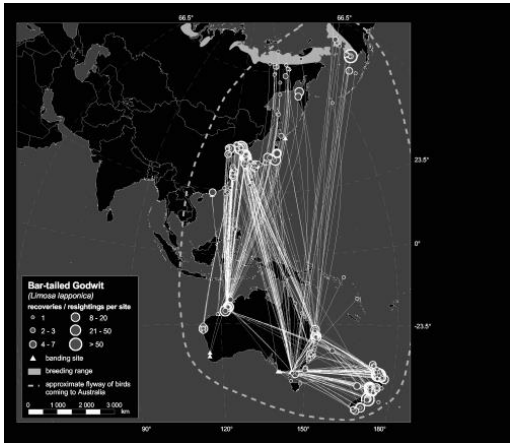
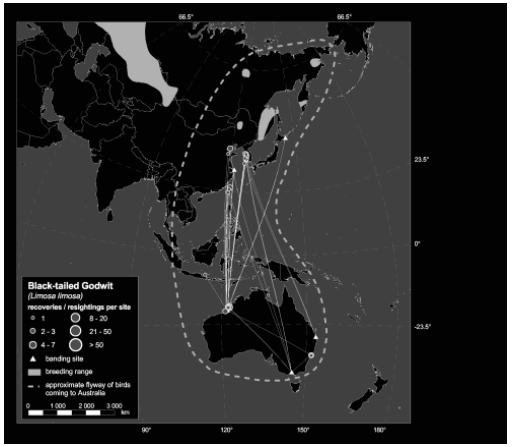
Due to differences in coastal or wetland habitat requirements between roosting and foraging behaviours, areas used most by migratory shorebirds usually comprise networks of foraging and roosting habitats. Shorebirds move between areas of this network depending on the time of day, availability of resources, levels of disturbance and environmental conditions (Commonwealth of Australia, 2015c). Displacement from one habitat or the other may result in utilisation of sub-optimal habitat and/or increase energetic demands via increased distance between habitats.

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.

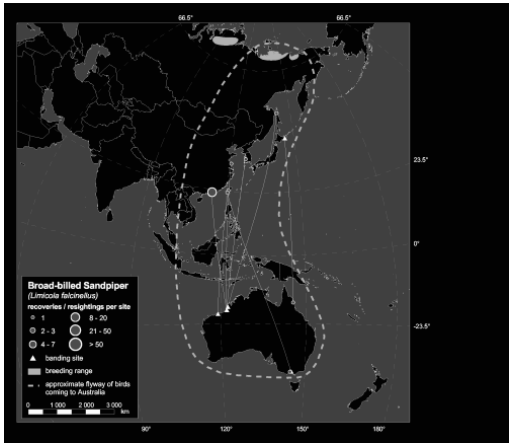
Ashmore Reef is documented as a BIA for migratory shorebirds in the NWMR (DSEWPAC, 2012a).

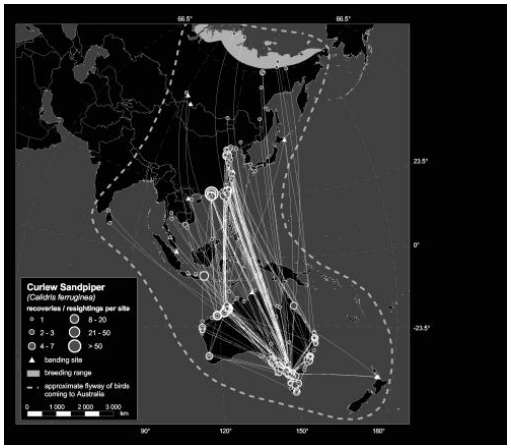
Species descriptions, including information on migration routes where available, for key high and moderate occurrence shorebird species are provided in **Table 8-4** and **Table 8-5**. It should be noted that Minton et al*.,* (2006) did not report on the Pilbara region or Exmouth Gulf, so the migratory pathways may be incompletely depicted.

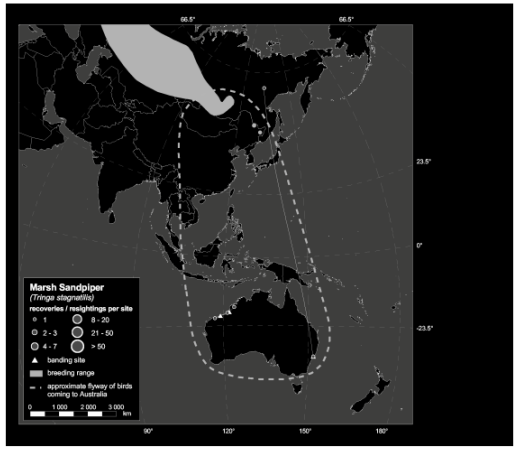
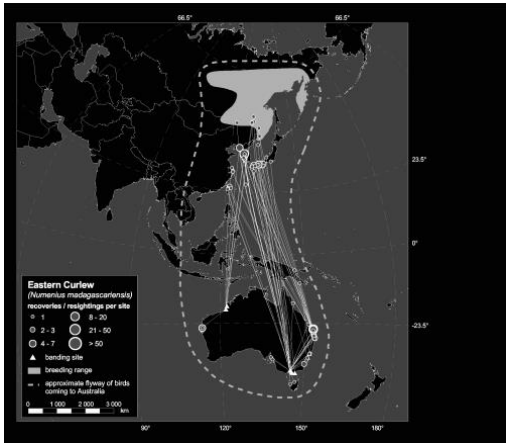
Table 8-4 Species summary for high and selected moderate occurrence key shorebird species.

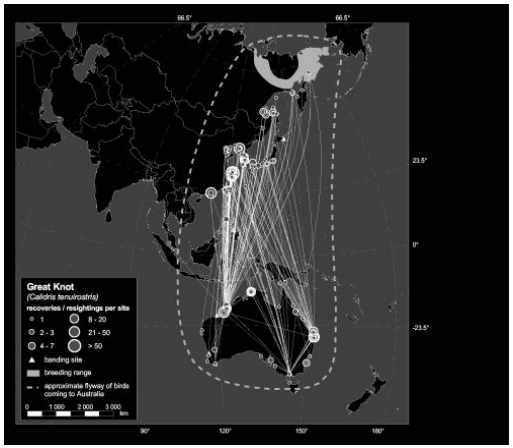
Species	Presence in NWMR	Roosting habitat	Foraging habitat	Diet	Migration From Minton et al (2006)
Bar-tailed godwit[21]	Widespread around the coast as far east as Derby, with a few scattered records elsewhere in the Kimberley *Internationally important site:* • Roebuck Bay • Eighty Mile Beach	Sandy beaches, sandbars, spits and also 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	

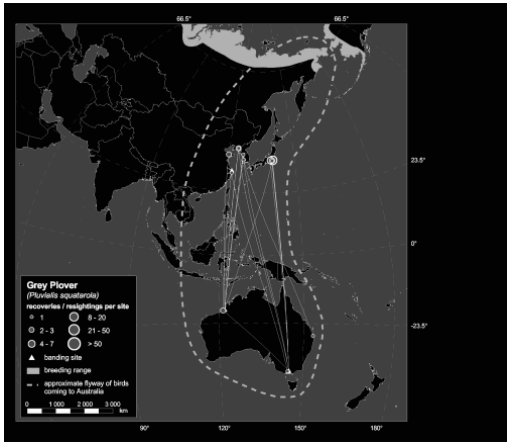
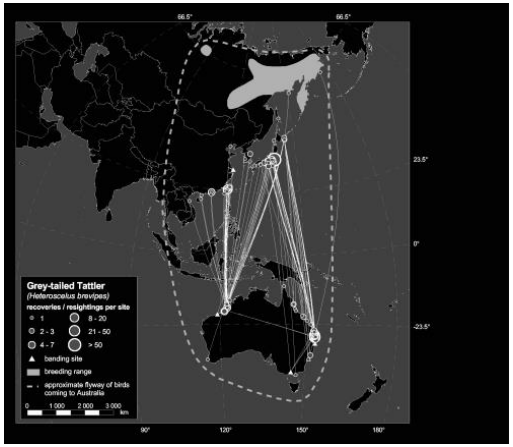
[21] Nominate species *Limosa lapponica.* Subspecies which may occur includes *L. l menzbieri,* which is listed Critically Endangered under the EPBC Act. Specific information on *L. l menzbieri* is lacking, but information regarding habitat use and diet for the nominate species is considered applicable.

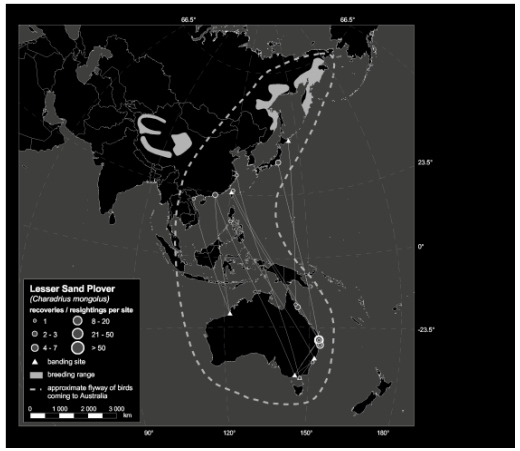
Species	Presence in NWMR	Roosting habitat	Foraging habitat	Diet	Migration From Minton et al (2006)
Broad billed sand piper	Regular visitor to coasts of the Pilbara and Kimberley between Onslow and Broome *Internationally important site:* • Port Hedland Saltworks	Sheltered sandy, shelly or shingly beaches	Mudflats, mangroves	Worms, including polychaetes, molluscs, crustaceans, insects and seeds	
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

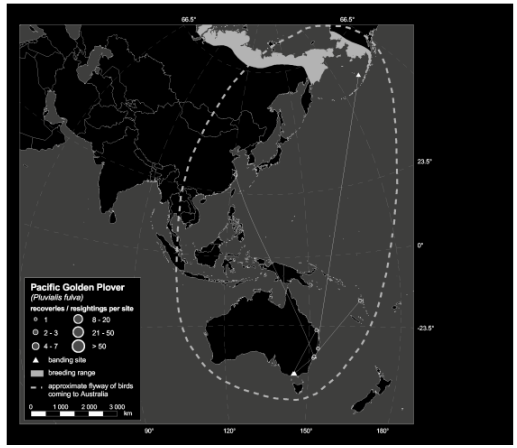
Species	Presence in NWMR	Roosting habitat	Foraging habitat	Diet	Migration From Minton et al (2006)
Curlew sandpiper	Widespread around coastal and subcoastal plains Non-breeding one year old birds may remain in Australia rather than migrating north *Internationally important site:* • Dampier Saltworks • 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, and insects, as well as seeds	

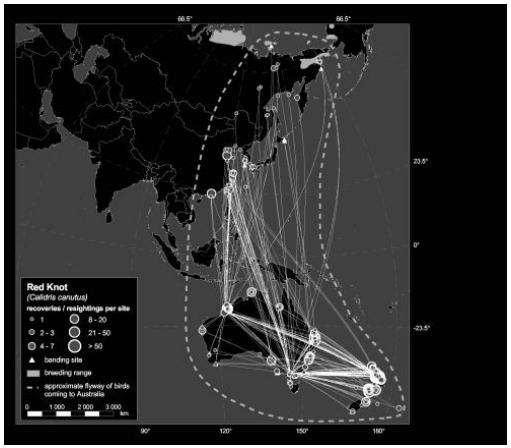
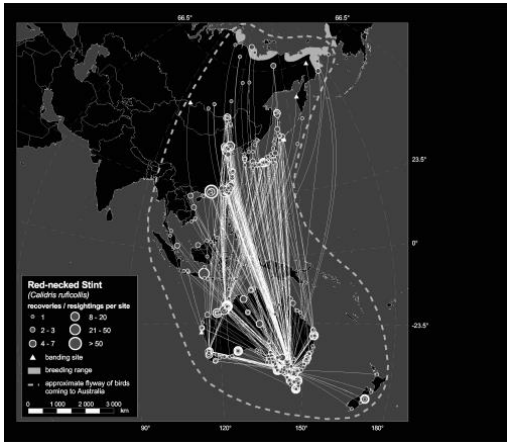
Species	Presence in NWMR	Roosting habitat	Foraging habitat	Diet	Migration From Minton et al (2006)
Marsh sandpiper	Widespread, notable areas include Eighty Mile Beach, Port Hedland Saltworks	Tidal mudflats	Mudflats, marshy vegetation	Molluscs, crustaceans and insects	
Eastern curlew	Continuous distribution from Barrow Island and Dampier Archipelago through the Kimberley region *Internationally important site:* • Eighty Mile Beach • Roebuck Bay	Sandy spits, sandbars and islets, beaches near the high-water mark, coastal vegetation including low saltmarsh or mangroves	Soft sheltered intertidal sandflats or mudflats, saltflats and saltmarsh, in proximity to mangroves, among rubble on coral reefs, and beaches near the tideline	Crustaceans small molluscs, insects	

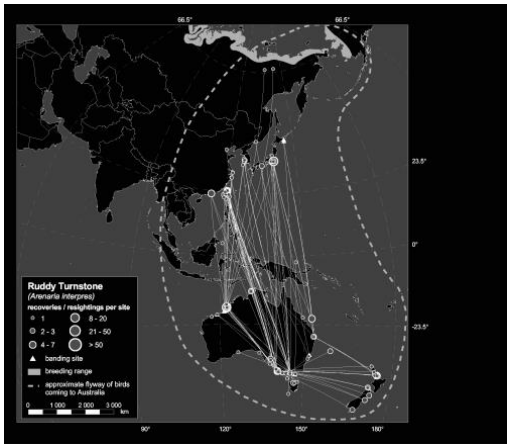
Species	Presence in NWMR	Roosting habitat	Foraging habitat	Diet	Migration From Minton et al (2006)
Great knot	Common on the coasts of the Pilbara and Kimberley, from the Dampier Archipelago to the Northern Territory border *Internationally important site:* • Eighty Mile Beach • Roebuck Bay	Roosts in large groups in open areas, often at the water's edge or in shallow water close to feeding grounds	Sheltered coastal habitats with large intertidal mudflats or sandflats	Bivalves, gastropods, crustaceans and other invertebrates	
Greater sand plover	Widespread between North-west Cape and Roebuck Bay *Internationally important site:* • 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	

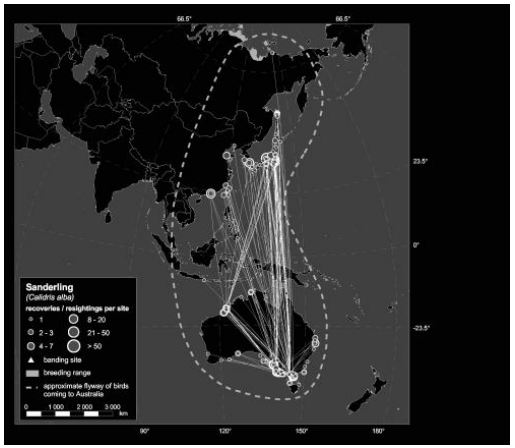
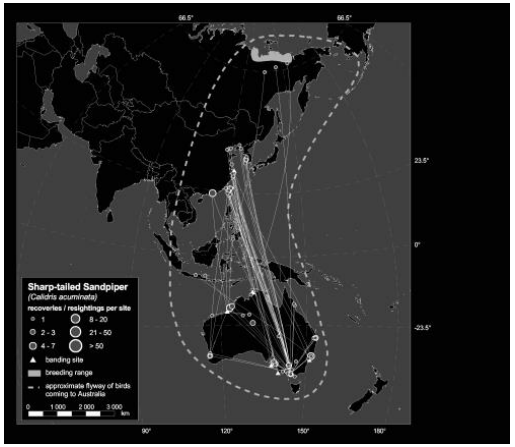
Species	Presence in NWMR	Roosting habitat	Foraging habitat	Diet	Migration From Minton et al (2006)
Grey plover	Widespread in coastal areas across Australia *Internationally important site:* • Eighty Mile Beach • Roebuck Bay	Sandy habitats including unvegetated sandbanks or sand-spits, sheltered beaches, estuaries or lagoons	Large areas of exposed mudflats and beaches of sheltered coastal shores	Molluscs, insects and their larvae, crustaceans and polychaete worms	
Grey-tailed tattler	Widespread from Houtman Abrolhos and the mainland adjacent to the Kimberley *Internationally important site:* • 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	

Species	Presence in NWMR	Roosting habitat	Foraging habitat	Diet	Migration From Minton et al (2006)
Lesser Sand Plover	Widespread, internationally important site: • 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	
Oriental plover	Most records are along the north-western coast, between Exmouth Gulf and Derby in Western Australia *Internationally important site:* • 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 beachcast seaweed on beaches	Insects, including termites, beetles, grasshoppers, crickets	Not available

Species	Presence in NWMR	Roosting habitat	Foraging habitat	Diet	Migration From Minton et al (2006)
Oriental pratincole	Widespread along the coasts of the Pilbara and Kimberley *Internationally important site:* • 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
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, beachcast 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	

Species	Presence in NWMR	Roosting habitat	Foraging habitat	Diet	Migration From Minton et al (2006)
Red knot	Large numbers regularly recorded in north-west Australia *Internationally important site:* • Eighty Mile Beach • Roebuck Bay	Sandy beaches, spits and islets, and mudflats close to feeding grounds	Soft substrate near the water edge including intertidal mudflats and sandflats exposed by low tide	Worms, bivalves, gastropods, crustaceans and echinoderms	
Red-necked stint	Widespread in coastal areas across Australia *Internationally important site:* • 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	

Species	Presence in NWMR	Roosting habitat	Foraging habitat	Diet	Migration From Minton et al (2006)
Ruddy turnstone	Found in most coastal regions across Australia *Internationally important site:* • Barrow Island • Eighty Mile Beach • Roebuck Bay • Lacepede Islands	Beaches above the tideline, among rocks, shells, beachcast 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

Species	Presence in NWMR	Roosting habitat	Foraging habitat	Diet	Migration From Minton et al (2006)
Sanderling	Occur most of the NWMR coast as far east as Derby *Internationally important site:* • 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 amongst 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 Pilbara to Kimberley *Internationally important site:* • Port Hedland 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	

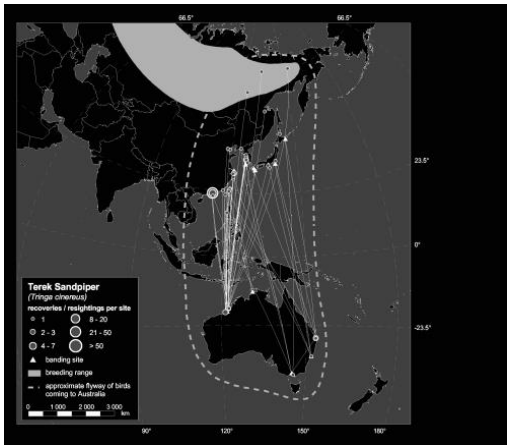
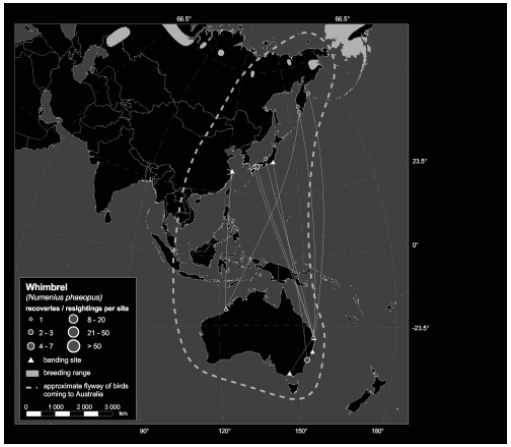
Species	Presence in NWMR	Roosting habitat	Foraging habitat	Diet	Migration From Minton et al (2006)
Terek sandpiper	The species is widespread in the Pilbara and Kimberley, from Dampier to Wyndham, with occasional records around Shark Bay *Internationally important site:* • Eighty Mile Beach • Roebuck 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 (e.g. small fish, little tern chicks)	

Table 8-5 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 and 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

Species	NWMR presence	Roosting habitat	Foraging habitat	Diet
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
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

Species	NWMR presence	Roosting habitat	Foraging habitat	Diet
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

8.4 Other marine birds

Species descriptions for high occurrence key other marine bird species are summarised in **Table 8-6**.

Table 8-6 Species summary for high occurrence key other marine bird species

Species	NWMR presence		Predominant feeding behaviour	Diet
Fork-tailed swift	*Non-breeding:* Oct – 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 season compared to 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 and 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.	

9. THREATENED AND MIGRATORY SPECIES SEASONAL PRESENCE

Seasonal sensitivity for key threatened and migratory species in the NWMR presented in **Table 9-1.** The timing presented is displayed as a broad representation for the NWMR, with location specific seasonality presented within Environment Plans (EPs).

Table 9-1 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) [1]												
Whale shark - foraging (high density prey, Ningaloo Reef)[2]												
Dwarf sawfish - reproduction[3]												
Dwarf sawfish - foraging[4]												
Largetooth (freshwater) sawfish - reproduction (pupping)[5]												
Largetooth (freshwater) sawfish - foraging												
Green sawfish (reproduction)												
Green sawfish (foraging)												
Marine reptiles- turtle nesting												
Green turtle												
Ashmore Reef Stock (G-AR)[6]												

Species	January	February	March	April	May	June	July	August	September	October	November	December
Scott Reef-Browse Island Stock (G-ScBr)[7]												
NWS Stock (G-NWS)[8]												
Hawksbill turtle												
Western Australia Stock (H-WA)[9]												
Flatback turtle												
Cape Domett Stock (F-CD)[10]												
South-west Kimberley Stock (F-swKim)[11]												
Pilbara Stock (F-Pil)[12]												
Unknown genetic stock Kimberley, Western Australia[13]												
Loggerhead turtle												
Western Australia Stock (LH-WA)[14]												
Cetaceans												
Fin whale[15]												
Humpback whale - northern migration[16]												
Humpback whale - southern migration[17]												

Species	January	February	March	April	May	June	July	August	September	October	November	December
Humpback whale - reproduction (nursing, Kimberley coast)[18]												
Omura's whale[19]												
Pygmy blue whale - northern migration[20]												
Pygmy blue whale - southern migration[21]												
Southern Right Whale (calving/presence in NWMR)[22]												
Seabirds (high occurrence seabirds with designated BIAs)												
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												
Australian fairy tern - breeding/foraging												
Great frigatebird- breeding / foraging	*	*	*	*	*	*	*	*	*			

Species	January	February	March	April	May	June	July	August	September	October	November	December
*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 Jan-Mar (protracted through to Oct at Ashmore Reef)												
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												
	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 NWMR.											

Species	January	February	March	April	May	June	July	August	September	October	November	December

[1]Whale shark foraging northward from Ningaloo in Spring (DCCEEW, 2024b15). Migration along the north coast of WA also known to occur between July - November (TSSC, 2015d). Potential presence of whale sharks year-round at Ningaloo (Norman et al., 2017).

[2]Whale shark foraging (high density prey) Ningaloo April- June, Autumn (DCCEEW, 2024b15). March- July (TSSC, 2015d). Potential presence of whale sharks year-round at Ningaloo (Norman et al., 2017).

[3]Dwarf sawfish reproduction- potential to occur in all seasons (DCCEEW, 2024b15).

[4]Dwarf sawfish foraging- potential to occur in all seasons (DCCEEW, 2024b15).

[5]Largetooth (freshwater) sawfish pupping occurs from January to May (DCCEEW, 2024b15).

[6]Green turtle nesting Ashmore Reef Stock- year-round (peak: December- January) (CoA, 2017).

[7]Green turtle nesting Scott Reef-Browse Island Stock November- March (CoA, 2017).

[8]Green turtle nesting NWS Stock November- March (CoA, 2017).

[9]Hawskbill turtle nesting Western Australia Stock October- February (CoA, 2017).

[10]Flatback turtle nesting Cape Domett Stock- year-round (peak July- September) (CoA, 2017).

[11]Flatback turtle nesting South-west Kimberley Stock October- March (CoA, 2017).

[12] Flatback turtle nesting Pilbara stock October- March (CoA, 2017).

[13]Unknown stock nesting Kimberley May- July (CoA, 2017).

[14]Loggerhead turtle nesting Western Australia stock November- May.

[15]Fin whale presence NWMR May- October (Aulich et al., 2022). Migrating north from Cape Leewuin (SWMR) May- October. Present offshore Dampier August- October (Aulich et al., 2022).

[16]Humpback whale northern migration. Range June- September (DCCEEW, 2024b15; TSSC, 2015b; DSEWPaC, 2012a). Peak July- August (Salgado Kent et al. 2012).

[17]Humpback whale southern migration. Range July- November. Peak August- October. (TSSC, 2015b; Irvine & Salgado Kent, 2019; Salgado Kent et al., 2012; DSEWPaC, 2012a;

[18]Humpback whale- reproduction (nursing, Kimberley coast) Winter (DCCEEW, 2024b15). Breeding August- September (DSEWPac, 2012a; TSSC, 2015b). Calves present off Kimberley in October (Thums et al., 2018).

[19]Limited data however sightings reported year-round (Cerchio et al, 2019).

Species	January	February	March	April	May	June	July	August	September	October	November	December

[20] Pygmy blue whale northern migration April - August (DCCEEW, 2024b15; DSEWPaC, 2012a; McCauley et al., 2018; CoA, 2015a). Peak April- July (Thums et al., 2022)

[21]Pygmy blue whale southern migration October- December, possibly into January (DCCEEW, 2024b15; DSEWPaC, 2012a citing (McCauley and Jenner, 2010; McCauley et al., 2018; Thums et al*.,* 2022; CoA, 2015a). Peak November - December (Thums et al., 2022).

[22]Southern right whale calving and migratory presence in Exmouth Gulf (NWMR) June to September with peak months July and August (DCCEEW, 2024a)

All seabird seasonality information derived from BIA metadata, scientific publications and expert opinion (Worley, 2024).

10. KEY ECOLOGICAL FEATURES

Key ecological features (KEFs) are elements of the Commonwealth marine environment that are considered to be important for a marine region's biodiversity or ecosystem function and integrity. KEFs have been identified by the Australian Government based on advice from scientists about the ecological processes and characteristics of the area.

KEFs meet one or more of the following criteria:

- a species, group of species, or a community with a regionally important ecological role (e.g. a predator, 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 which 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, twelve KEFs within the SWMR and eight KEFs within the NMR. These KEFs have been identified in the Protected Matters search (**APPENDIX A**. Protected Matter Search Reports for NWMR, SWMR and NMR) and outlined in **Table 10-1, Table 10-2** and **Table 10-3,** and **Figure 10-1, Figure 10-10-2** and **Figure** -10-3.

Table 10-1 Key Ecological Features (KEF) within the NWMR.

KEF Name	Woodside Activity Area			Values[1]	Description
	Browse	NWS/S	NW 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 which are important for sessile species	The carbonate banks and terrace system of the Sahul Shelf are located in the western Joseph Bonaparte Gulf and to the 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 approximately 31,278 km^2 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)
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 Pinnacles of the Bonaparte Basin KEF is located within both the NWMR and NMR (refer **Table 10-3**)	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 km^2 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 that 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)
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 present 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

KEF Name	Woodside Activity Area			Values[1]	Description
	Browse	NWS/S	NW Cape		
					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
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)
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 North-west 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 (225–500 m water depths) and the mid-slope (750–1000 m). Although poorly known, it is suggested that 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, large squid, and toothed whales (Brewer et al., 2007). Pelagic production is phytoplankton-based, with hot spots around oceanic reefs and islands (Brewer et al., 2007)

KEF Name	Woodside Activity Area			Values[1]	Description
	Browse	NWS/S	NW Cape		
Ancient coastline at 125 m depth contour	✓	✓	✓	Unique seafloor feature with ecological properties of regional significance Provides areas of hard substrate and therefore 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 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)
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)
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 located about 150 km north of Dampier on the Rowley shelf at depths of 33–77 m (Falkner et al., 2009). Studies by Abdul Wahab et al. (2018) found a number of hard coral and sponge species in water depths less than 40 m. One hundred and seventy (170) different species of fishes were detected with greatest species richness and abundance in shallow habitats (Abdul Wahab et al., 2018). Fish species present include a number of 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 that the shoal is likely to be an area of high productivity

KEF Name	Woodside Activity Area			Values[1]	Description
	Browse	NWS/S	NW 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 Rowley Shoals KEF is adjacent to the three nautical mile State waters limit surrounding Clerke Reef and Imperieuse Reef, and include the Mermaid Reef Marine Park as described in **Section 11**. 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)
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 approximately 1000 m	The Exmouth Plateau is a large, mid-slope, continental margin plateau that lies off the northwest coast of Australia. It ranges in depth from about 500 to more than 5000 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 deep water flow and be associated with the generation of internal tides; both of which may subsequently contribute to the upwelling of deeper, nutrient-rich waters closer to the surface (Brewer et al., 2007). Satellite observations suggest that productivity is enhanced along the northern and southern boundaries of the plateau (Brewer et al., 2007). Sediments on the plateau suggest that 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
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	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, large predatory fish, and seabirds are known to occur in this area

KEF Name	Woodside Activity Area			Values[1]	Description
	Browse	NWS/S	NW Cape		
				fish, sharks, toothed whales and dolphins	
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, large predatory fish, and seabirds 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 11**
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 the Department of Agriculture, Water and the Environment (DAWE) SPRAT database.

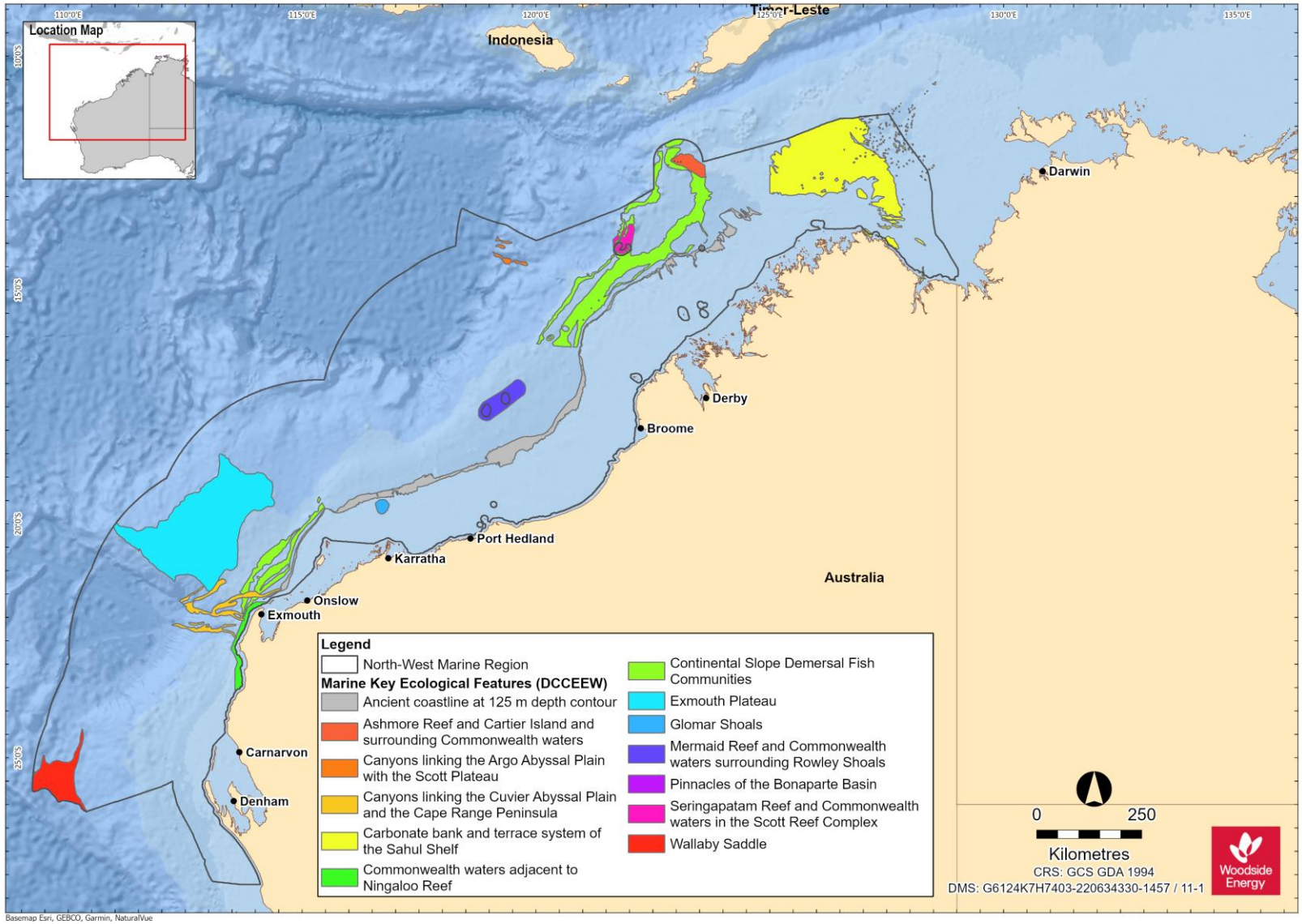


Figure 10-1 Key Ecological Features (KEFs) within the NWMR (data source: DCCEEW, 2024d)

Table 10-2 Key Ecological Features (KEF) within the SWMR

KEF Name	Values[1]	Description
Albany Canyons group and adjacent shelf break	High productivity and aggregations of marine life, and unique seafloor feature with ecological properties of regional significance Both benthic and demersal habitats within the feature are of conservation value	The Albany Canyons group is thought to be associated with small, periodic subsurface upwelling events, which may drive localised regions of high productivity. The canyons are known to be a feeding area for sperm whale and sites of orange roughy aggregations. Anecdotal evidence also indicates that this area supports fish aggregations that attract large predatory fish and sharks
Ancient coastline at 90-120 m depth	Relatively high productivity and aggregations of marine life, and high levels of biodiversity and endemism The feature creates topographic complexity, that may facilitate benthic biodiversity and enhanced biological productivity	Benthic biodiversity and productivity occur where the ancient coastline forms a prominent escarpment, such as in the western Great Australian Bight, where the sea floor is dominated by sponge communities of significant biodiversity and structural complexity
Cape Mentelle upwelling	Facilitates nutrient upwelling, supporting high productivity and diverse aggregations of marine life	The Cape Mentelle upwelling draws relatively nutrient-rich water from the base of the Leeuwin Current, up the continental slope and onto the inner continental shelf, where it results in phytoplankton blooms at the surface. The phytoplankton blooms provide the basis for an extended food chain characterised by feeding aggregations of small pelagic fish, larger predatory fish, seabirds, dolphins and sharks
Commonwealth marine environment surrounding the Houtman Abrolhos Islands (and adjacent shelf break)	High levels of biodiversity and endemism within benthic and pelagic habitats	The Houtman Abrolhos Islands and surrounding reefs support a unique mix of temperate and tropical species, resulting from the southward transport of species by the Leeuwin Current over thousands of years. The Houtman Abrolhos Islands are the largest seabird breeding station in the eastern Indian Ocean. They support more than one million pairs of breeding seabirds
Commonwealth marine environment surrounding the Recherche Archipelago	Aggregations of marine life and high levels of biodiversity and endemism within benthic and demersal communities	The Recherche Archipelago is the most extensive area of reef in the SWMR. Its reef and seagrass habitat supports a high species diversity of warm temperate species, including 263 known species of fish, 347 known species of molluscs, 300 known species of sponges, and 242 known species of macroalgae. The islands also provide haul-out (resting areas) and breeding sites for Australian sea lions and New Zealand fur seals

KEF Name	Values[1]	Description
Commonwealth marine environment within and adjacent to the west-coast inshore lagoons	High productivity and aggregations of marine life within benthic and pelagic habitats Important for benthic productivity and recruitment for a range of marine species	These lagoons are important for benthic productivity, including macroalgae and seagrass communities, and breeding and nursery aggregations for many temperate and tropical marine species. They are important areas for the recruitment of commercially and recreationally important fish species. Extensive schools of migratory fish visit the area annually, including herring, garfish, tailor and Australian salmon
Commonwealth marine environment within and adjacent to Geographe Bay	High productivity and aggregations of marine life, and high levels of biodiversity, recruitment within benthic and pelagic communities	Geographe Bay is known for its extensive beds of tropical and temperate seagrass that support a diversity of species, many of them not found anywhere else. The bay provides important nursery habitat for many species. Juvenile dusky whaler sharks use the shallow seagrass habitat as nursery grounds for several years, before ranging out to adult feeding grounds along the shelf break. The seagrass also provides valuable habitat for fish and invertebrates (Carruthers et al., 2007). It is also an important resting area for migratory humpback whales
Diamantina Fracture Zone	Unique seafloor feature with ecological properties of regional significance which apply to its benthic and demersal habitats	The Diamantina Fracture Zone is a rugged, deep-water environment of seamounts and numerous closely spaced troughs and ridges. Very little is known about the ecology of this remote, deep-water feature, but marine experts suggest that its size and physical complexity mean that it is likely to support deep-water communities characterised by high species diversity, with many species found nowhere else
Naturaliste Plateau	Unique seafloor feature with ecological properties of regional significance including high species diversity and endemism which apply to its benthic and demersal habitats	The Naturaliste Plateau is Australia's deepest temperate marginal plateau. The combination of its structural complexity, mixed water dynamics and relative isolation indicate that it supports deep-water communities with high species diversity and endemism
Perth Canyon and adjacent shelf break, and other west-coast canyons	An area of higher productivity that attracts feeding aggregations of deep-diving mammals and large predatory fish. It is also recognised as a unique seafloor feature with ecological properties of regional significance	The Perth Canyon is the largest known undersea canyon in Australian waters. Deep ocean currents rise to the surface, creating a nutrient-rich cold-water habitat attracting feeding aggregations of deep-diving mammals, such as pygmy blue whales and large predatory fish that feed on aggregations of small fish, krill and squid
Western demersal slope and associated fish communities of the Central Western Province	Provides important habitat for demersal fish communities and supports species groups that are nationally or regionally important to biodiversity	The western demersal slope provides important habitat for demersal fish communities, with a high level of diversity and endemism. A diverse assemblage of demersal fish species below a depth of 400 m is dominated by relatively small benthic species such as grenadiers, dogfish and cucumber fish. Unlike other slope fish communities in Australia, many of these species display unique physical adaptations to feed on the sea floor (such as a mouth position adapted to bottom feeding), and many do not appear to migrate vertically in their daily feeding habits
Western rock lobster	A species that plays a regionally important ecological role	This species is the dominant large benthic invertebrate in the region. The lobster plays an important trophic role in many of the inshore ecosystems of the SWMR. Western rock lobsters are an important part of the food web on the inner shelf, particularly as juveniles.

KEF Name	Values[1]	Description

[1.] *Values description sourced from Marine bioregional plan for the South-west Marine Region (DSEWPAC, 2012b) and the Department of Agriculture, Water and the Environment (DAWE) SPRAT database*

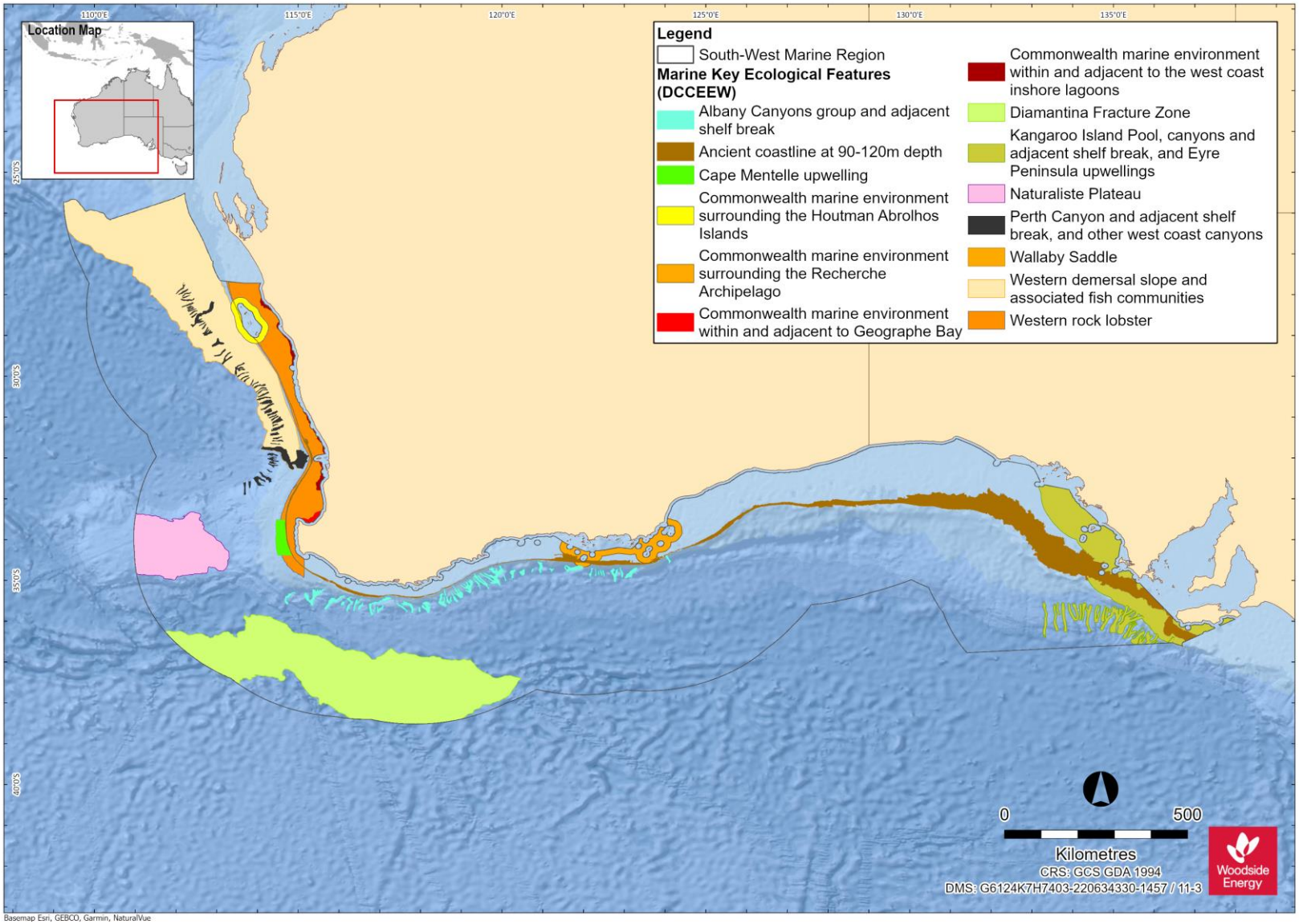


Figure 10-10-2. Key Ecological Features (KEFs) within the SWMR (data source: DCCEEW, 2024d)

Table 10-3 Key Ecological Features (KEF) within the NMR

KEF Name	Values[1]	Description
Carbonate bank and terrace system of the Van Diemen Rise	Important for its role in enhancing biodiversity and local productivity relative to its surrounds and for supporting relatively high species diversity The feature has been identified as a sponge biodiversity hotspot (Przeslawski et al. 2014)	The bank and terrace system of the Van Diemen Rise is part of the larger system associated with the Sahul Banks to the north and Londonderry Rise to the east; it is characterised by terrace, banks, channels and valleys. The variability in water depth and substrate composition may contribute to the presence of unique ecosystems in the channels. Species present include sponges, soft corals and other sessile filter feeders associated with hard substrate sediments of the deep channels; epifauna and infauna include polychaetes and ascidians. Olive ridley turtles, sea snakes and sharks are also found associated with this feature
Gulf of Carpentaria basin	Regional importance for biodiversity, endemism and aggregations of marine life relevant to benthic and pelagic habitats	The Gulf of Carpentaria basin is one of the few remaining near-pristine marine environments in the world. Primary productivity in the Gulf of Carpentaria basin is mainly driven by cyanobacteria that fix nitrogen but is also strongly influenced by seasonal processes. The soft sediments of the basin are characterised by moderately abundant and diverse communities of infauna and mobile epifauna dominated by polychaetes, crustaceans, molluscs, and echinoderms. The basin also supports assemblages of pelagic fish species including planktivorous and schooling fish, with top predators such as shark, snapper, tuna, and mackerel
Gulf of Carpentaria coastal zone	High productivity, aggregations of marine life (including several endemic species) and high biodiversity compared to broader region	Nutrient inflow from rivers adjacent to the NMR generates higher productivity and more diverse and abundant biota within the Gulf of Carpentaria coastal zone than elsewhere in the region. The coastal zone is near pristine and supports many protected species such as marine turtles, dugongs, and sawfishes. Ecosystem processes and connectivity remain intact; river flows are mostly uninterrupted by artificial barriers and healthy, diverse estuarine and coastal ecosystems support many species that move between freshwater and saltwater environments
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 Pinnacles of the Bonaparte Basin KEF is located within both the NWMR and NMR (refer **Table 10-1**)	Covering more than 520 km^2 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 that 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

KEF Name	Values[1]	Description
Plateaux and saddle north-west of the Wellesley Islands	High species abundance, diversity and endemism of marine life	Abundance and species density are high in the plateaux and saddle as a result of increased biological productivity associated with habitats rather than currents. Submerged reefs support corals that are typical of northern Australia, including corals that have bleach-resistant zooxanthellae; and particular reef fish species that are different to those found elsewhere in the Gulf of Carpentaria. Species present include marine turtles and reef fish such as coral trout, cod, mackerel, and shark. Seabirds frequent the plateaux and saddle, most likely due to the presence of predictable food resources for feeding offspring
Shelf break and slope of the Arafura Shelf	The shelf break and slope of the Arafura Shelf is defined as a key ecological feature for its ecological significance associated with productivity emanating from the slope It also forms part of a unique biogeographic province (Last et al., 2005)	The shelf break and slope of the Arafura Shelf is characterised by continental slope and patch reefs and hard substrate pinnacles. The ecosystem processes of the feature are largely unknown in the region; however, the Indonesian Throughflow and surface wind-driven circulation are likely to influence nutrients, pelagic dispersal and species and biological productivity in the region. Biota associated with the feature is largely of Timor–Indonesian Malay affinity
Submerged coral reefs of the Gulf of Carpentaria	High aggregations of marine life, biodiversity and endemism Twenty per cent of the reefs found in the NMR are situated within this KEF (Harris et al., 2007)	The submerged coral reefs of the Gulf of Carpentaria are characterised by submerged patch, platform and barrier reefs that form a broken margin around the perimeter of the Gulf of Carpentaria basin, rising from the sea floor at depths of 30–50 m. These reefs 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. Coral trout species that inhabit the submerged reefs are smaller than those found in the Great Barrier Reef and may prove to be an endemic sub-species
Tributary Canyons of the Arafura Depression	High productivity and high levels of species diversity and endemism of marine life within the benthic and pelagic habitats of the feature	The tributary canyons are approximately 80–100 m deep and 20 km wide. The largest of the canyons extend some 400 km from Cape Wessel into the Arafura Depression, and are the remnants of a drowned river system that existed during the Pleistocene era. Sediments in this feature are mainly calcium-carbonate rich, although sediment type varies from sandy substrate to soft muddy sediments and hard, rocky substrate. Marine turtles, deep sea sponges, barnacles and stalked crinoids have all been identified in the area

[1] *Values description sourced from Marine bioregional plan for the North Marine Region (DSEWPAC, 2012c) and Department of Agriculture, Water and the Environment (DAWE) SPRAT database.*

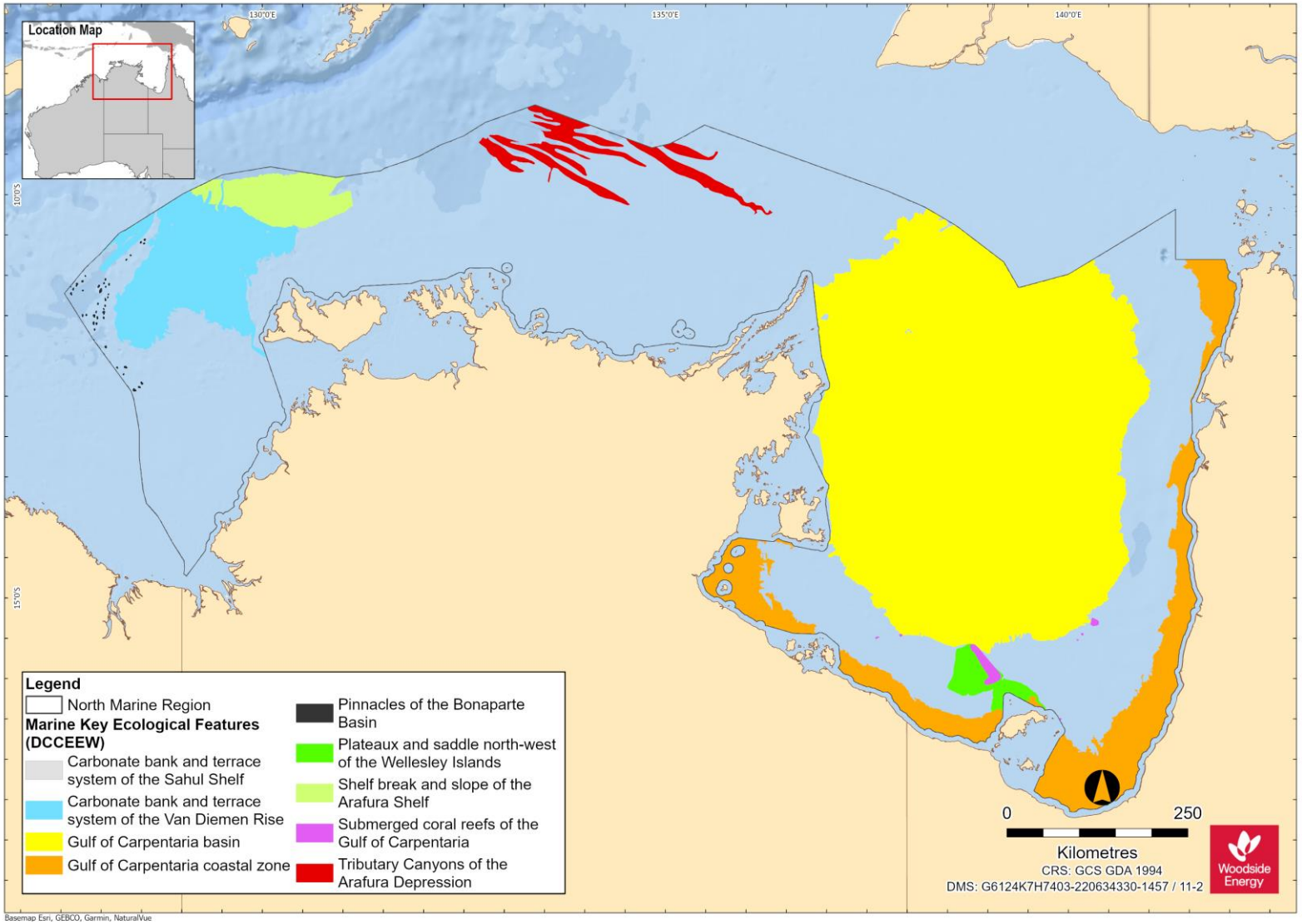


Figure -10-3. Key Ecological Features (KEFs) within the NMR (data source: DCCEEW, 2024d)

11. PROTECTED AREAS

11.1 Regional Context

Protected areas include World Heritage Properties, National Heritage Places, Wetlands of International Importance, Australian Marine Parks, State Marine Parks and Reserves, Threatened Ecological Communities and the Australian Whale Sanctuary. The PMST Reports (**APPENDIX A**. Protected Matter Search Reports for NWMR, SWMR and NMR) show that there are 29 protected areas found in the NWMR, 18 in the SWMR and 9 in the NMR.

Australian Marine Parks are outlined in, **Table 11-1, Table 11-3** and **Table 11-4.** All other protected areas of each of the marine regions NWMR, SWMR and NMR are outlined in **Table 11-6, Table** 11-7 and **Table 11-8**, respectively.

11.2 World Heritage Properties

World Heritage listings are sites of outstanding universal value and meet at least 10 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 12**.

The list of Australia's World Heritage Properties and the PMST Reports (**APPENDIX A**. Protected Matter Search Reports for NWMR, SWMR and NMR) show two World Heritage Properties within the NWMR (**Table 11-6**), one World Heritage Property within the SWMR (**Table 11-7**), and though not reported in the NMR PMST Report, Kakadu National Park World Heritage Area is included in **Table 11-8**.

11.3 National and Commonwealth Heritage Places–- Natural

The National Heritage List is Australia's list of natural, historic, and Indigenous places of outstanding significance to the nation. The National Heritage List Spatial Database describes the place name, class (Indigenous, natural, historic), and status. Commonwealth Heritage Places are a collection of sites recognised for their Indigenous, historical and/or natural values which are owned or controlled by the Australian Government.

Only National and Commonwealth Heritage Places classed as natural are discussed in this section. Heritage Places classed as Indigenous or historic are discussed in **Section 12**.

A search of the National Heritage List Spatial Database and the PMST Reports (**APPENDIX A**. Protected Matter Search Reports for NWMR, SWMR and NMR) identified three natural National Heritage Places in the NWMR (**Table 11-6**), one in the SWMR (**Table 11-7**) and for the NMR, Kakadu National Park (not included in the PMST report) is included in **Table 11-8**.

A search of the Commonwealth Heritage List identified six natural commonwealth heritage places within the NWMR (**Table 11-6**) and one within the SWMR (**Table 11-7**).

11.4 Wetlands of International Importance (listed under the Ramsar Convention)

Australia has 65 Ramsar wetlands that cover >8.3 million ha. 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**. Protected Matter Search Reports for NWMR, SWMR and NMR) identified four Ramsar Sites with coastal features within the NWMR (**Table 11-6**), five in the SWMR (**Table 11-7**) and two for the Northern Territory, included for the NMR (not included in the PMST report) (**Table 11-8**).

11.5 Australian Marine Parks

Australian Marine Parks (AMPs), proclaimed under the EPBC Act in 2007 and 2013, are located 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**. Protected Matter Search Reports for NWMR, SWMR and NMR) show 16 AMPs within the NWMR, 10 within the SWMR and eight within the NMR. These are displayed in **Figure 11-1**, Error! Reference source not found. and Error! Reference source not found. respectively.

The values of all marine parks identified in the North-West, South-West and North Marine Network management plans are described in **Table 11-1**, **Table 11-3** and **Table 11-4**, respectively.

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 11-2, Figure 11-1**) (Commonwealth of Australia, 2021).

11.5.1 North West Marine Parks Network

Table 11-1 describes Australian Marine Parks within the North West Marine Park Network, according to the North West Marine Parks Network Management Plan 2018 (DNP, 2018a).

Table 11-1 Summary of Commonwealth Australian Marine Parks (AMPs) 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 located approximately 270 km North-west of Broome, Western Australia, and extends to the limit of Australia's exclusive economic zone. This AMP covers an area of 146,003 km^2 and water depths between 220 m and 6000 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.
		Natural values The Marine Park includes ecosystems representative of: • Northwest Transition—an area of shelf break, continental slope, and the majority 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. Key ecological features: • Canyons linking the Argo Abyssal Plain with the Scott Plateau; and • 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. Biologically important areas 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 Socio-economic values of this Marine Park include commercial fishing and mining.

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 located approximately 630 km north of Broome and 110 km south of the Indonesian island of Roti. The Marine Park is located 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.
		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 Western Australian coast. This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas 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 dugong, 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 dugong, and has the highest diversity of hermatypic (reef-building) corals on the West Australian coast. It is known for its abundance and diversity of sea snakes, although populations at Ashmore Reef have been in decline since 1998. Key ecological features: • Ashmore Reef and Cartier Island and surrounding Commonwealth waters; and • 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.
		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 located approximately 300 km North-west of Carnarvon. It covers an area of 6177 km² and a water depth range of 1,500–6,000 m.

North West Marine Park Network	IUCN zones	Description and Values
		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, deep-water 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 (e.g. 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 located approximately 45 km south-east of Ashmore Reef Marine Park and 610 km north of Broome, Western Australia. Both Marine Parks are in Australia's External Territory of Ashmore and Cartier Islands and are also within an area subject to a Memorandum of Understanding (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.
		Natural values This 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. The reefs and islands of this bioregion are regarded as biodiversity hotspots. Key ecological features: • Ashmore Reef and Cartier Island and surrounding Commonwealth waters; and • 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 to the 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. Biologically important areas 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.

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. 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 1976:* 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) Multiple Use (VI)	**Description** The Dampier Marine Park is located approximately 10 km North-east of Cape Lambert and 40 km from Dampier, extending from the Western Australian state water boundary. This Marine Park covers an area of 1252 km² and a water depth range between less than 15 m and 70 m.
		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. Biologically important areas 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 people 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 listings apply to this Marine Park, however the Marine Park is approximately 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.

North West Marine Park Network	IUCN zones	Description and Values
Eighty Mile Beach Marine Park	Multiple Use (VI)	**Description** The Eighty Mile Beach Marine Park is located approximately 74 km North-east of Port Hedland, adjacent to the Western Australian 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.
		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. Biologically important areas 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.
		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, dugong, crabs and oysters. Access to sea country by families is important for cultural traditions, livelihoods and future socio-economic 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 Kimberley and Pilbara regions.
		Heritage values This Marine Park contains three known shipwrecks listed under the *Historic Shipwrecks Act 1976: Lorna Doone* (wrecked in 1923), *Nellie* (wrecked in 1908), and *Tifera* (wrecked in 1923). No international, Commonwealth or national 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 located approximately 20 km off the west coast of the Cape Range Peninsula, adjacent to the Ningaloo Reef Marine Park and the Western Australian Ningaloo Marine Park and extends to the limit of Australia's exclusive economic zone. This Marine Park covers an area of 81,766 km² and water depth varies between 15 m and 6,000 m.

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, benthic slope communities comprising tropical and temperate species; and • Northwest Province—an area of continental slope comprising diverse and endemic fish communities. Key ecological features: • Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula; • Commonwealth waters adjacent to Ningaloo Reef; • Continental slope demersal fish communities; and • 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. Biologically important areas 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.
		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 1976*.
		Social and economic values Commercial fishing, mining and recreation are important activities in this Marine Park.
Kimberley Marine Park	Habitat Protection (IV) National Park (II)	**Description** The Kimberley Marine Park is located approximately 100 km north of Broome, extending from the Western Australian state water boundary north from the Lacepede Islands to the Holothuria Banks offshore from Cape Bougainville. This Marine Park is

North West Marine Park Network	IUCN zones	Description and Values
	Multiple Use (VI)	adjacent to the Western Australian Lalanggarram/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.
		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 North-west and North Marine Regions and in the Northwest includes shelf break, continental slope, and the majority 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) ranging 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. Key ecological features: • The ancient coastline at the 125 m depth contour; and • The continental slope demersal fish communities. This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas 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 dugong 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 located 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, dugong, crabs and oysters. Access to sea country by families is important for cultural traditions, livelihoods and future socio-economic 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; and • Important pearl resources that were used in traditional trade through the wunan and in contemporary commercial agreements.

North West Marine Park Network	IUCN zones	Description and Values
		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 that all of 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 1976.* No international, Commonwealth or national heritage listings apply to the Marine Park, however the Marine Park is adjacent to the national heritage place of the West Kimberley.
		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 located approximately 280 km North-west of Broome, adjacent to the Argo–Rowley Terrace Marine Park and approximately 13 km from the Western Australian 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 North-west Shelf, and may also provide an upstream source for recruitment to reefs further south.
		Natural values This Marine Park includes examples of ecosystems representative of the Northwest Transition—an area of shelf break, continental slope, and the majority 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 key ecological feature 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. Biologically important areas 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 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.

North West Marine Park Network	IUCN zones	Description and Values
		This Marine Park contains one known shipwreck listed under the *Historic Shipwrecks Act 1976*: *Lively* (wrecked in 1810).
		Social and economic values Tourism, recreation, and scientific research are important activities in this Marine Park.
Montebello Marine Park	Multiple Use (VI)	**Description** The Montebello Marine Park is located offshore of Barrow Island and 80 km west of Dampier extending from the Western Australian State water boundary, and is adjacent to the Western Australian Barrow Island and Montebello Islands Marine Parks. This Marine Park covers an area of 3413 km² and water depths from less than 15 m to 150 m.
		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 key ecological feature of this Marine Park is the ancient coastline at the 125 m depth contour. This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas 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.
		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, however this Marine Park is adjacent to the Western Australia 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 1976: 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.
Ningaloo Marine Park	National Park (II) Recreational Use (IV)	**Description** The Ningaloo Marine Park stretches approximately 300 km along the west coast of the Cape Range Peninsula, and is adjacent to the Western Australian 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 Western Australian 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.
		Natural values This Marine Park includes examples of ecosystems representative of:

North West Marine Park Network	IUCN zones	Description and Values
		• 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; and • 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. Key ecological features: • Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula; • Commonwealth waters adjacent to Ningaloo Reef; and • 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. Biologically important areas within this Marine Park include breeding and / or 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 dugong 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 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 1976*.
		Social and economic values Tourism and recreation, including fishing, are important activities in this Marine Park.

North West Marine Park Network	IUCN zones	Description and Values
Roebuck Marine Park	Multiple Use (VI)	**Description** The Roebuck Marine Park is located approximately 12 km offshore of Broome and is adjacent to the Western Australian 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 Western Australian Yawuru Nagulagun/Roebuck Bay Marine Park, providing connectivity between offshore and inshore coastal waters of Roebuck Bay.
		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. Biologically important areas 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 dugong.
		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 that 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 socio-economic 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, however 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.
	Multiple Use (VI)	**Description**

North West Marine Park Network	IUCN zones	Description and Values
Shark Bay Marine Park		The Shark Bay Marine Park is located approximately 60 km offshore of Carnarvon, adjacent to the Shark Bay world heritage property and national heritage place. This Marine Park covers an area of 7443 km², extending from the Western Australian State water boundary, and a water depth range between 15 m and 220 m.
		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 – 100 m. The bioregion is a transitional zone between tropical and temperate species; and • 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. Biologically important areas 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, Western Australia World Heritage Property and Shark Bay, Western Australia National Heritage Place. The Marine Park contains approximately 20 known shipwrecks listed under the *Historic Shipwrecks Act 1976.*
		Social and economic values Tourism, commercial fishing, mining and recreation, including fishing, are important activities in the Marine Park.

11.5.2 Indian Ocean Territory

Error! Reference source not found. describes the values of the Indian Ocean territory Australian Marine Parks (Commonwealth of Australia, 2021)

Table 11-2 Summary of Commonwealth marine parks within Indian Ocean territories

Indian Ocean territory Marine Park	IUCN Zones	Values
Christmas Island Marine Park	National Park (II) Habitat Protection (IV)	**Description** Christmas Island Marine Park covers an area of 277,016 km^2 and extends from the island's shoreline to the limit of Australia's exclusive economic zone, approximately 200 nm from shore (except to the north of Christmas Island). This marine park adjoins the marine boundary of Christmas Island National Park (CINP), 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 and 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. Biologically important areas 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.
		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.
		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.
Cocos (Keeling) Islands Marine Park	National Park (II) Habitat Protection (IV)	**Description** Cocos (Keeling) Islands are located around 2,750 km North-west of Perth and the Cocos (Keeling) Islands Marine Park covers a 467,054 km^2 area, extending from most of the islands' shoreline to the limit of the Australian exclusive economic zone, approximately 100 nm from shore. The Cocos (Keeling) islands are a group of 27 tropical low-lying coral islands.
		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) as well as 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), as well as species such as dolphins, deep-sea fish and sharks that are or may be threatened elsewhere in the region.

Indian Ocean territory Marine Park	IUCN Zones	Values
		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. The lagoon and ocean are an important part of life for all community members living on the remote atoll.
		Social and economic values This Marine Park is valued for recreational and subsistence activities (i.e., fishing, boating, diving, snorkelling, kite surfing, and kayaking), tourism, scientific research, and educational activities.

11.5.3 South-west Marine Parks Network

Table 11-3 describes the Australian Marine Parks within the South-west Marine Parks Network (South-west Network), according to the South West Marine Parks Network Management Plan 2018 (DNP, 2018b)

Table 11-3 Summary of Commonwealth Australia Marine Parks (AMP)s for the South West Marine Park Network

South West Marine Park Network	IUCN zones	Natural Values
Abrolhos Marine Park	National Park (II) Habitat Protection (IV) Multiple use (VI) Special Purpose Zone (Trawl) (VI)	**Description** The Abrolhos Marine Park is located adjacent to the Western Australian Houtman Abrolhos Islands, covering a large offshore area extending from the Western Australian State water boundary to the edge of Australia's exclusive economic zone. It is located approximately 27 km south-west of Geraldton and extends north to approximately 330 km west of Carnarvon. The northernmost part of the shelf component of the Marine Park, north of Kalbarri, is adjacent to the Shark Bay World Heritage Area. This Marine Park covers an area of 88,060 km² and a water depth range between less than 15 m and 6,000 m.
		Natural values This Marine Park includes ecosystems representative of: • Central Western Province—characterised by a narrow continental slope incised by many submarine canyons and the most extensive area of continental rise in any of Australia's marine regions. A significant feature within the area are several eddies that form off the Leeuwin Current at predictable locations, including west of the Houtman Abrolhos Islands; • Central Western Shelf Province— a predominantly flat, sandy and low nutrient area, in water depths between 50 and 100 m. Significant seafloor features of this area include a deep hole and associated area of banks and shoals offshore of Kalbarri. The area is a transitional zone between tropical and temperate species; • Central Western Transition—a deep ocean area characterised by large areas of continental slope, a range of significant seafloor features including the Wallaby Saddle, seasonal and sporadic upwelling, and benthic slope communities comprising tropical and temperate species; and • South-west Shelf Transition—a narrow continental shelf that is noted for its physical complexity. The Leeuwin Current has a significant influence on the biodiversity of this nearshore area as it pushes subtropical water southward along the area's western edge. The area contains a diversity of tropical and temperate marine life including a large number of endemic fauna species. Key ecological features: • Commonwealth marine environment surrounding the Houtman Abrolhos Islands; • Demersal slope and associated fish communities of the Central Western Province; • Mesoscale eddies; • Perth Canyon and adjacent shelf break, and other west-coast canyons; • Western rock lobster; • Ancient coastline between 90 m and 120 m depth; and • Wallaby Saddle.

South West Marine Park Network	IUCN zones	Natural Values
		This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include foraging and breeding habitat for seabirds, foraging habitat for Australian sea lions and white sharks, and a migratory pathway for humpback and pygmy blue whales. The Marine Park is adjacent to the northernmost Australian sea lion breeding colony in Australia on the Houtman Abrolhos Islands.
		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 Nanda and Naaguja People have responsibilities for sea country in this Marine Park. Traditional owners have strong stories that connect ocean and land. Artefacts from ancestors are abundant on islands in the adjacent State marine park. The Yamatji Marlpa Aboriginal Corporation is the Native Title Representative Body for the Yamatji region.
		Heritage values No international heritage listings apply to this Marine Park, however this Marine Park is adjacent to the Western Australian Shark Bay World Heritage Property, listed as an area of outstanding universal value under the World Heritage Convention in 1991, meeting world heritage listing criteria vii, viii, ix, and x. No Commonwealth or national heritage listings apply to this Marine Park ; however this Marine Park is adjacent to the Western Australian Shark Bay National Heritage Place. This Marine Park contains 11 known shipwrecks listed under the *Historic Shipwrecks Act 1976*. The *Zuytdorp* (wrecked in 1712) historic shipwreck protected zone lies in State waters adjacent to the northernmost part of the shelf component of the Marine Park, north of Kalbarri. The *HMAS Sydney II* and *HSK Kormoran* Shipwreck Sites (1941) lie at 2,500 m depth about 75 km east of the northern part of the Marine Park. This site is on the National Heritage List and a historic shipwreck protected zone. The *Batavia* (wrecked on the adjacent Abrolhos Islands in 1629) Shipwreck Site and Survivor Camps Area are on the National Heritage List.
		Social and economic values Tourism, commercial fishing, mining, recreation including fishing, are important activities in the Marine Park.
Bremer Marine Park	National Park Zone (II) Special Purpose Zone (Mining Exclusion) (VI)	**Description** The Bremer Marine Park is located approximately half-way between Albany and Esperance, offshore from the Fitzgerald River National Park, extending from the Western Australian State water boundary. This Marine Park covers an area of 4,472 km² and water depths from 15 m to 5,000 m.
		Natural values This Marine Park includes examples of ecosystems representative of: • Southern Province—includes the deepest ocean areas of the Australian exclusive economic zone, reaching depths of around 5,900 m, and is characterised by a long continental slope incised by numerous, well-developed submarine canyons; and • South-west Shelf Province—marine life in this area is very diverse and likely influenced by the warm waters of the Leeuwin Current. The sheltered bays along the south coast are important southern right whale calving areas. Key ecological features: • Albany Canyon group and adjacent shelf break; and • Ancient coastline between 90 m and 120 m depth.

South West Marine Park Network	IUCN zones	Natural Values
		This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include foraging habitat for seabirds, Australian sea lions, and white sharks, a migratory pathway for humpback whales, and a significant calving area for southern right whales. This Marine Park includes canyons—important aggregation areas for killer 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 Noongar people have responsibilities for sea country in this Marine Park. Local traditional owners recognise Kaart, Koort and Waarnginy (head, heart and talking) as bringing together the narratives and protocols that have been practiced for thousands of years and the kinship that influences all stages and cycles of life. Traditional owners have responsibility for cultural values and are focussed on the creation and regeneration of spiritual, ethical, cultural and practical benefits and opportunities for marine systems. The South West Aboriginal Land and Sea Council is the Native Title Service Provider for the South-west region.
		Heritage values No international, Commonwealth or national heritage listings apply to this Marine Park.
		Social and economic values Tourism, commercial fishing and recreation, including fishing, are important activities in this Marine Park.
Eastern Recherche Marine Park	National Park Zone (II) Special Purpose Zone (VI)	**Description** The Eastern Recherche Marine Park is located approximately 135 km east of Esperance, adjacent to the Recherche Archipelago, close to the Western Australian Cape Arid National Park. This Marine Park covers an area of 20,575 km², extending from the Western Australia State water boundary to the edge of Australia's exclusive economic zone, and a water depth range from less than 15 m to 6,000 m.
		Natural values This Marine Park includes ecosystems representative of: • South-west Shelf Province—marine life in this area is very diverse and likely influenced by the warm waters of the Leeuwin Current. It includes globally important biodiversity hotspots, such as the waters surrounding the Recherche Archipelago; • Southern Province—includes the deepest ocean areas of the Australian exclusive economic zone, reaching depths of around 5,900 m, and is characterised by a long continental slope, numerous, well-developed submarine canyons, and extensive mid-slope terraces; and • Great Australian Bight Shelf Transition—a vast and shallow area characterised by an extensive area of flat continental shelf. The invertebrate communities that inhabit the seafloor are among the most diverse in the world. The inshore areas of the bioregion are globally important for threatened southern right whale and the Australian sea lion. Key ecological features: • Mesoscale eddies; • Ancient coastline between 90 m and 120 m depth; and • Commonwealth marine environment surrounding the Recherche Archipelago.

South West Marine Park Network	IUCN zones	Natural Values
		This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include foraging habitat for seabirds, Australian sea lions and white sharks, and a calving buffer area for southern right 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 Ngadju and Esperance Nyungar people have responsibilities for sea country in this Marine Park. Local traditional owners recognise Kaart, Koort and Waarnginy (head, heart and talking) as bringing together the narratives and protocols that have been practiced for thousands of years and the kinship that influences all stages and cycles of life. Traditional owners have responsibility for cultural values and are focussed on the creation and regeneration of spiritual, ethical, cultural and practical benefits and opportunities for marine systems. The South West Aboriginal Land and Sea Council is the Native Title Service Provider for the South-west region.
		Heritage values No international, Commonwealth or national heritage listings apply to this Marine Park. This Marine Park contains two known shipwrecks listed under the *Historic Shipwrecks Act 1976—Rodondo* (wrecked in 1894) and *Start* (wrecked in 1879).
		Social and economic values Tourism, commercial fishing, mining and recreation, including fishing, are important activities in this Marine Park.
Geographe Marine Park	National Park Zone (II) Habitat Protection (IV) Multiple Use (VI) Special Purpose (Mining Exclusion Zone) (VI)	**Description** The Geographe Marine Park is located in Geographe Bay, approximately 8 km west of Bunbury and 8 km north of Busselton, adjacent to the Western Australian Ngari Capes Marine Park. This Marine Park covers an area of 977 km^2, extending from the Western Australian State water boundary, and a water depth range between 15 m and 70 m.
		Natural values This Marine Park includes examples of ecosystems representative of the South-west Shelf Province—an area of diverse marine life, influenced by the warm waters of the Leeuwin Current. The bioregion includes globally important biodiversity hotspots, such as the waters off Geographe Bay. Key ecological features: • Commonwealth marine environment within and adjacent to Geographe Bay; and • Western rock lobster. This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include foraging habitat for seabirds, a migratory pathway for humpback and pygmy blue whales, and a calving buffer area for southern right 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 Noongar people have responsibility for sea country in this Marine Park. Traditional owners have maintained cultural responsibilities for sea country as passed down from elders, to keep the oceans healthy, to support spiritual wellbeing and to uphold and protect obligatory cultural responsibilities for future generations.

South West Marine Park Network	IUCN zones	Natural Values
		The South West Aboriginal Land and Sea Council is the Native Title Service Provider for the South-west region.
		Heritage values No international, Commonwealth or national heritage listings apply to this Marine Park. This Marine Park contains eight known shipwrecks listed under the *Historic Shipwrecks Act 1976.*
		Social and economic values Tourism, commercial fishing and recreation, including fishing, are important activities in the Marine Park.
Great Australian Bight Marine Park	National Park Zone (II), Multiple Use Zone (VI) Special Purpose Zone (Mining Exclusion) (VI) Special Purpose Zone (VI)	**Description** The Great Australian Bight Marine Park is located approximately 12 km south-east of Eucla and 174 km west of Ceduna, adjacent to the South Australian Far West Coast and Nuyts Archipelago Marine Parks. This Marine Park covers an area of 45,822 km², extending from South Australian State water boundary to the edge of Australia's exclusive economic zone, and a water depth range between less than 15 m and 6,000 m.
		Natural values This Marine Park includes examples of ecosystems representative of: • Great Australian Bight Shelf Transition—a vast and shallow area, characterised by an extensive area of flat continental shelf. The invertebrate communities that inhabit the seafloor are among the most diverse in the world. The inshore areas of the bioregion are globally important for the threatened southern right whale and the Australian sea lion; • Southern Province—includes the deepest ocean areas of the Australian exclusive economic zone, reaching depths of around 5,900 m, and that is characterised by a long continental slope, numerous, well-developed submarine canyons, and extensive mid-slope terraces such as the Ceduna Terrace. Key ecological features: • Ancient coastline between 90 m and 120 m depth; • Benthic invertebrate communities of the eastern Great Australian Bight; and • Small pelagic fish of the South-west Marine Region. This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include foraging habitat for seabirds, Australian sea lions, white sharks and pygmy blue and sperm whales, and a calving area, migratory pathway and large aggregation area for southern right 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 Mirning and Wirangu people have responsibilities for sea county in this Marine Park. The far west coast region of South Australia includes over 1,000 km of coastline along the Nullarbor Cliffs of the Great Australian Bight and the Nyuts Archipelago, and supports a sea-based tradition and culture. The Mirning people have a strong connection to land and sea country of the Nullarbor, and the Wirangu people have a strong connection to land and sea country across the remainder of the far west coastal region. Fishing is woven into the beliefs and values of this region, through the use of resources such as shell fish, periwinkles, abalone and razorfish; and the sharing of traditional fishing knowledge, catch and meals. The care and protection of these waters, the coastline, marine life and resources correspond directly with cultural stories, sites and knowledge. South Australian Native Title Services is the native title service provider for the South Australian region.

South West Marine Park Network	IUCN zones	Natural Values
		Heritage values No international, Commonwealth or national heritage listings apply to this Marine Park.
		Social and economic values Tourism, commercial fishing, and mining are important activities in this Marine Park.
Jurien Marine Park	National Park Zone (II) Special Purpose (VI)	**Description** The Jurien Marine Park is located approximately 148 km north of Perth and 155 km south of Geraldton, adjacent to the Western Australian Jurien Bay Marine Park. This Marine Park covers an area of 1,851 km² of continental shelf, extending from the Western Australian State water boundary, and a water depth range between 15 m and 220 m.
		Natural values This Marine Park includes ecosystems representative of: • South-west Shelf Transition—consists of a narrow continental shelf that is noted for its physical complexity. The Leeuwin Current has a significant influence on the biodiversity of this nearshore area as it pushes subtropical water southward along the bioregion's western edge. The area contains a diversity of tropical and temperate marine life including a large number of endemic fauna species; and • Central Western Province—this Marine Park includes a small component of this bioregion, characterised by a narrow continental slope and influenced by the Leeuwin Current. Key ecological features: • Ancient coastline between 90 m and 120 m depth; • Demersal slope and associated fish communities of the Central Western Province; and • Western rock lobster. This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include foraging habitat for seabirds, Australian sea lions and white sharks, and a migratory pathway for humpback and 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 Noongar people have responsibilities for sea country in this Marine Park. Traditional owners have strong stories that connect ocean and land. Artefacts from ancestors are abundant on islands in the adjacent State marine park. The South West Aboriginal Land and Sea Council is the Native Title Service Provider for the South-west region.
		Heritage values No international, Commonwealth or national heritage listings apply to this Marine Park. This Marine Park contains two known shipwrecks listed under the *Historic Shipwrecks Act 1976— SS Cambewarra* (wrecked in 1914) and *Oleander* (wrecked in 1884).
		Social and economic values Tourism, commercial fishing, mining and recreation, including fishing, are important activities in this Marine Park.
Murat Marine Park	National Park Zone (II)	**Description**

South West Marine Park Network	IUCN zones	Natural Values
		The Murat Marine Park is located 86 km off the west coast south-west of Ceduna, south of the South Australian Nuyts Archipelago Marine Park. This Marine Park covers an area of 938 km² and is relatively shallow, with water depths between less than 15 m and 70 m.
		Natural values This Marine Park includes examples of ecosystems representative of the Great Australian Bight Shelf Transition—a vast and shallow area characterised by an extensive area of flat continental shelf. The invertebrate communities that inhabit the seafloor are among the most diverse in the world. The inshore areas of the bioregion are globally important for the threatened southern right whale and the Australian sea lion. Key ecological features: • Benthic invertebrate communities of the eastern Great Australian Bight; and • Small pelagic fish of the South-west Marine Region. This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include foraging habitat for seabirds and Australian sea lions.
		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 Mirning people have a strong attachment to land and sea country of the Nullarbor, while the Wirangu people have a strong attachment to land and sea country across the remainder of the far west coast region. The care and protection of the waters, coastline, marine creatures, marine environments and sea resources correspond directly with cultural stories and important cultural sites and knowledge. South Australian Native Title Services is the native title service provider for the South Australian region.
		Heritage values No international, Commonwealth or national heritage listings apply to this Marine Park.
		Social and economic values The remoteness of this Marine Park makes access difficult with most recreational and tourism activities confined to State waters. Commercial ships may pass through this Marine Park to and from the port of Ceduna.
Perth Canyon Marine Park	National Park (II) Habitat Protection (IV) Multiple Use (VI)	**Description** The Perth Canyon Marine Park is located approximately 52 km west of Perth and approximately 19 km west of Rottnest Island. This Marine Park covers an area of 7,409 km² and water depths range between 120 m and 5,000 m.
		Natural values This Marine Park includes examples of ecosystems representative of: • Central Western Province—characterised by a narrow continental slope incised by many submarine canyons, including Perth Canyon, and the most extensive area of continental rise in any of Australia's marine regions. A significant feature within the area are several eddies that form off the Leeuwin Current at predictable locations, including the Perth Canyon; • South-west Shelf Province—marine life in this area is diverse and influenced by the warm waters of the Leeuwin Current;

South West Marine Park Network	IUCN zones	Natural Values
		• South-west Transition—significant features of this area include the submarine canyons that incise the northern parts of the slope and the deep-water mixing that results from the dynamics of major ocean currents when these meet the seafloor, particularly in the Perth Canyon; and • South-west Shelf Transition—consists of a narrow continental shelf that is noted for its physical complexity. The Leeuwin Current has a significant influence on the biodiversity of this nearshore area as it pushes subtropical water southward along the area's western edge. The area contains a diversity of tropical and temperate marine life including many endemic fauna species. Key ecological features: • Perth Canyon and adjacent shelf break, and other west-coast canyons; • Demersal slope and associated fish communities of the Central Western Province; • Western rock lobster; and • Mesoscale eddies. This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include foraging habitat for seabirds, Antarctic blue, pygmy blue and sperm whales, a migratory pathway for humpback, Antarctic blue and pygmy blue whales, and a calving buffer area for southern right 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 Swan River traditional owners have responsibilities for sea country in this Marine Park. Traditional owners have maintained cultural responsibilities for sea country as passed down from elders, to keep the oceans healthy, to support spiritual wellbeing and to uphold and protect obligatory cultural responsibilities for future generations. The South West Aboriginal Land and Sea Council is the Native Title Service Provider for the South-west region.
		Heritage values No international, Commonwealth or national heritage listings apply to this Marine Park.
		Social and economic values Tourism, commercial shipping, commercial fishing, recreation, including fishing, and defence training are important activities in this Marine Park.
Southern Kangaroo Island Marine Park	Special Purpose Zone (Mining Exclusion) (VI)	**Description** The Southern Kangaroo Island Marine Park is located approximately 140 km south-west of Adelaide, adjacent to the South Australian Kangaroo Island Marine Park. This Marine Park covers an area of 630 km² extending from the South Australian State water boundary, and water depth ranges between 15 m and 100 m.
		Natural values The Marine Park includes examples of ecosystems representative of the Spencer Gulf Shelf. Seasonal winds and ocean currents interact with seafloor features to produce small seasonal upwellings that are important for biological productivity. The area is noted for its diverse seafloor communities, productivity hotspots and aggregations of marine life associated with seasonal upwellings of nutrient-rich water. A key ecological feature of this Marine Park is the Kangaroo Island Pool, canyons and adjacent shelf break, and Eyre Peninsula upwellings.

South West Marine Park Network	IUCN zones	Natural Values
		This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include foraging habitat for seabirds, Australian sea lions and white sharks and a calving buffer area for southern right 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. South Australian Native Title Services is the Native Title Service Provider for the South Australian region.
		Heritage values No international, Commonwealth or national heritage listings apply to this Marine Park.
		Social and economic values Tourism, commercial fishing and recreation are important activities in this Marine Park. The Kangaroo Island community values the island's unique qualities and character.
South-west Corner Marine Park	National Park (II) Habitat Protection (IV) Multiple Use (VI) Special Purpose (VI) Special Purpose (Mining Exclusion)	**Description** The South-west Corner Marine Park is located adjacent to the Western Australian Ngari Capes Marine Park, covering an extensive offshore area that is closest to Western Australia State waters approximately 48 km west of Esperance, 73 km west of Albany and 68 km west of Bunbury, and extends to the edge of Australia's exclusive economic zone. This Marine Park covers an area of 271,833 km² and a water depth range from less than 15 m to 6,400 m.
		Natural values This Marine Park includes ecosystems representative of: • Southern Province—includes the deepest ocean areas of the Australian exclusive economic zone, reaching depths of around 5,900 m, and is characterised by a long continental slope incised by numerous, well-developed submarine canyons and the Diamantina Fracture Zone, a rugged area of deep seafloor comprising seamounts and many ridges and troughs. • South-west Transition—the main features of this area are the Naturaliste Plateau, the deepest submarine plateau along Australia's continental margins. The Naturaliste Plateau supports rich and diverse biological communities. Deep-water mixing results from the dynamics of major ocean currents when these meet the seafloor. • South-west Shelf Province—marine life in this area is diverse and influenced by the warm waters of the Leeuwin Current. A small upwelling of nutrient-rich water off Cape Mentelle during summer increases productivity locally, attracting aggregations of marine life. Key ecological features: • Albany Canyon group and adjacent shelf break; • Cape Mentelle upwelling; • Diamantina Fracture Zone; • Naturaliste Plateau; • Western rock lobster; and • Ancient coastline between 90 m and 120 m depth.

South West Marine Park Network	IUCN zones	Natural Values
		This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include foraging habitat for seabirds, Australian sea lions, white sharks and sperm whales, a migratory pathway for Antarctic blue, pygmy blue and humpback whales, and a calving buffer area for southern right 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 Nyungar/Noongar people have responsibilities for sea country in this Marine Park. Traditional owners have maintained cultural responsibilities for sea country as passed down from elders, to keep the oceans healthy, to support spiritual wellbeing and to uphold and protect obligatory cultural responsibilities for future generations. The South West Aboriginal Land and Sea Council is the Native Title Service Provider for the South-west region.
		Heritage values No international, Commonwealth or national heritage listings apply to the Marine Park. This Marine Park contains 10 known shipwrecks listed under the *Historic Shipwrecks Act 1976.*
		Social and economic values Tourism, commercial fishing, commercial shipping, and recreation, including fishing, are important activities in this Marine Park.
Twilight Marine Park	National Park Zone (II) Special Purpose Zone (Mining Exclusion) (VI)	**Description** The Twilight Marine Park is located approximately 245 km south-west of Eucla and 373 km north-east of Esperance, adjacent to the Western Australian State water boundary. This Marine Park covers an area of 4,641 km² and water depths between less than 15 m and 70 m.
		Natural values This Marine Park includes ecosystems representative of the Great Australian Bight Shelf Transition—a vast and shallow area characterised by an extensive area of flat continental shelf. There are diverse invertebrate communities inhabiting the seafloor. The inshore areas of the bioregion are globally important for the threatened southern right whale and the Australian sea lion. This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include foraging habitat for seabirds, Australian sea lions and white sharks, and a calving buffer area for southern right 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 Mirning and Spinifex people have responsibilities for sea country in this Marine Park. Local traditional owners recognise Kaart, Koort and Waarnginy (head, heart and talking) as bringing together the narratives and protocols that have been practiced for thousands of years and the kinship that influences all stages and cycles of life. Traditional owners have responsibility for cultural values and are focussed on the creation and regeneration of spiritual, ethical, cultural and practical benefits and opportunities for marine systems. The Goldfields Land and Sea Council is the Native Title Representative Body for the Goldfields region.

South West Marine Park Network	IUCN zones	Natural Values
		Heritage values No international, Commonwealth or national heritage listings apply to this Marine Park**.**
		Social and economic values Tourism and commercial and recreational fishing are important activities in this Marine Park.
Two Rocks Marine Park	Multiple Use (VI)	**Description** The Two Rocks Marine Park is located approximately 25 km north-west of Perth, to the north-west of the Western Australian Marmion Marine Park. The Marine Park covers an area of 882 km², extending from the Western Australian State water boundary, and a water depth range from 15 m to 120 m.
		Natural values This Marine Park includes examples of ecosystems representative of the South-west Shelf Transition—an area of narrow continental shelf that is noted for its physical complexity. The Leeuwin Current has a significant influence on the biodiversity of this nearshore area as it pushes subtropical water southward along the area's western edge. The area contains a diversity of tropical and temperate marine life including endemic fauna species. The inshore lagoons are thought to be important areas for benthic productivity and recruitment for marine species. Key ecological features: • Commonwealth marine environment within and adjacent to the west-coast inshore lagoons; • Western rock lobster; and • Ancient coastline between 90 m and 120 m depth. This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include foraging habitat for seabirds and Australian sea lions, a migratory pathway for humpback and pygmy blue whales, and a calving buffer area for southern right 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 Swan River traditional owners have responsibilities for sea country in this Marine Park. Traditional owners have maintained cultural responsibilities for sea country as passed down from elders, to keep the oceans healthy, to support spiritual wellbeing and to uphold and protect obligatory cultural responsibilities for future generations. The South West Aboriginal Land and Sea Council is the Native Title Service Provider for the South-west region.
		Heritage values No international, Commonwealth or national heritage listings apply to this Marine Park.
		Social and economic values Tourism, commercial fishing, recreation, including fishing, and scientific research are important activities in this Marine Park.
Western Eyre Marine Park	National Park Zone (II) Multiple Use Zone (VI) Special Purpose Zone (VI) Special Purpose Zone (Trawl) (VI)	**Description** The Western Eyre Marine Park is located approximately 123 km² south-west of Port Lincoln and 28 km west of Streaky Bay, adjacent to South Australia's Investigator, West Coast Bays and Nuyts Archipelago Marine Parks. This Marine Park covers an area of 57,944 km², extending from the South Australian State water boundary to the edge of Australia's exclusive economic zone, and water depths range between 15 m and more than 6,000 m.

South West Marine Park Network	IUCN zones	Natural Values
		Natural values This Marine Park includes ecosystems representative of*:* • Spencer Gulf Shelf—seasonal winds and ocean currents interact with seafloor features to produce a number of small seasonal upwellings that are important for biological productivity. The area is noted for its very diverse seafloor communities, productivity hotspots and aggregations of marine life associated with seasonal upwellings of nutrient-rich water; • Great Australian Bight Shelf Transition—a vast and shallow area, characterised by an extensive area of flat continental shelf. The invertebrate communities that inhabit the seafloor are among the most diverse in the world. The inshore areas of the bioregion are globally important for the threatened southern right whale and the Australian sea lion; and • Southern Province—includes the deepest ocean areas of the Australian exclusive economic zone, reaching depths of around 5,900 m, and is characterised by a long continental slope; numerous, well-developed submarine canyons; and extensive mid-slope terraces such as the Ceduna Terrace. Key ecological features: • Ancient coastline between 90 m and 120 m depth; • Kangaroo Island Pool, canyons and adjacent shelf break, and Eyre Peninsula upwellings; • Mesoscale eddies; • Benthic invertebrate communities of the eastern Great Australian Bight; and • Small pelagic fish of the South-west Marine Region. This Marine Park provides connectivity between deeper offshore waters and the adjacent South Australian Investigator, West Coast Bays and Nuyts Archipelago Marine Parks. Waters surrounding the Nuyts Archipelago and Investigator Group form part of the ecologically important offshore islands that protect the coastline. This Marine Park is a hotspot for productivity, with feeding aggregations of marine mammals, sharks and seabirds. This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include breeding and foraging habitat for seabirds, foraging habitat for Australian sea lions, white sharks and pygmy blue and sperm whales, and a calving buffer area for southern right 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 far west coast region of South Australia includes over 1,000 km of coastline along the Nullarbor Cliffs of the Great Australian Bight and the Nyuts Archipelago, and supports a sea-based tradition and culture. The Mirning people have a strong connection to land and sea country of the Nullarbor, and the Wirangu people have a strong connection to land and sea country across the remainder of the far west coastal region. Fishing is woven into the beliefs and values of this region, through the use of resources such as shell fish, periwinkles, abalone and razorfish; and the sharing of traditional fishing knowledge, catch and meals. The care and protection of these waters, the coastline, marine life and resources correspond directly with cultural stories, sites and knowledge. South Australian Native Title Services is the Native Title Service Provider for the South Australian region.

South West Marine Park Network	IUCN zones	Natural Values
		Heritage values No international, Commonwealth or national heritage listings apply to this Marine Park.
		Social and economic values Tourism, commercial fishing, recreation and mining are important activities in this Marine Park.
Western Kangaroo Island Marine Park	National Park Zone (II) Special Purpose Zone (Mining Exclusion) (VI) Special Purpose Zone (VI)	**Description** The Western Kangaroo Island Marine Park is located approximately 230 km south-west of Adelaide and 110 km south of Port Lincoln, adjacent to the South Australian Western Kangaroo Island Marine Park. The Marine Park covers an area of 2,335 km² and water depths range between 15 m and 165 m.
		Natural values This Marine Park includes examples of ecosystems representative of the Spencer Gulf Shelf. Seasonal winds and ocean currents interact with seafloor features to produce a number of small seasonal upwellings that are important for biological productivity. The area is noted for its diverse seafloor communities, productivity hotspots and aggregations of marine life associated with the seasonal upwellings of nutrient rich water. Key ecological features: • The ancient coastline between 90 m and 120 m depth; and • Kangaroo Island Pool, canyons and adjacent shelf break, and Eyre Peninsula upwellings. This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include foraging habitat for seabirds, Australian sea lions, white sharks and pygmy blue and sperm whales, and a calving buffer area for southern right 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. South Australian Native Title Services is the Native Title Service Provider for the South Australian region
		Heritage values No international, Commonwealth or national heritage listings apply to this Marine Park.
		Social and economic values Tourism, commercial fishing and recreation are important activities in this Marine Park. The Kangaroo Island community values the island's unique qualities and character.

11.5.4 North Marine Park Network

Table 11-4 describes the Commonwealth marine parks within the North Marine Park Network according to the North Marine Park Network Management Plan 2018 (DNP, 2018c)

Table 11-4 Summary of Commonwealth Australian Marine Parks (AMP)s for the North Marine Park Network

North Marine Park Network	IUCN Zones	Values
Arafura Marine Park	Multiple Use Zone (VI) Special Purpose Zone (VI) Special Purpose Zone (Trawl) (VI)	**Description** The Arafura Marine Park is located approximately 256 km north-east of Darwin and 8 km offshore of Croker Island, Northern Territory. It extends from Northern Territory waters to the limit of Australia's exclusive economic zone. This Marine Park covers an area of 22,924 km², and a water depth range from less than 15 m to 500 m.
		Natural values The Arafura Marine Park includes examples of ecosystems representative of: • Northern Shelf Province—a dynamic region, with gently sloping shelf topped with a number of pinnacles at depths ranging from 5 m to 30 m. Tidal eddies induce localised upwellings and hotspots of productivity, which correspond with aggregations of marine life within this Marine Park. • Timor Transition Province—includes continental slope, canyons, ridges, terraces and the Arafura Depression. The primary drivers of biological productivity are associated with deep water upwellings at canyon heads, driven by strong tides. The key ecological feature in this Marine Park is the tributary canyons of the Arafura Depression. The canyons channel deep ocean waters, enhancing productivity and supporting large predatory fish, whale sharks, sawfish and marine turtles, deep sea sponges, and barnacles. This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include internesting habitat for marine turtles and important foraging and breeding habitat for seabirds.
		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 Yuwurrumu members of the Mandilarri-Ildugij, the Mangalara, the Murran, the Gadura-Minaga and the Ngaynjaharr clans have responsibilities for sea country in this Marine Park. These clans have native title determined over part of their sea country, which is included in this Marine Park. The Northern Land Council is the Native Title Representative Body for the Northern Territory's northern region and is assisting these native title holders in the absence of a native title Prescribed Body Corporate. It is the point of contact for this Marine Park.
		Heritage values No international, Commonwealth or national heritage listings apply to this Marine Park.
		Social and economic values Commercial fishing, tourism, and recreation, including fishing, are important activities in this Marine Park.
		Description

North Marine Park Network	IUCN Zones	Values
Arnhem Marine Park	Special Purpose Zone (VI)	The Arnhem Marine Park is located approximately 100 km south-east of Croker Island and 60 km south-east of the Arafura Marine Park. It extends from Northern Territory waters surrounding the Goulburn Islands, to the waters north of Maningrida. This Marine Park covers an area of 7,125 km² and water depth ranges from less than 15 m to 70 m.
		Natural values This Marine Park includes ecosystems representative of the Northern Shelf Province. Internal currents in the region drive a net clockwise movement of nutrient-rich coastal water contributing to high biological diversity. Tidal eddies induce localised upwellings and hotspots of productivity that correspond with aggregations of marine life within this Marine Park. This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include foraging habitat and a migratory pathway for marine turtles and seabirds.
		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 coastal First Nations people of West Arnhem Land have responsibilities for sea country in this Marine Park. This Marine Park contains sites which are registered under the *Northern Territory Aboriginal Sacred Sites Act 1989* (NT). The Northern Land Council is the Native Title Representative Body for the Northern Territory's northern region.
		Heritage values No international, Commonwealth or national heritage listings apply to this Marine Park.
		Social and economic values Commercial fishing, tourism, and recreation, including fishing, are important activities in this Marine Park.
Gulf of Carpentaria Marine Park	National Park Zone (II) Special Purpose Zone (Trawl) (VI)	**Description** The Gulf of Carpentaria Marine Park is located approximately 90 km north-west of Karumba, Queensland and is adjacent to the Wellesley Islands in the south of the Gulf of Carpentaria basin. This Marine Park covers an area of 23,771 km² and water depths range from less than 15 m to 70 m.
		Natural values This Marine Park includes ecosystems representative of the Northern Shelf Province—a dynamic region with a gently sloping shelf topped with a number of pinnacles at depths ranging from 5 m to 30 m. Tidal eddies induce localised upwellings and hotspots of productivity that correspond with aggregations of marine life within the Marine Park. Key ecological features: • Gulf of Carpentaria basin; • Gulf of Carpentaria coastal zone; • Plateaux and saddle north-west of the Wellesley Islands; and • Submerged coral reefs of the Gulf of Carpentaria. This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include breeding and foraging areas for seabirds and internesting and foraging areas for turtles.
		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.

North Marine Park Network	IUCN Zones	Values
		The Lardil, Yangkaal, Kaiadlit and Gangalidda people of the Wellesley Islands have a continuing spiritual connection with their sea country and responsibilities for managing that country. They have had their native title rights recognised. Both the Thuwathu-Bujimulla Indigenous Protected Area (IPA) and the Wellesely Island Sea Claim determination extend over part of the Gulf of Carpentaria Marine Park. The Thuwathu-Bujimulla IPA includes 160 sites of cultural heritage significance and the largest collection of stone fish traps in the southern hemisphere. The Lardil, Yangkaal, Kaiadlit and Gangalidda people of the Wellesley Islands hold a wealth of cultural knowledge about their islands and sea country. They recognise the presence of the Rainbow Serpent (Thuwathu or Bujimulla) in cyclones, waterspouts and rainbows, and understand that the Rainbow Serpent has the power to cause a special type of sickness known as Markiriil in Lardil. They also consider that there are dangerous places on their country where spirits can do you harm if you are not accompanied by the right people for that area. Many prominent marine features, such as reefs, rocks, oyster banks or sand bars have their own specific names. Among these named sites are special 'story places', where significant events happened in the past, where people carry out ritual activities to maintain particular animal or plant species, or which are responsible for making tidal floods, cyclones or strong winds. The Lardil people, as the traditional owners of Mornington Island and surrounding sea country, are recognised as the people of the Wellesley Islands with the authority to speak for sea country within the Gulf of Carpentaria Marine Park. The Gulf Region Aboriginal Corporation Prescribed Body Corporate represents the Lardil, Yangkaal, Kaiadlit and Gangalidda native title holders of the Wellesley Islands and is the point of contact for this Marine Park. The Carpentaria Land Council Aboriginal Corporation is the Native Title Representative Body for the region.
		Heritage values This Marine Park contains four known shipwrecks listed under the *Historic Shipwrecks Act 1976— Douglas Mawson* (wrecked in 1923); *A.D.C*. (wrecked in 1886); *Wild Duck* (wrecked in 1876); and *Ada* (wrecked 1886). No international, Commonwealth or national heritage listings apply to this Marine Park.
		Social and economic values Commercial fishing, tourism, and recreation, including fishing, are important activities in this Marine Park.
Limmen Marine Park	Habitat Protection Zone (IV)	**Description** The Limmen Marine Park is located approximately 315 km south-west of Nhulunbuy, Northern Territory, in the south-west of the Gulf of Carpentaria. It extends from Northern Territory waters, between the Sir Edward Pellew Group of Islands and Maria Island in the Limmen Bight, adjacent to the Northern Territory Limmen Bight Marine Park. This Marine Park covers an area of 1,399 km² and water depths range from less than 15 m to 70 m.
		Natural values This Marine Park includes examples of ecosystems representative of the Northern Shelf Province—a dynamic region with gently sloping shelf, topped with a number of pinnacles at depths ranging from 5 m to 30 m. Tidal eddies induce localised upwellings and hotspots of productivity that correspond with aggregations of marine life within this Marine Park. The key ecological feature in this Marine Park is the Gulf of Carpentaria coastal zone—nutrients from rivers flowing into the coastal zone support high productivity and diverse biota. A prominent seafloor feature within this Marine Park is the Labyrinthian Shoals, a group of sand banks, some with rocky heads, in depths of less than 1.8 m. This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include internesting and foraging habitat for marine turtles.
		Cultural values

North Marine Park Network	IUCN Zones	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 Marra people have responsibilities for sea country in this Marine Park, and share song-lines that travel through this Marine Park with the Yanyuwa People. The Northern Land Council is the Native Title Representative Body for the Northern Territory's northern region.
		Heritage values No international, Commonwealth or national heritage listings apply to this Marine Park
		Social and economic values Commercial fishing, tourism, and recreation, including fishing, are important activities in this Marine Park.
Wessel Marine Park	Habitat Protection Zone (IV) Special Purpose Zone (Trawl) (VI)	**Description** The Wessel Marine Park is located approximately 22 km east of Nhulunbuy, Northern Territory. It extends from Northern Territory waters adjacent to the tip of the Wessel Islands to Northern Territory waters adjacent to Cape Arnhem. This Marine Park covers an area of 5,908 km² and water depths between 15 m and 70 m.
		Natural values This Marine Park includes examples of ecosystems representative of the Northern Shelf—a dynamic region with gently sloping shelf topped with a number of pinnacles at depths ranging from 5 m to 30 m. Tidal eddies induce localised upwellings and hotspots of productivity that correspond with aggregations of marine life within this Marine Park. The key ecological feature in this Marine Park is the Gulf of Carpentaria basin—characterised by soft sediments that support abundant and diverse communities dominated by polychaetes, crustaceans, molluscs and echinoderms, with pelagic fish species such as shark, snapper, tuna and mackerel. This Marine Park overlaps the Arafura Sill, which is a seafloor barrier that restricts movement of water into the Gulf of Carpentaria basin and forms a distinct biogeographical transition point for sessile invertebrate (e.g. sponges and corals) and fish species. This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include breeding habitat for seabirds and internesting and foraging habitat for marine turtles.
		Cultural values Sea country is valued for Indigenous cultural identity, health and wellbeing. Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. The Yolŋu people have responsibilities for sea country in this Marine Park. This Marine Park contains sites which are registered under the *Northern Territory Aboriginal Sacred Sites Act 1989* (NT). The Northern Land Council is the Native Title Representative Body for the Northern Territory's northern region.
		Heritage values No international, Commonwealth or national heritage listings apply to this Marine Park.
		Social and economic values Commercial fishing, tourism, and recreation, including fishing, are important activities in this Marine Park.
		Description

North Marine Park Network	IUCN Zones	Values
West Cape York Marine Park	National Park Zone (II) Habitat Protection Zone (IV) Special Purpose Zone (VI).	The West Cape York Marine Park is located adjacent to the northern end of Cape York Peninsula approximately 25 km south-west of Thursday Island and 40 km north-west of Weipa, Queensland. It extends from Queensland State waters to the limit of Australia's exclusive economic zone. This Marine Park covers an area of 16,012 km² and water depths range from less than 15 m to 70 m.
		Natural values This Marine Park includes ecosystems representative of: • Northeast Shelf Transition—includes continental shelf, shallow water depths and high bottom salinity. It is influenced by tidal currents and has sandy substrates and reefs supporting benthic marine communities, reef-dwelling and pelagic species. • Northern Shelf Province—a dynamic region with gently sloping shelf topped with a number of pinnacles at depths ranging from 5 m to 30 m. Tidal eddies induce localised upwellings and hotspots of productivity that correspond with aggregations of marine life within this Marine Park. Key ecological features: • Gulf of Carpentaria basin; and • Gulf of Carpentaria coastal zone. This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include breeding and foraging habitat for seabirds, internesting and foraging habitat for marine turtles and dugong, and foraging, breeding and calving habitat for dolphins.
		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. Torres Strait Islanders and coastal First Nations people of the west coast of Cape York have responsibilities for sea country in this Marine Park. The Cape York Land Council is the Native Title Representative Body for the Cape York region, which includes most of this Marine Park. The Carpentaria Aboriginal Land Council and the Torres Strait Regional Authority also perform the function of Native Title Representative Bodies for parts of this Marine Park.
		Heritage values No international, Commonwealth or national heritage listings apply to the Marine Park. The Marine Park contains one known shipwreck listed under the *Historic Shipwrecks Act 1976*.
		Social and economic values Commercial fishing, tourism, and recreation, including fishing, are important activities in this Marine Park.
Oceanic Shoals	National Park Zone (II) Multiple Use (VI) Oceanic Shoals Special Purpose (Trawl) (VI) Habitat Protection (IV)	**Description** The Oceanic Shoals Marine Park is located west of the Tiwi Islands, approximately 155 km north-west of Darwin, Northern Territory and 305 km north of Wyndham, Western Australia. It extends to the limit of Australia's exclusive economic zone. The Marine Park covers an area of 71,743 km² and water depths from less than 15 m to 500 m.
		Natural values This Marine Park includes ecosystems representative of the Northwest Shelf Transition— a dynamic environment influenced by strong tidal currents, upwellings of nutrient-rich waters, and a range of prominent seafloor features. The pinnacles, carbonate banks and shoals are sites of enhanced biological productivity.

North Marine Park Network	IUCN Zones	Values
		Key ecological features: • Carbonate bank and terrace systems of the Van Diemen Rise; • Carbonate bank and terrace system of the Sahul Shelf; • Pinnacles of the Bonaparte Basin; and • Shelf break and slope of the Arafura Shelf. This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include foraging and internesting habitat for marine turtles.
		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. At the commencement of this plan, there was limited information about the cultural significance of this Marine Park. The Northern Land Council and the Kimberley Land Council are the Native Title Representative Bodies for the Northern Territory's northern region, and the Kimberley region. The Tiwi Land Council collectively represents traditional owners of the Tiwi Islands.
		Heritage values No international, Commonwealth or national heritage listings apply to this Marine Park.
		Social and economic values Commercial fishing and mining 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 located approximately 15 km west of Wadeye, Northern Territory, and approximately 90 km north of Wyndham, Western Australia, in the Joseph Bonaparte Gulf. It is adjacent to the Western Australian 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.
		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 key ecological feature 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. Biologically important areas within this Marine Park include foraging habitat for marine turtles and the Australian snubfin dolphin.
		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

North Marine Park Network	IUCN Zones	Values
		Northern Land Council and the Kimberley Land Council are the Native Title Representative Bodies for the Northern Territory's northern region, and the Kimberley region.
		Heritage values No international, Commonwealth or national heritage listings apply to this Marine Park, however 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.

11.6 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**. Protected Matter Search Reports for NWMR, SWMR and NMR). The Monsoon vine thickets (which is a TEC) occurs on the coastal dunes of Dampier Peninsula (NWMR). The subtropical and temperate coastal saltmarsh (which is a TEC) occurs within the marine water of the SWMR. Both TECs are described in **Table 11-5.**

Table 11-5 Summary of Threatened Ecological Communities within the NWMR, NMR and SWMR.

Threatened Ecological Community	Description	Conservation Values
Threatened Ecological Communities in the NWMR		
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 Western Australia, predominantly restricted to the coastlines of the Dampier Peninsula from Broome in the south to One Arm Point in the north and on the northeastern coast of the Peninsula from One Arm Point to Goodenough Bay (DSEWPaC, 2013d). The TEC occurs as discontinuous patches of dense vegetation and contains approximately 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 Monsoon vine thickets on the coastal sand dunes of Dampier Peninsula 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).
Threatened Ecological Communities in the NMR		
N/A		
Threatened Ecological Communities in the SWMR		
Subtropical and Temperate Coastal Saltmarsh	The ecological community spans six state jurisdictions: Queensland (southern), New South Wales, Victoria, Tasmania, South Australia and Western Australia (south-western) (DSEWPaC, 2013c). The TEC occupies a relatively narrow strip along the Australian coast, in areas which have an intermittent or regular tidal influence. The coastal saltmarsh community consists mainly of salt-tolerant vegetation including grasses, herbs, sedges, rushes and shrubs. (Adam, 1990 cited in DSEWPaC, 2013c).	The Subtropical and Temperate Coastal Saltmarsh TEC is listed as vulnerable (DCCEEW, 2023a). This TEC consists of organisms including and associated with saltmarsh in coastal regions of sub-tropical and temperate Australia (DSEWPaC, 2013c). A wide range of infaunal and epifaunal invertebrates and low and high tide visitors such as fish, birds and prawns also inhabit the TEC (DSEWPaC, 2013c). It is reported as an important nursery habitat for fish and prawn species. The dominant marine residents are benthic invertebrates, including molluscs and crabs (Ross et al., 2009 cited in DSEWPaC, 2013c) with insects also abundant and considered an important food source for fauna (DSEWPaC, 2013c).

11.7 Australian Whale Sanctuary

The Australian Whale Sanctuary 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 three nautical mile State/Territory waters limit out to the boundary of the economic exclusion zone (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.

11.8 State Marine Parks and Reserves

State Marine Parks and Reserves, proclaimed under the *Conservation and Land Management Act 1984* (WA) (CALM Act), are located in State waters and vested in the WA Conservation and Parks Commission. State Marine Parks and Reserves of Western Australia have been considered, with 10 occurring in the NWMR (**Table 11-6**) and six occurring in the SWMR (**Table 11-7**).

Three new marine parks were established in 2022 in the Buccaneer Archipelago of the Kimberley. Boundaries commenced on July 1, 2023. The parks have been co-designed and are joint-managed by Traditional Owners, alongside with the Department of Biodiversity, Conservation and Attractions (DBCA, 2021b). The three new marine parks are:

- Bardi Jawi Gaarra Marine Park;
- Lalang-gaddam Marine Park (formed from the amalgamation of Lalang-garram/Camden Sound Marine Park, Lalang-garram/Horizontal Falls Marine Park, North Lalang-garram Marine Park and Maiyalam Marine Park along Western Australia's Kimberley Coast); and
- Mayala Marine Park.

There is a marine park to be defined in the Exmouth Gulf (EPA, 2022). The Exmouth Gulf Taskforce Interim Report to the Minister for Environment (DWER, 2023) outlines the values and recommended management approach of the Exmouth Gulf Marine Park.

11.9 Summary of Protected Areas within the NWMR

Table 11-6 Protected Areas within the NWMR

Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description and Values
	Browse	NWS/S	NW Cape		
World Heritage Properties					
Shark Bay World Heritage Property	-	-	✓		**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 dugong and threatened species. Inscribed under Natural Criteria vii, viii, ix and x (UNESCO, 1991).
The Ningaloo Coast World Heritage Property	-	-	✓		**Description** The Ningaloo Coast World Heritage Property is approximately 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; in particular, Ningaloo Reef supports both tropical and temperate marine reptiles and mammals. Inscribed under Natural Criteria vii and x (UNESCO, 2011).
National Heritage Places – Natural					
Shark Bay	-	-	✓		**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). **Conservation Values** This national heritage place has a number of 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 also provides a refuge for a number of other globally threatened species. Shark Bay meets the national heritage listing criteria a, b, c, d, e, f, g, h and I (DEC, 2008).

Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description and Values
	Browse	NWS/S	NW Cape		
The Ningaloo Coast	-	-	✓		**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 near-shore reefs in the world, being home to rugged limestone peninsulas, spectacular coral and sponge gardens and the whale shark. The Ningaloo Coast meets the national heritage listing criteria a, b, c, d, and f (Commonwealth of Australia, 2010).
The West Kimberley	✓	✓	-		**Description** The West Kimberley National Heritage Place covers an area of around 192,000 km^2 located in the north-west of Australia from Broome to Wyndham, and was established on the National Heritage List in 2011 (Commonwealth of Australia, 2011).
					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 First Nations 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, 2011).
Commonwealth Heritage Places – Natural					
Mermaid Reef – Rowley Shoals	-	✓	-		**Description** The Mermaid Reef – Rowley Shoals Commonwealth Heritage Place is located within the boundary of the Mermaid Reef Marine National Nature Reserve. The site was listed as a Commonwealth Heritage Place in 2004 (DCCCEEW, 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

Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description and Values
	Browse	NWS/S	NW Cape		
					and Imperieuse reefs, has biogeographical significance due to the presence of species which are at, or close to, 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 Western Australia which have been the site of major biological collection trips by the WA Museum (DCCCEEW, n.d.-a).
Ashmore Reef National Nature Reserve	✓	-	-		**Description** The Ashmore Reef Commonwealth Heritage Place is located within the boundary of the Ashmore Reef Marine Park (refer AMPs below). The site was listed as a Commonwealth Heritage Place in 2004 (DCEEW, 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 fisherman 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 (DCEEW, n.d-d).
Scott Reef and Surrounds – Commonwealth Area	✓	-	-		**Description** Scott Reef and Surrounds Commonwealth Heritage Place is located within the Western Australian Coastal Waters surrounding North and South Scott Reef. The site was listed as a Commonwealth Heritage Place in 2004 (DCEEW, 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 which are at, or close to, 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

Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description and Values
	Browse	NWS/S	NW Cape		
					geophysical and physical environmental characteristics and its use as a site of major biological collection trips and surveys by the WA Museum and the Australian Institute of Marine Science (DCEEW, n.d-e).
Ningaloo Marine Area – Commonwealth Waters	-	-	✓		**Description** The Ningaloo Marine Area Commonwealth Heritage Place is located within the Commonwealth waters of the Ningaloo Marine Park (refer AMPs below). The site was listed as a Commonwealth Heritage Place in 2004 (DCEEW, n.d-f).
					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 (DCEEW, n.d-f).
Yampi Defence Area	✓	-	-		**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 an unusual occurrence (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 the Commonwealth heritage listing criteria a,b,c (DCCEEW, n.d.-c).
Learmonth Air Weapons Range Facility	-	-	✓		**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

Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description and Values
	Browse	NWS/S	NW Cape		
					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,c (DCCEEW, n.d.-b).
Wetlands of International Importance (Ramsar)					
Ashmore Reef National Nature Reserve	✓	-	-	Ramsar	**Description** The Ashmore Reef Ramsar site is located 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 dugong, and has the highest diversity of hermatypic (reef-building) corals on the Western Australian coast. It is known for its abundance and diversity of sea snakes. However, since 1998 populations of sea snakes at Ashmore Reef 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 km^2, located along a long section of the Western Australian 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.

Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description and Values
	Browse	NWS/S	NW Cape		
					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 land fall for waders migrating south for the austral summer (CALM, 2003a).
Roebuck Bay	-	✓	-	Ramsar	**Description** The Roebuck Bay Ramsar site covers an area of 550 km^2, located 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).
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 and/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 Western Australia (DCCEEW, 2019a).

Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description and Values
	Browse	NWS/S	NW Cape		
Wetlands of National Importance (DAWE, 2019)					
Ashmore Reef	✓	-	-		**Description** Ashmore Reef is a shelf-edge platform reef located among the Sahul Banks of north-western Australia. It covers an area of 583 km^2 and consists of three islets surrounded by intertidal reef and sand flats (DCCEEW, 2019b). **Conservation Values** These islets are major seabird nesting sites with 20 breeding species recorded to date. The total bird population has been estimated to exceed 100,000 during the peak breeding season. The marine reserve also has the highest diversity of marine fauna of the reefs on the NWS and differs from other reefs and coastal areas in the region. The area meets criteria 1, 3, 4 and 5 for inclusion on the Directory of Important Wetlands in Australia (DCCEEW, 2019b).
Mermaid Reef	-	✓	-		**Description** Mermaid Reef Marine Park covers an area of around 540 km^2, located ~280 km west north-west of Broome, and is the most north-easterly atoll of the Rowley Shoals (DCCEEW, 2019b). **Conservation Values** The reefs of the Mermaid Reef Marine Park have biogeographic value due to the presence of species that are at or close to the limit of their distribution. The coral communities are one of the special values of Mermaid Reef. The area meets criteria 1, 2 and 3 for inclusion on the Directory of Important Wetlands in Australia (DCCEEW, 2019b).
Exmouth Gulf East	-	-	✓		**Description** Exmouth Gulf East covers an area of 800 km^2 and includes wetlands in the eastern part of Exmouth Gulf, from Giralia Bay; to Urala Creek, Locker Point (DCCEEW, 2019b). **Conservation Values** The Exmouth Gulf East is an outstanding example of tidal wetland systems of the low coast of north-west Australia, with well-developed tidal creeks, extensive mangrove swamps and broad saline coastal flats.

Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description and Values
	Browse	NWS/S	NW Cape		
					The site is one of the major population centres for dugong in WA and its seagrass beds and extensive mangroves provide nursery and feeding areas for marine fishes and crustaceans in the Gulf. The area meets criteria 1, 2 and 3 for inclusion on the Directory of Important Wetlands in Australia (DCCEEW, 2019b).
Hamelin Pool	-	-	✓		**Description** Hamelin Pool covers an area of 900 km^2 in the far south-east part of Shark Bay (DCCEEW, 2019b).
					Conservation Values Hamelin Pool is an outstanding example of a hypersaline marine embayment and supports extensive microbialite (subtidal stromatolite) formations, which are the most abundant and diverse examples of growing marine microbialites in the world. The area meets criteria 1 and 6 for inclusion on the Directory of Important Wetlands in Australia (DCCEEW, 2019b).
Shark Bay East	-	-	✓		**Description** Shark Bay East covers a 250 km area of coastline comprising tidal wetlands, and marine waters less than 6 m deep at low tide, in the east arm of Shark Bay (DCCEEW, 2019b).
					Conservation Values The site is an outstanding example of a very large, shallow marine embayment, with particularly extensive occurrence of seagrass beds and substantial areas of intertidal mud/sandflats and mangrove swamp. The site supports what is probably the world's largest discrete population of dugong; it is also a major nursery and/or feeding area for turtles, rays, sharks, other fishes, prawns and other marine fauna; and is a major migration stop-over area for shorebirds. The area meets criteria 1, 2, 3, 4, 5 and 6 for inclusion on the Directory of Important Wetlands in Australia (DCCEEW, 2019b).
State Marine Parks and Reserves					
North Kimberley Marine Park	✓	-	-	Sanctuary, Special Purpose and General Use Zones	**Description** The North Kimberley Marine Park covers. 18,450 km^2 with its south-western boundary located ~270 km north-east of Derby (DPAW, 2016a).
					Conservation Values

Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description and Values
	Browse	NWS/S	NW Cape		
					The marine park covers approximately 1,845,000 hectares. The coral reefs of the North Kimberley have the greatest diversity in Western Australia 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 provides 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).
Rowley Shoals Marine Park	-	✓	-	Sanctuary, Recreation and General Use Zones	**Description** The Rowley Shoals comprise of three reef systems, Mermaid Reef, Clerke Reef and Imperieuse Reef, all 30-40 km apart. These reef systems are located ~300 km west north-west of Broome (DEC, 2007a). **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 km^2 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 deep-water 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).

Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description and Values
	Browse	NWS/S	NW Cape		
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 dugong and flatback turtles (DPAW, 2016b).
					Social and Economic Values The marine park is adjacent to Broome and 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).
Eighty Mile Beach Marine Park	-	✓	-	Sanctuary, Recreation, Special Purpose and General Use Zones	**Description** Eighty Mile Beach Marine Park covers ~2000 km^2 stretching across 220 km of coastline between Port Hedland and Broome (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 which 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).

Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description and Values
	Browse	NWS/S	NW Cape		
					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).
Montebello Islands Marine Park, Barrow Island Marine Park and Barrow Island Marine Management Area (jointly managed)	-	✓	-	Sanctuary, Recreation, General Use and Special Purpose Zones	**Description** The Montebello Islands Marine Park, Barrow Island Marine Park and Barrow Island Marine Management Area are located off the north-west coast of WA, ~1,600 km north of Perth, and cover areas of ~583 km^2, 42 km^2 and 1,147 km^2, 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 which provide employment and economic value to surrounding communities. Nature based-tourism, water sports and recreational fishing are popular recreational activities undertaken in the area (DEC, 2007b).
					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).
Ningaloo Marine Park and Muiron Islands Marine Management Area (jointly managed)	-	-	✓	Sanctuary, Recreation, General Use and Special Purpose Zones	**Description** The Ningaloo Marine Park and Muiron Islands Marine Management Area are located off the North-west Cape, ~1,200 km north of Perth, and cover areas of ~2,633 km^2 and 286 km^2 respectively (CALM, 2005a).

Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description and Values
	Browse	NWS/S	NW Cape		
					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 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).
					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).
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 located 400 km north of Geraldton, covering areas of ~7,487 km^2 and 1,270 km^2, respectively (CALM, 1996).
					Conservation Values Seagrass covers over 4,000 km^2 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 dugong 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 Western Australia.

Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description and Values
	Browse	NWS/S	NW Cape		
					Hamelin Pool contains the most diverse and abundant examples of stromatolites found in the world. These are living representatives of stromatolites that existed some 3500 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).
					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).
Bardi Jawi Gaarra Marine Park	✓	-	-	Sanctuary, Recreation, Special Purpose Zones (biocultural conservation and cultural protection), and General use	**Description** The Bardi Jawi Gaara Marine Park is located in the West Kimberley region surrounding the northern part of the Dampier Peninsula and the western islands of the Buccaneer Archipelago covering areas of ~2,040 km^2.
					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).

Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description and Values
	Browse	NWS/S	NW Cape		
Lalang-gaddam Marine Park	✓	-	-	Sanctuary, Recreation, General Use and Special Purpose Zones	**Description** Amended joint management plan for the Lalang-gaddam / Camden Sound, Lalang-gaddam / Horizontal Falls and North Lalang-gaddam marine parks, and indicative joint management plan for the proposed Maiyalam Marine Park. The Lalang-gaddam Marine Park is located in the Kimberley region of Western Australia and adjacent to Derby and the Shire of Wyndham. The Class A marine park covers ~13,085 km^2 (DBCA 2022b).
					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 (~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 a number of islands fringed with coral reef and 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. Approximately 500 pairs of crested terns also nest on the island (DBCA 2022b).
					Social and Economic Values This Marine Park has spectacular scenery which attracts a number of tourists and generates approximately $563 million annually. Recreational fishing and recreational maritime activities are popular within ths Marine Park. Commercial fisheries can operate within the waters of this Marine Park, however many do not regularly fish within this area. Pearling and aquaculture occurs within this Marine Park and provides economic value for the region (DBCA 2022b).
					Cultural Values

Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description and Values
	Browse	NWS/S	NW Cape		
					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).
Mayala Marine Park	✓	-	-	Sanctuary, Recreation, General Use and Special Purpose Zones	**Description** The Mayala Marine Park is a Class A reserve located in the West Kimberley region and covers ~3,150 km^2 (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 man-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).

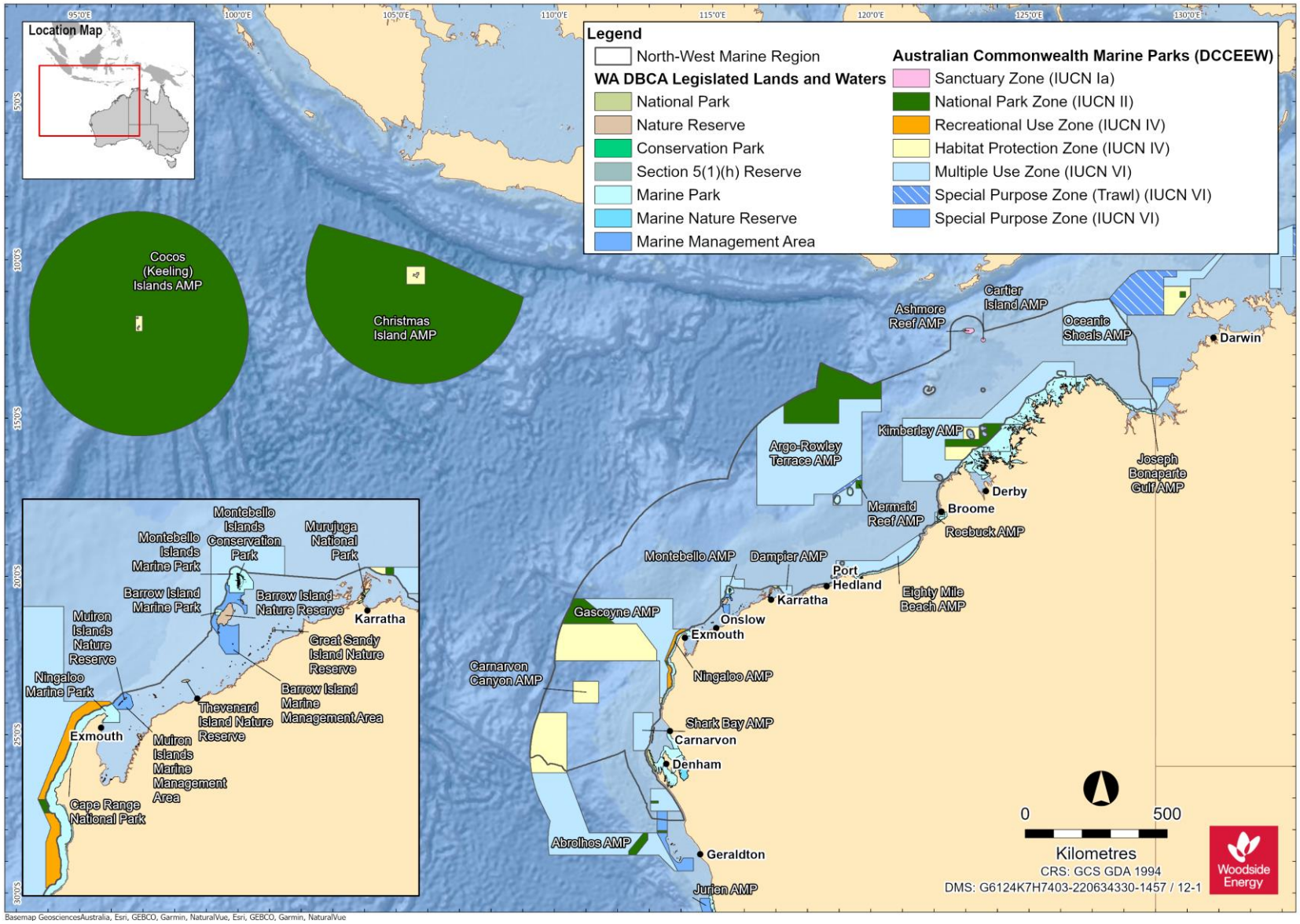


Figure 11-1 Commonwealth and State Marine Protected Areas for the NWMR and Indian Ocean Territories (data source: GA, 2024)

11.10 Summary of Protected Areas within the SWMR

Table 11-7 Protected Areas within the SWMR

Protected Area	IUCN Protected Area Category* or Relevant Park Zone	Description and Values
World Heritage Properties		
Australian Convict Sites (Fremantle Prison)		**Description** Fremantle Prison contains well preserved remnants of the earliest phase of European settlement of Western Australia. The Prison includes 16 intact convict-built structures surrounded by a six-metre-high limestone perimeter wall. The prison is one of the largest surviving convict establishments in the world (DCCEEW, 2021a).
		Conservation Values The Australian Convict Sites represent the global phenomenon of convictism—- the forced migration of convicts to penal colonies in the 18th and 19th centuries (DCCEEW, 2021a).
National Heritage Places—- Natural		
N/A		
Commonwealth Heritage Places—- Natural		
Garden Island		**Description** Garden Island, and in particular the Cliff Point Historic Site, is highly valued by the community for its cultural associations as the site of first settlement in Western Australia. The absence of feral predators means that Garden Island provides a significant refuge for animals vulnerable to predation on the mainland (DAWE, 2004).
		Conservation Values It is likely that Indigenous values exist at this place. As yet these have not been identified, documented or assessed for National Estate significance by the Australian Heritage Commission. Species of particular interest include the Tammar wallaby (*Macropus eugenii*), carpet python (*Morelia spilota*), and the lined skink (*Lerista lineata*). The parabolic sand dunes on the western side of the island are among the best-preserved dunes of the Quindalup soil unit (DAWE, 2004).
Wetlands of International Importance (Ramsar)		
Becher Point Wetlands	Ramsar	**Description** Beecher Point Wetlands is a system of about sixty small wetlands located near Rockingham in south-west WA, covering an area of around 7 km^2. The site was listed under the Ramsar Convention in 2001 (DPAW, 2014b).

Protected Area	IUCN Protected Area Category* or Relevant Park Zone	Description and Values
		Conservation Values The wetlands support sedgelands, herblands, grasslands, open-shrublands and low open-forests. The sedgelands that occur within the linear wetland depressions of the Ramsar site are a nationally listed threatened environmental community. At least four species of amphibians and 21 species of reptiles have been recorded on the site. The site also supports the southern brown bandicoot. The site meets criteria 1 and 2 of the Ramsar Convention (DPAW, 2014b).
Forrestdale and Thomsons Lakes	Ramsar	**Description** Forrestdale Lake is located in the City of Armadale and Thomsons Lake is located in the City of Cockburn both of which lie within the southern Perth metropolitan area, in Western Australia. The site was listed under the Ramsar Convention in 1990 (CALM, 2003c).
		Conservation Values The lakes are surrounded by medium density urban development and some agricultural land. The sediments of Thomsons Lake are between 30,000 and 40,000 years old, which are the oldest lake sediments discovered in WA to date. These lakes are the best remaining examples of brackish, seasonal lakes with extensive fringing sedgeland, typical of the Swan Coastal Plain. The site meets criteria 1, 3, 5 and 6 of the Ramsar Convention (CALM, 2003c).
Peel-Yalgorup System	Ramsar	**Description** The Peel-Yalgorup System, located adjacent to the City of Mandurah in Western Australia, is a large and diverse system of shallow estuaries, coastal saline lakes and freshwater marshes. The site was listed under the Ramsar Convention in 1990 (CALM, 2003d).
		Conservation Values The Peel-Yalgorup System Ramsar site is the most important area for waterbirds in south-western Australia. It supports a large number of waterbirds, and a wide variety of waterbird species. It also supports a wide variety of invertebrates, and estuarine and marine fish. The system also includes an occurrence of thrombolites. The site meets criteria 1, 3, 5 and 6 of the Ramsar Convention (CALM, 2003d).
Vasse-wonnerup system	Ramsar	**Description** The Vasse-Wonnerup System Ramsar wetland is situated in the Perth Basin, south-western Western Austraia. The site was listed under the Ramsar Convention in 1990 (DPAW, 2014b).
		Conservation Values The Vasse-Wonnerup System is an extensive, shallow, nutrient-enriched wetland system of highly varied salinities. Large areas of the wetland dry out in late summer. The Vasse-Wonnerup System supports tens of thousands of resident and migrant waterbirds of a wide variety of species. More than 80 species of waterbird have been recorded in the System such as

Protected Area	IUCN Protected Area Category* or Relevant Park Zone	Description and Values
		red-necked avocets and black-winged stilts, wood sandpiper, sharp-tailed sandpiper, long-toed stint, curlew sandpiper and common greenshank. 13 waterbird species are also known to breed at the Ramsar site, including the largest regular breeding colony of black swans in south-western Australia. The site meets criteria 5 and 6 of the Ramsar Convention (DPAW, 2014b).
Lake Warden System	Ramsar	**Description** The Lake Warden System Ramsar site is located adjacent to Esperance, south-western Australia. It is a system of saline lakes, lagoons and marsh areas behind beach-front dunes and at least one relatively narrow connection to the sea. The site was listed under the Ramsar Convention in 1990.
		Conservation Values The wetlands within the Lake Warden System form a system of inter-connected lakes and coastal brackish/saline lagoons connected by channels. It provides a significant habitat, nursery and refuge for waterbirds. Supporting up to 20,000 birds regularly. The System supports over 1% of Hooded Plovers in south-western Australia who breed regularly at the Lake Warden System. It meets criteria 1,5 and 6 of the Ramsar Convention (DEC, 2009b).
Wetlands of National Importance (DAWE, 2019)		
Rottnest Island Lakes		**Description** The Rottnest Island Lakes site is the cluster of 18 lakes and swamps on the north-east part of Rottnest Island (DCCEEW, 2019b).
		Conservation Values An outstanding example of a series of lakes/swamps of varied depth and salinity located on an offshore island; the only island among 200 plus in WA exceeding 10 ha in area, that has a salt-lake complex; the only known example of seasonally meromictic lakes in Australia. The area meets criteria 1, 2, 3 and 6 for inclusion on the Directory of Important Wetlands in Australia (DCCEEW, 2019b).
State Marine Parks and Reserves		
Jurien Bay Marine Park	Sanctuary, Special Purpose and General Use Zones.	**Description** The Jurien Bay Marine Park is located on the central west coast of WA ~200 km north of Perth and covers an area of 824 km^2 (CALM, 2005b).
		Ecological Values The Jurien Bay region is dominated by five major marine habitats: seagrass meadows, bare or sparsely vegetated mobile sand, shoreline and offshore intertidal reef platforms, subtidal limestone reefs, and reef pavement. An extensive limestone reef system parallel to the shore has created a huge shallow lagoon that provides perfect habitat for Australian sea lions, dolphins and a myriad of juvenile fish. Extensive seagrass meadows inside the reef shelter many marine animals such as western rock lobsters, octopus and cuttlefish that make up the diet of young sea lions. The marine park also surrounds dozens of ecologically important islands that contain rare and endangered animals found nowhere else in the world (CALM, 2005b).

Protected Area	IUCN Protected Area Category* or Relevant Park Zone	Description and Values
		Social and Economic Values Commercial fishing for rock lobster has the highest economic value of any single species commercial fishery in Australia and is important for the economy of the Jurien Bay region. Recreational water activities such as fishing, boating, surfing, diving, and wind surfing are popular within the area (CALM, 2005b).
		Cultural Values The Nyungar people have occupied the land and waters in this region and depended on coastal resources for more than 30,000 years. There are burial sites, middens and other sites of significance listed within the region (CALM, 2005b).
Marmion Marine Park	Sanctuary, Recreation and Special Use Zones.	**Description** The Marmion Marine Park lies within State waters between Trigg Island and Burns Beach and encompasses a coastal area of ~95 km^2. Marmion Marine Park was the State's first marine park, declared in 1987 (CALM, 1992).
		Ecological Values The marine park has a number of sanctuary zones including Little Island, The Lumps and the Boyinaboat Reef protecting a variety of habitats from limestone reefs, seagrass beds and clear shallow lagoons that support a diversity of marine life. In addition, there are the general use zone and the Waterman Recreation Area. The marine park contains important habitat for the endemic Australian sea lion, an array of seabird species, and migratory whales are regular visitors (CALM, 1992; DPAW, 2016c).
		Social Values The marine park is popular for recreational water activities including boating, swimming, kayaking, snorkelling, whale watching, kite and windsurfing. Scuba diving and freediving is common at the Boyinaboat Reef which is located close to Hillary's Boat Harbour. Recreational fishing is permitted in most areas (DPAW, 2016c).
Swan Estuary Marine Park	Special Purpose and Nature Reserve Zones.	**Description** Three biologically important areas of Perth's Swan River make up the Swan Estuary Marine Park, including Alfred Cove, Pelican Point and Crawley. These three sites cover a total area of 3.4 km^2 (CALM, 1999).
		Ecological Values The sand flats, mud flats and beaches at the three locations of the Swan Estuary Marine Park provide the only remaining significant feeding and resting areas in the Swan Estuary for trans-equatorial migratory wading and waterbirds. This Marine Park and adjacent reserves also provide habitat for a diverse assemblage of aquatic and terrestrial flora and fauna (CALM, 1999).
		Social and Economic Values

Protected Area	IUCN Protected Area Category* or Relevant Park Zone	Description and Values
		Nature-based wildlife tourism operates in the area and this Marine Park supports commercial net fishing. Recreational activities that occur within the area include fishing, bird watching, kayaking, windsurfing, boating, and sightseeing (DBCA, 2023).
		Cultural Values The Whadjuk people are the traditional owners of the land and waters of Swan Canning Estuary and have frequented the waters of this park for many years. The estuarine and terrestrial habitats provide a source of fish, shellfish, reptiles and birds for hunting (CALM, 1999; DBCA, 2023).
Shoalwater Islands Marine Park	Sanctuary, Special Purpose and General Use Zones.	**Description** The Shoalwater Islands Maine Park is located adjacent to Rockingham on the south-west coast of Western Australia, ~50 km south of Perth and covers an area of ~66 km^2 (DEC, 2007c).
		Ecological Values The Shoalwater Islands Marine Park consists of a complex seabed and coastal topography consisting of islands, limestone ridges and reef platforms, protected inshore areas and deeper basins, sandbars and beaches, and is home to five species of cetacean and 14 species of sea and shore bird. The waters of this Marine Park are also used to access feeding grounds for the little penguin (*Eudyptula minor*) colony on Penguin Island, which is close to the northernmost limit of the species' range and is the largest known breeding colony in Western Australia (DEC, 2007c). A recent study has also reported a recurrent aggregation of scalloped hammerheads (*Sphyrna lewini*) within this Marine Park (López et al., 2022).
		Social and Economic Values Commercial fisheries target a number of species within the area and this Marine Park also supports a mussel farming industry. Tourism is a popular activity within this Marine Park and includes water sports such as scuba diving, snorkelling, sailing, kayaking, kite surfing, and windsurfing. Recreational fishing is popular in this area and is likely to increase. The diversity of this Marine Park biota makes this Marine Park important for scientific research and education among tertiary institutions, schools and outdoors organisations (DEC, 2007c).
		Cultural Values This Marine Park is of cultural significance to the Gnaarla Karla Booja people who are the traditional owners and have frequented this Marine Park for thousands of years. The Gnaarla Karla Booja people have continued to use this Marine Park for fishing and hunting. Shoalwater and Garden Island areas are significant parts of the story of creation and there are a number of sites adjacent to and within this Marine Park that are registered as culturally significant (DEC, 2007c).
Ngari Capes Marine Park	Sanctuary, Special Purpose and Recreation Zones.	**Description** The Ngari Capes Marine Park is located off the south-west coast of Western Australia, ~250 km south of Perth, covering ~1238 km^2 (DEC, 2013).
		Ecological Values The Ngari Capes Marine Park consists of a complex arrangement of sandy bays, high energy limestone and granite reefs bordered by headlands and cliffs and two weathered capes. Coral

Protected Area	IUCN Protected Area Category* or Relevant Park Zone	Description and Values
		communities consist of both tropical and temperate species. Cetaceans and pinnipeds are resident in and/or transient through this Marine Park as well as a diverse range of seabirds and shorebirds (DEC, 2013).
		Social and Economic Values A diverse range of commercial fisheries and aquaculture occur within and around this Marine Park targeting species such as abalone, salmon, sharks, demersal finish, baitfish, and western rock lobster. This Marine Park offers a wide range of attractions for marine based tourism which include shore-based and boat-based whale watching tours and dive and snorkel tours. Recreational activities that occur within this Marine Park include diving, fishing, snorkelling and wildlife watching (DEC, 2013).
		Cultural Values The Pibelmen and Wardani people occupy the lands adjacent to this Marine Park and utilise the coastline for fishing, hunting, ceremonial activities and resource gathering as they have continued to do for thousands of years. At least 45 sites of Indigenous significance have been identified within or adjacent to this Marine Park. Many marine species including mammang borungar (whale) and kalda (sea mullet) are culturally significant to the Indigenous people of the southwest region (DEC, 2013).
Walpole and Nornalup Inlets Marine Park	Recreation Zone.	**Description** The Walpole and Nornalup Inlets Marine Park is located adjacent to the towns of Walpole and Nornalup on the south coast of Western Australia, ~120 km west of Albany, and covers ~14 km^2 (DEC, 2009a).
		Conservation Values The Walpole and Nornalup Inlets Marine Park consists of a geologically complex lagoonal estuarine system comprising three significant rivers and two connected inlets that are permanently open to the ocean. Approximately 40 marine and estuarine finfish species commonly inhabit the inlet system, as well as a variety of shark and ray species and numerous seabirds and shorebirds. The sandy beaches and shoreline vegetation of the inlet system are of high ecological and social importance to this Marine Park (DEC, 2009a).
		Social Values The diversity of wildlife and easily accessible terrestrial, estuarine, and coastal scenery has enhanced nature-based tourism within the area. Popular recreational activities that occur within this Marine Park include boating, fishing, swimming, hiking, bird watching, and wildlife watching (DEC, 2009a).
		Cultural Values Estuaries are significant hunting, fishing and gathering areas for Minang people of south-western Australia who have a strong spiritual connection to the area. Aboriginal artefact scatters and other listed areas of cultural significance have been found within and adjacent to this Marine Park (DEC, 2009a).

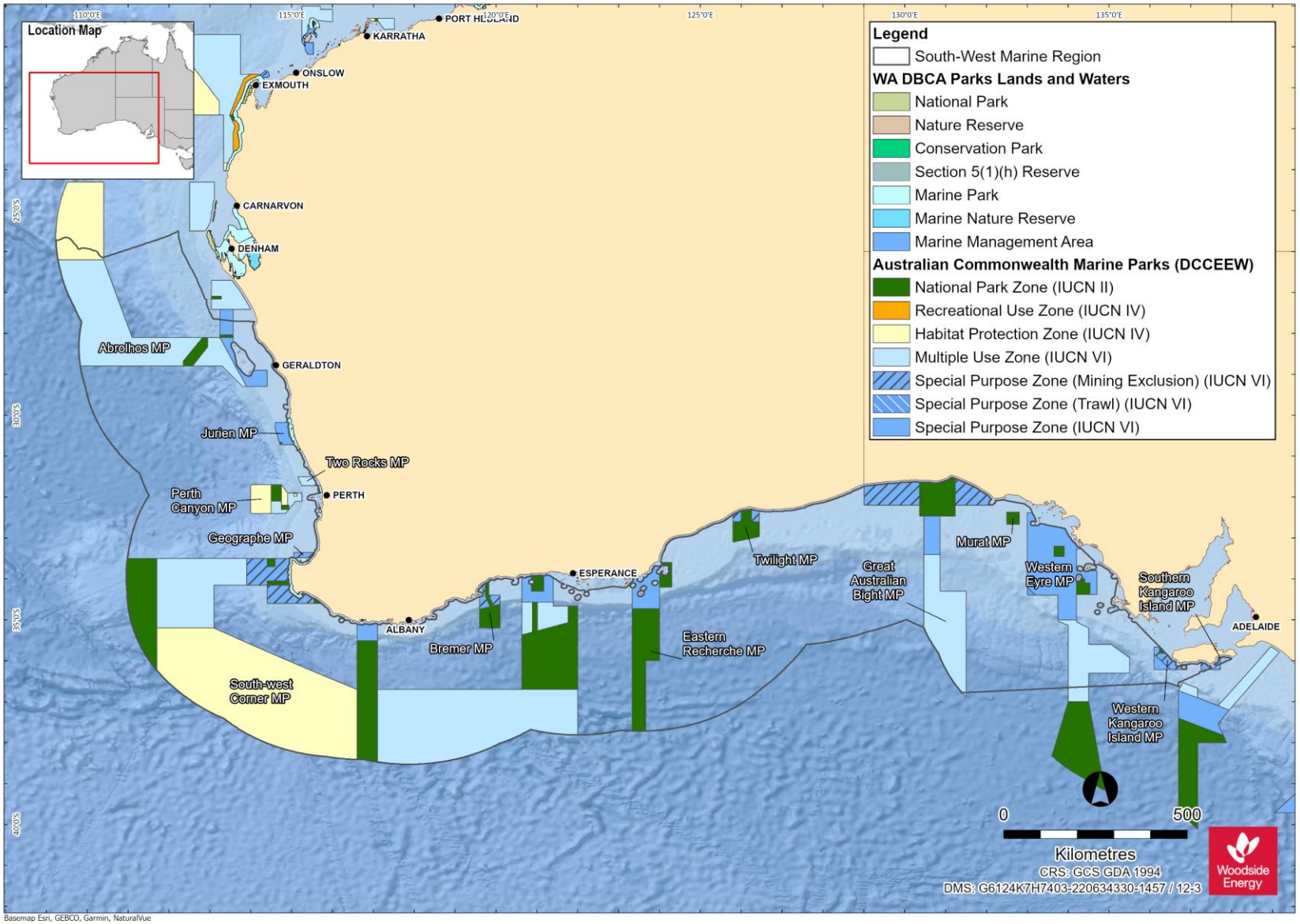


Figure 11-2 Commonwealth and State Marine Protected Areas for the SWMR (data source: GA, 2024)

11.11 Summary of Protected Areas within the NMR

Table 11-8 Protected Areas within the NMR

Protected Area	IUCN Protected Area Category* or Relevant Park Zone	Description and Values
World Heritage Properties		
Kakadu National Park		**Description** Kakadu National Park is a living landscape with exceptional natural and cultural values. It is the largest National Park in Australia and preserves the greatest variety of ecosystems on the Australian continent including extensive areas of floodplains, mangroves, tidal mudflats, coastal areas and monsoon forests. The park was inscribed on the World Heritage list in three stages over 11 years. It is located in tropical north Australia covering a total area of 19,810 km^2 (Director of National Parks, 2016).
		Ecological Values The conservation values reflect the WHA Criterion: (i), (vi), (vii) and (ix): Natural features relate to Criterion (vii) – the remarkable contrast between the internationally recognised Ramsar-listed wetlands and the spectacular rocky escarpment and its outliers and Criterion (ix) – four major river systems of tropical Australia and floodplains that are dynamic environments, shaped by changing sea levels and big floods every wet season. These floodplains illustrate the ecological and geomorphological effects that have accompanied Holocene climate change and sea level rise. Kakadu National Park contains important and significant habitats supporting a diverse range of flora and fauna. Coastal areas of the park are dominated by mudflats which are mostly lined by mangroves which support breeding and nursery grounds for a variety of animals. The threatened flatback turtles nest on Field Island which is within the park. Kakadu National Park is a key habitat for threatened species including one species of river shark, two sawfish species and two inshore dolphin species (Director of National Parks, 2016).
		Social Values Kakadu National Park is a popular tourist destination which provides important economic value to the region through boat and fishing tours and wildlife tours. Commercial tours operate within the area which provides employment opportunities for local communities. Popular recreational activities within the park include bushwalking, camping, recreational fishing and boating, swimming, wildlife watching, and viewing culturally significant sites (Director of National Parks, 2016).
		Cultural Values The Bininj/Mungguy people are the traditional owners of Kakadu National Park and have had longstanding custodianship and spiritual connection with the Kakadu region and continue to use the park for cultural practices. Kakadu holds one of the world's greatest concentrations of rock art sites and there is thought to be up to 15,000 sites in total with some sites estimated to be over 20,000 years old (Director of National Parks, 2016).

Protected Area	IUCN Protected Area Category* or Relevant Park Zone	Description and Values
National Heritage Places–- Natural		
Kakadu National Park		Refer to World Heritage property description and values above
Commonwealth Heritage Places–- Natural		
N/A		
Wetlands of International Importance (Ramsar)		
Kakadu National Park		**Description** Australian Ramsar site number 2. The stage 1 and 2 Ramsar sites, established in 1980, 1985 and 1989, respectfully were combined into a single Ramsar site in 2010 (BMT WBM, 2010).
		Conservation Values The Kakadu National Park Ramsar site straddles the western edge of the Arnhem Land Plateau encompassing a range of landforms and extensive floodplains. It is a mosaic of contiguous wetlands comprising the catchments of two large river systems, the East and South Alligator rivers and encompasses extensive tidal mudflat areas. It is an internationally important site for migratory shorebirds as part of the EAAF (BMT WBM, 2010).
Cobourg Peninsula		**Description** Australian Ramsar site number 1 established in 1974. This Ramsar site includes freshwater and extensive intertidal areas but excludes subtidal areas. It is in a remote location and there has been minimal human impact on the site (BMT WBM, 2011).
		Conservation Values The wetlands encompassed in the Ramsar site are some of the better protected and near-natural wetlands in the bioregion and there is a diverse array of wetland in a confined area. The site supports important turtle nesting habitat and habitat for coastal dolphin species and is an internationally significant migratory shorebird habitat as part of the EAAF and an important location for seabird breeding colonies (BMT WBM, 2011).
Wetlands of National Importance (DAWE, 2019)		
Southern Gulf Aggregation		**Description** The site is a complex continuous wetland aggregation in the Gulf of Carpentaria, covering an area of ~5,460 km^2 located 58 km east of Burketown, Queensland (DCCEEW, 2019b).
		Conservation Values The Southern Gulf Aggregation is the largest continuous estuarine wetland aggregation of its type in northern Australia. It is one of the three most important areas for shorebirds in Australia. The area meets criteria 1, 2, 3, 4, 5 and 6 for inclusion on the Directory of Important Wetlands in Australia (DCCEEW, 2019b).

Protected Area	IUCN Protected Area Category* or Relevant Park Zone	Description and Values
		Social Values The area is an important site for recreational barramundi fishing and is a popular site for ecotourism (DCCEEW, 2019b).
Territory Marine Parks and Reserves		
Cobourg Marine Park	II, IV, VI	**Description** Cobourg Marine Park covers an area of 2,290 km^2 and is located in the waters surrounding the Cobourg Peninsula ~220 km north-east of Darwin. This Marine Park is part of the larger Garig Gunak Barlu National Park. Garig Gunak Barlu National Park includes both this Marine Park and the Cobourg Sanctuary (Northern Territory Government, 2011)
		Conservation Values Cobourg Marine Park is located in the Cobourg and Van Diemen Gulf marine bioregions with the northern portion of the Marine Park covered by the Cobourg marine bioregion and the southern portion covered by the Van Diemen Gulf marine bioregion. This Marine Park is characterised by a number of deeply incised bays and estuaries on its northern shores. These bays are ancient river valleys that were drowned during periods of sea level rise and provide a varied environment and habitat that is quite distinct from the open water areas of the Marine Park. The areas of the Marine Park that have been studied and where extensive collections have been made indicates that the Marine Park supports rich and diverse marine life including live coral reefs, seagrass, diverse reef and pelagic fish populations, saltwater crocodiles, and six species of threatened marine turtles and dugong (Northern Territory Government, 2011).
		Social and Economic Values A variety of commercial fisheries, aquaculture and pearling occur within this Marine Park. The Marine Park has visitors who stay within the Cobourg sanctuary, sailors who moor in the area and guests who stay at onsite accommodation. Water sports such as fishing, boating, sailing, scuba diving, recreational fishing, sightseeing and wildlife viewing are popular activities undertaken in the Marine Park (Northern Territory Government, 2011).
		Cultural Values The Cobourg people have a longstanding connection to the lands and seas of Cobourg Marine Park. The Marine Park is a culturally significant place for the Cobourg people to practice customary activities including ceremonies and fishing and hunting of marine resources (Northern Territory Government, 2011).

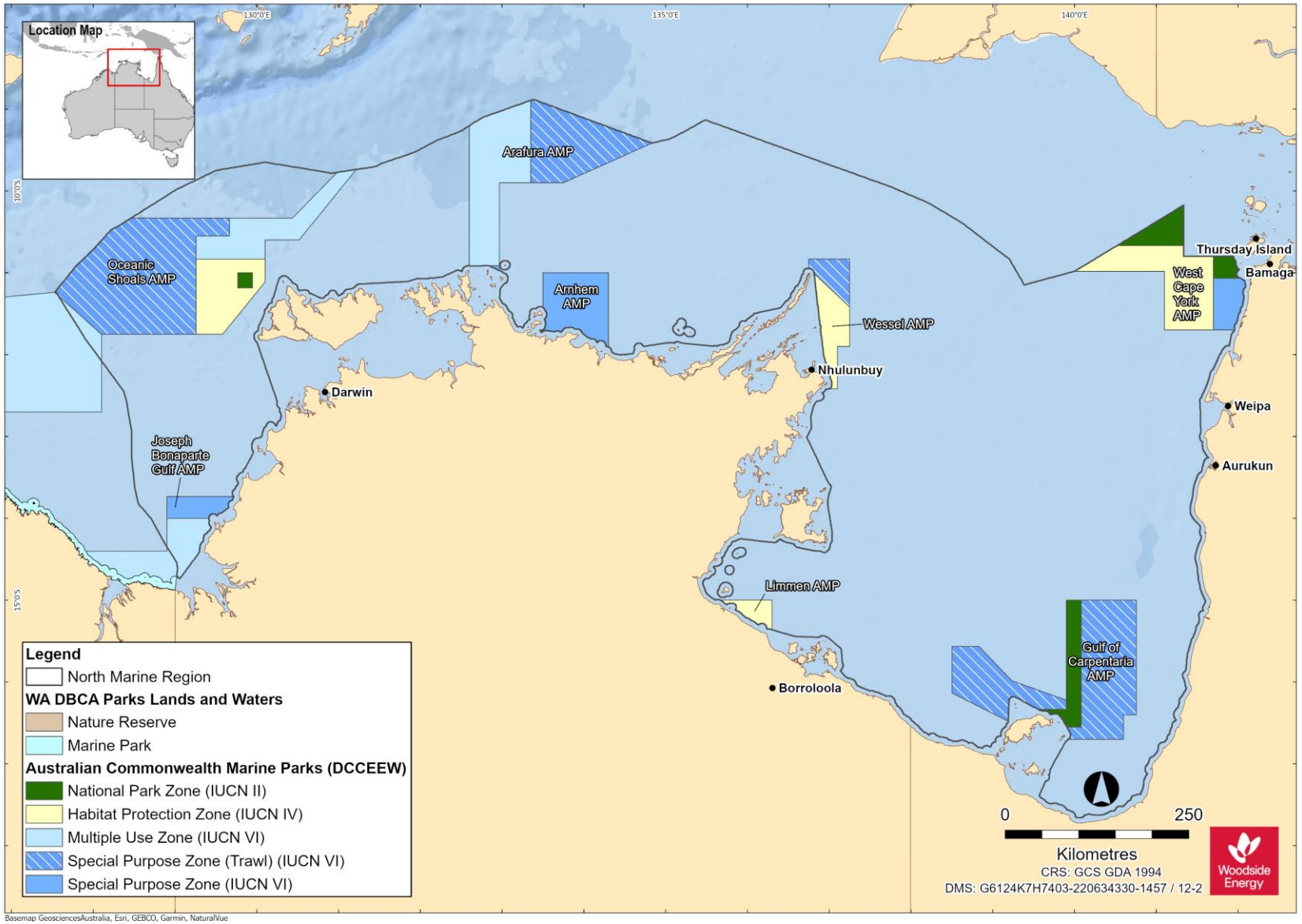


Figure 11-3 Commonwealth and State Marine Protected Areas within the NMR (data source: GA, 2024)

12. SOCIO-ECONOMIC AND CULTURAL ENVIRONMENT

This section summarises the information relating to the socio-economic and cultural environment of the regions offshore of Western Australia, with a focus on the NWMR and to a lesser extent the SWMR and NWR.

12.1 Cultural Values and Heritage

Woodside's approach to Cultural Values and Heritage management reflects our publicly available **First Nations Communities Policy** (Woodside 2022). 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 First Nations communities. Our approach to the identification, management and protection of cultural heritage is consistent with the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP), engaging with First Nations communities in ways that reflect the principles of seeking Free, Prior and Informed Consent (FPIC). Where heritage is concerned Woodside seeks to avoid impact, or if avoidance is not possible, to minimise and mitigate impact through consultation with relevant First Nations communities. We seek to ensure Traditional Owners and Custodians are central to heritage management so that 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).

12.1.1 Native Title

Woodside uses established systems, such as native title, to identify First Nations groups that may have functions, interests or activities that may be affected. 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 First Nations 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 which asserts it holds native title rights and interests in an area of land and/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 that its native title 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 that there is an organised society that occupied the land and/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 utilized in a way determined by that society. There must, of course, be a society sufficiently organized to create and sustain rights and duties…

Therefore, Woodside understands that native title rights and interests are held communally by an organised society, that native title claims are understood to represent the area over which First Nations 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 (section 57, *Native Title Act 1993*) in trust or as agent for native title holders.

Indigenous Land Use Agreements (ILUAs) are voluntary agreements between native title parties and other people or bodies about the use and management of land and/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 on the cultural features or heritage values of an area and therefore do not inform Woodside's understanding of heritage values or cultural features.

12.1.2 Coastal First Nations Groups

First Nations 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 which 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 First Nations groups to be consulted.

Woodside understands from engagement with stakeholders that extending a native title group's responsibility to areas which 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 that a First Nations 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.

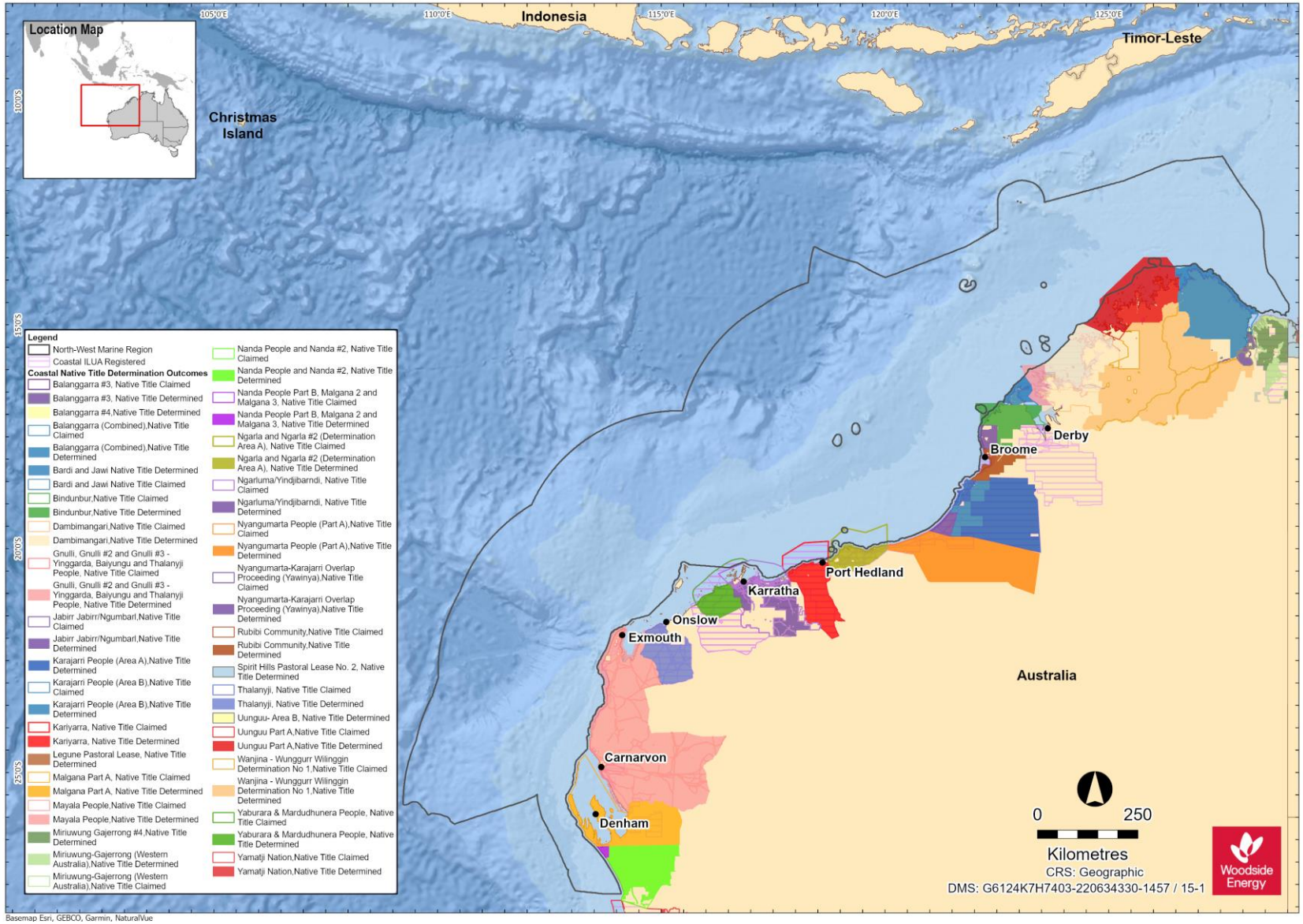


Figure 12-1 Coastal Native Title Claims/ Determinations and ILUAs in the NWMR (data source: DPLH 2024)

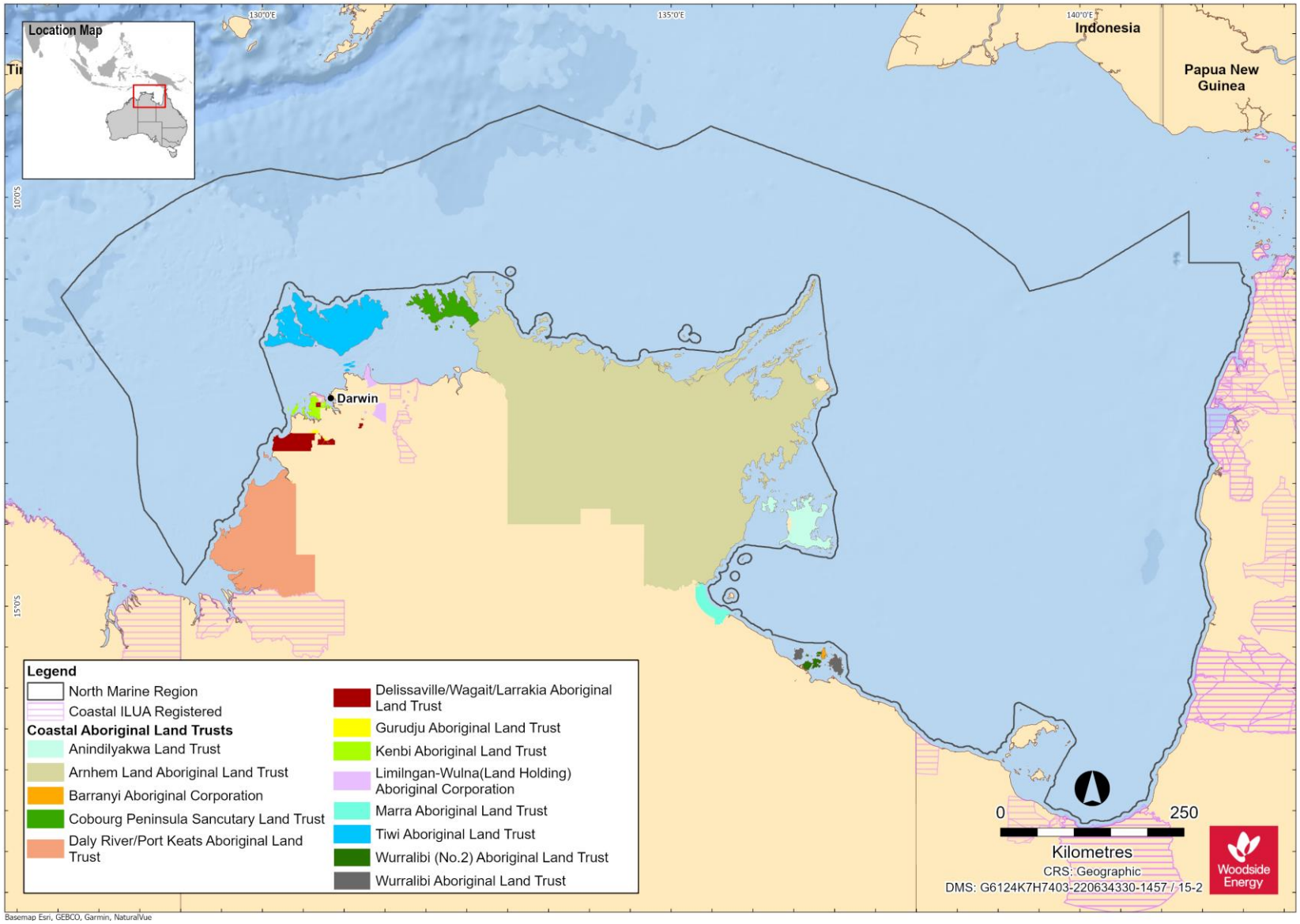


Figure 12-2 Coastal Native Title Claims/ Determinations and ILUAs in the NMR (data source: DPLH 2024)

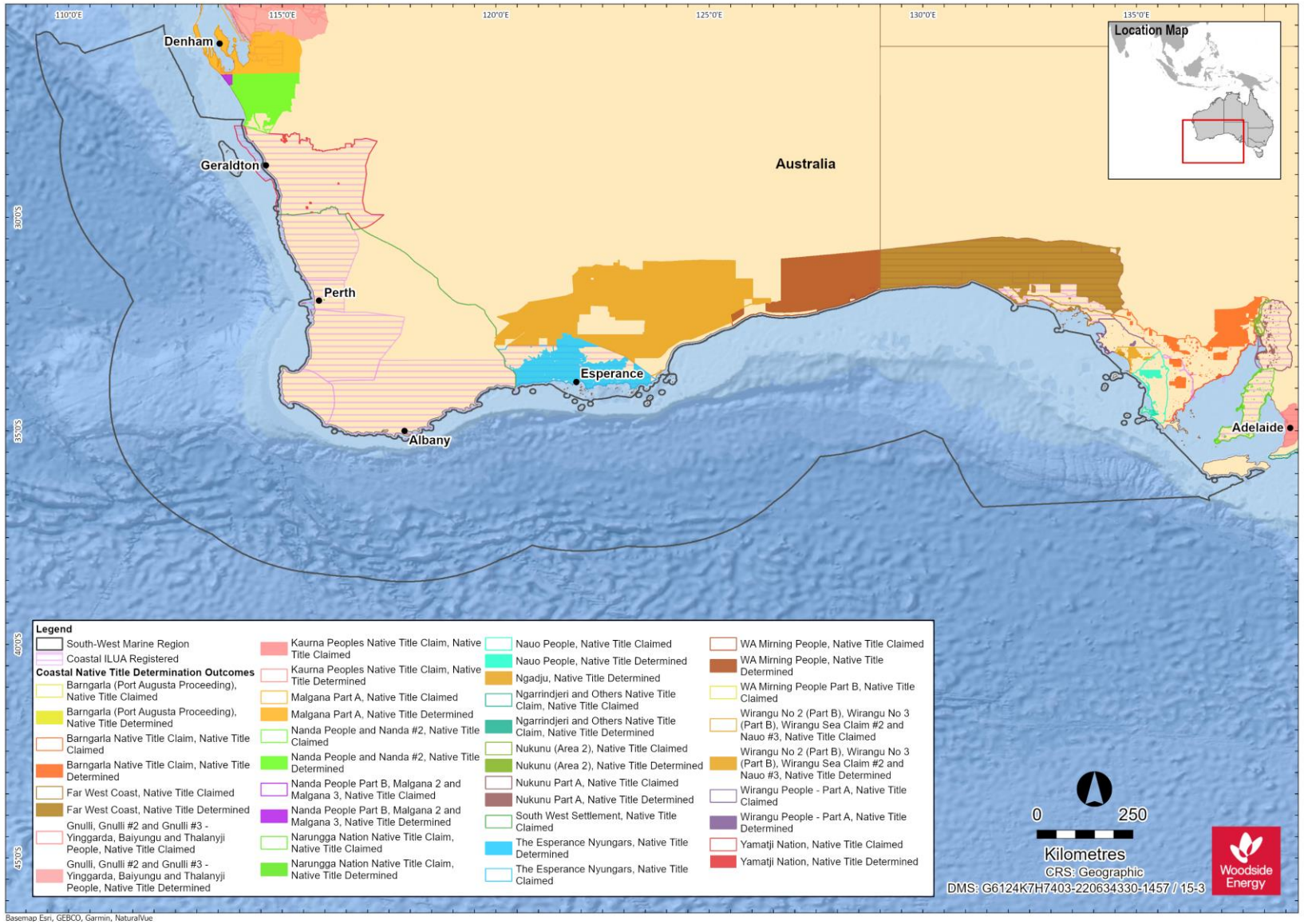


Figure 12-3 Coastal Native Title Claims/ Determinations and ILUAs in the SWMR (data source: DPLH 2024)

12.1.3 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 a First Nations 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).

It necessarily follows that an impact to marine ecosystems has the potential to impact cultural features where the impact is detectable within Sea Country—the seascape which 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 deliver environmental benefits…Managing IPAs also helps Indigenous communities protect the cultural values of their country for future generations…" (DCCEEW, 2024c).

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. 20–30km 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 100km 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 (e.g. 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 Western Australia (Double et al., 2010, 2012), passing First Nations language groups along the entire west coast of Australia.

Table 12-1 Commonly identified Sea Country species and habitats.

Value	Details
Marine mammals	Whales, and in particular humpback whales and dugongs, are commonly identified through consultation with First Nations 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 First Nations people as culturally important species and a favoured resource. First Nations 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 First Nations people (Fijn 2021:47; Delisle et al. 2018).
Fish and Cephalopods	Fish and squid are commonly identified through consultation with First Nations people as a culturally important species, with fish generally being identified as a resource. First Nations may identify cultural values associated with fish species as important to maintaining both tangible (physical cultural sites) and intangible (cultural 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/rituals for species of squid and octopus to enhance or maintain populations. Thalu are places where these increase ceremonies are performed.

Seabirds	Seabirds, and in particular shags, are commonly identified through literature as a culturally significant species (Malgana Land and Sea Management et al. (2021), as well as a resource (seabird eggs; Smyth 2007).
Benthic habitats	First Nations groups identify benthic habitats as valuable for both their ecological and aesthetic values. Corals attract fish and seagrass providing shelters for fauna, as well as an important resource for dugongs.
Shoreline habitats	First Nations groups 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 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.

12.1.4 Marine Parks

Woodside acknowledges that Commonwealth and State Marine Park Management Plans have sought to recognise cultural values and responsibilities of First Nations groups. Australian Marine Parks (AMP) 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'. AMP summarises these values as natural values, cultural values, heritage values and socio-economic values (**Refer to section 11.5**).

12.1.5 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. 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. There are currently 85 dedicated IPAs over 74 million hectares. These account for more than 50 per cent of the National Reserve System (NIAA, 2023). As of August 2024, an additional 36 Traditional Owner consultation projects to develop management plans for proposed IPAs are underway (DCCEEW, 2024c). Ten Sea Country IPA consultation projects were announced in 2022. One of these, Tukujana pa Karajarri Kura Jurrar, is in the NWMR and extends from the existing Karajarri IPA into the sea off the south-west Kimberley coast (DCCEEW, 2024c). The Indigenous Protected Areas program is administered by the National Indigenous Australians Agency in partnership with DCCEEW. Dedicated and proposed IPAs are shown in **Figure 12-12-4**.

The following IPAs are within the NWMR:

Nyangumarta Warrarn IPA

The Nyangumarta Warrarn IPA is comprised of four areas totalling approximately 28,675 km^2, 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 First Nations 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 (NWAC & YMAC, 2015).

Karajarri IPA

Karajarri Indigenous Protected Area (IPA) was dedicated in 2014, to manage, protect and enhance Karajarri country. The IPA covers nearly 25,000 km^2 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.).

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” (KTLA, 2014a).

The IPA includes two different 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 the planning and development of the IPA, the Karajarri Traditional Lands Association (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).

Yawuru IPA

The Yawuru IPA was dedicated by Yawuru people in 2017, covering 2,109 km^2 of Yawuru coastal and inland country (YRNTBC, 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.-a).

The Yawuru IPA is managed under the Walyjalajala nagulagabu birrangun buru Plan of Management for 2017-2026 (YRNTBC, 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 and seagrass beds that provide habitat for dugongs (*Dugong dugon*) and EPBC Act-listed threatened sea turtle species including Hawksbill Turtle (*Eretmochelys imbricata*), Loggerhead Turtle (*Caretta caretta*), Green Turtle (*Chelonia mydas*) and Flatback Turtle (*Nataden depressus*). Roebuck Bay is a Ramsar site and has a known population of snubfin dolphins (*Orcaella heinsohni*) (**Figure 7-6** Australian snubfin dolphin BIAs for the NWMR (data source: DCCEEW, 2024b)). Other ecological values include pearl shell beds for pearl oysters and habitat for a range of EPBC Act listed threatened species (YRNTBC, 2014).

Bardi Jawi IPA

Bardi Jawi IPA is located 160 km north of Broome and covers 1269.9 km^2 of land and sea country (NIAA, n.d.-b). 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 traditional country. Today people live in outstations spread along the mainland Peninsula coastline (KLC/ BJNAC 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 (CAP). 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 (KLC/ BJNAC 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 stories attached to these places are culturally important. Ecological values of the Jardagarr (coastal) country includes many species of native native garrabal (birds), including Eastern Curlews and Fork-tailed Swifts (KLC/ BJNAC RNTBC, 2013).

Dambimangari IPA

Dambimangari IPA is located between Broome and Darwin, stretching east to the Prince Regent area. It covers 6,422.94 km^2 of landscape, including open grasslands, eucalyptus woodlands, intertidal flats and rocky reefs and shoals (NIAA, n.d.-c). 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 (dugong).

The targets for protection are identified in the Dambimangari Healthy Country Plan 2012-2022 as following:

- cultural sites
- reefs, beaches and islands
- saltwater fish
- turtle and dugong
- whales and dolphins
- rivers, waterholes, waterfalls and wetlands (freshwater systems)
- culturally important native animals
- bush fruits and medicine plants
- right-way fire (DAC, 2012).

Jurluwarra (Saltwater-turtle) and warliny (Dugong) 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 (DAC, 2012).

Uunguu IPA

Stage one of the Uunguu IPA was declared on May 23, 2011, coinciding with the Native Title Determination and release of the Healthy Country Plan. The IPA covers 7,598.06 km^2. 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 (WGAC, 2017). A Saltwater IPA Plan of Management was created in 2017 as a sub-plan for the Wunambal Gaambera Healthy Country Plan (WGAC, 2017)[22].

[22] Marine areas were proposed to be added to the Uunguu IPA as an International Union for Conservation of Nature (IUCN) Category VI (Managed Resource) Protected Area, early in 2018.

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),
- Yawal (waterholes),
- bush plants,
- rock art,
- cultural places on islands,
- fish and other seafoods,
- mangguru (marine turtles) and balguja (dugong) (WGAC, 2010).

The Uunguu Rangers look after land and sea country through pest control, visitor management, cultural heritage conservation, monitoring flora and fauna and fire management (NIAA, n.d.-c).

Balanggarra IPA

The Balanggarra IPA was dedicated on August 7, 2013. The IPA spans over 1 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 rivers include 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 or country (land, sea, rivers, islands),
- Cultural sites (rock art sites, burial sites, heritage places),
- Native animals,
- Accessible bush tucker / 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 and protect and enhance the unique biodiversity values of their country (Balanggarra Aboriginal Corporation, 2011).

Wilinggin IPA

The Wilinggin IPA spans over 2.4 million hectares of remote country in the central north Kimberley region and was declared in 2013. It included basalt ranges and sandstone cliffs which 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-d). Wilinggin Country is mostly landlocked, apart from two small saltwater areas which include Walcott Inlet and Prince Frederick Harbour.

Seven targets are identified in the Wilinggin Healthy Country Plan 2023 – 2032.

- 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).

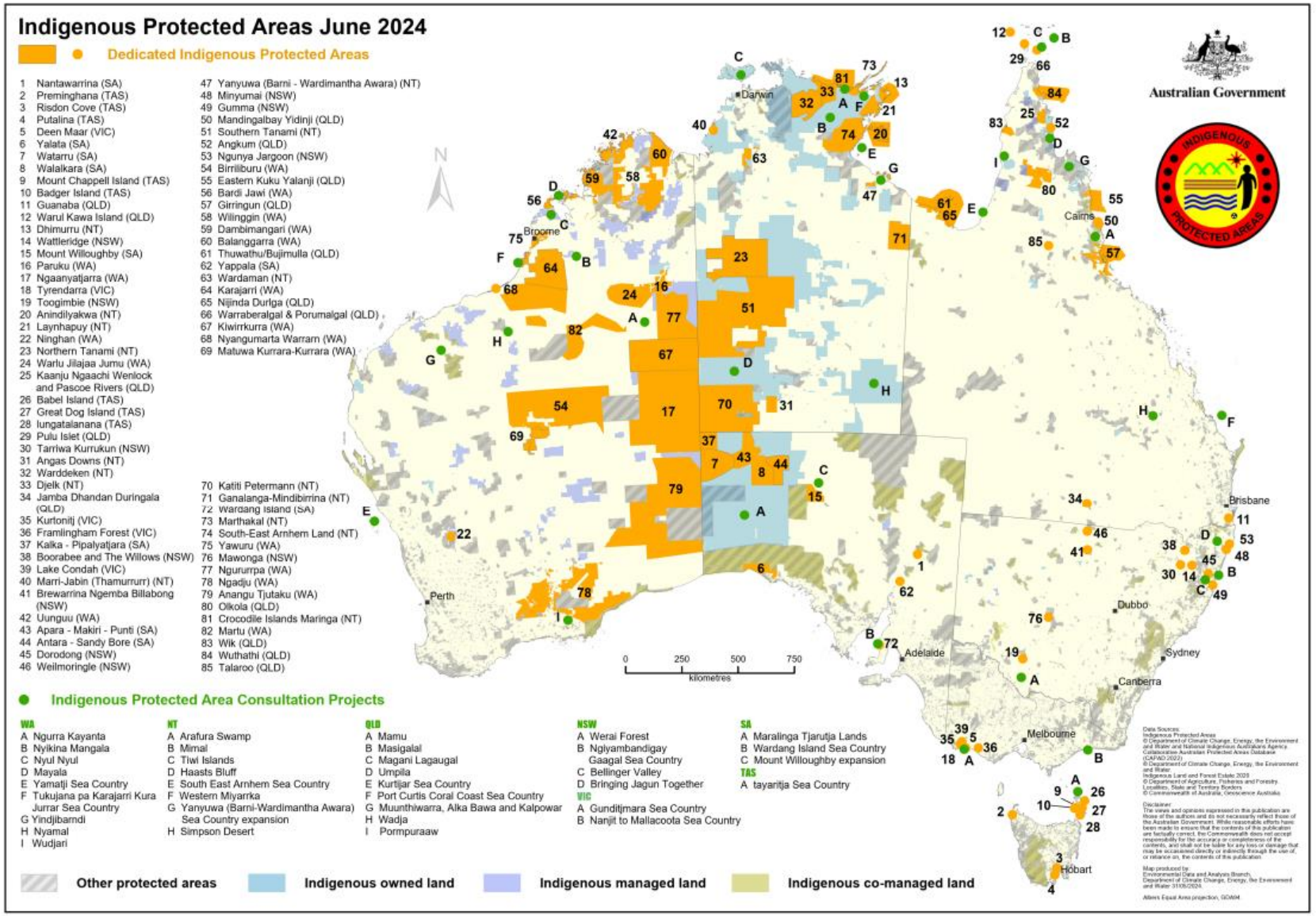


Figure 12-12-4 Indigenous Protected Areas (IPAs) in Australia (data source: DCCEEW & NIAA, 2024)

12.1.6 First Nations Cultural Heritage

Woodside understands that communal cultural connection exist between Traditional Custodians and land and waters. It is understood from the onshore archaeological record that First Nations 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 with the potential to exist 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 which relates to the preservation of their fabric (i.e. the tangible features) and their context (i.e. their location and relationship to other archaeological and natural features). Archaeological sites may also have intangible dimensions (ICOMOS, 2013) cultural value 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, and they can also be new and living at the same time. An understanding of the intangible cultural heritage of different First Nations 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 to (NNTC, n.d). **Figure 12-2** provides context to common intangible themes that exist in First Nations communities.

Table 12-2 Intangible Heritage Values associated with Sea Country

Value	Details
Songlines	Oral songlines are often described by First Nations people 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 and consist of a series of invisible, interconnected routes across the landscape that mark significant sites for First Nations people (Higgins 2021:723). Songlines demonstrate First Nations 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 inter alia: 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). 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. In Australia, songlines can stretch thousands of kilometres, making up a complex and organic network of stories containing cultural knowledge of First Nations 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 make mention of mythical events occurring 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 that 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 in order to communicate sacred knowledge that assists in safe navigation of the ocean (Neale and Kelly 2020:83-84).
Creation/dreaming sites, sacred sites and ancestral beings	The only published sources located by Woodside with detailed descriptions of the location of ancestral beings or creation/dreaming/sacred sites place these on land, or within inland water sources such as rivers or 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 First Nations 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 reviewed by Woodside, caring for Country was noted to include, but is not limited to, 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 e.g., 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 is 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/relocation of First Nations communities may have implications for the preservation of First Nations knowledge. Further, 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 (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	Describes the multi-faceted relationship between First Nations people and the landscape, which is envisioned as having personhood and spirit. It is also an aspect of personal identity for many First Nations 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 the continuation of other values including caring for Country, carrying out cultural practices and the transfer of 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/or a responsibility to care for species (Muller 2008). Kinship arises from totemic associations within First Nations “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 that 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).
Resource collection	A number of marine species are identified through consultation and literature as important resources, particularly as food sources **(See Section 12.1.4)**. In addition to their immediate value as sustenance, the gathering and preparation of these resources is 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.

On 15 November 2023, the *Aboriginal Heritage Act 1972* (WA) was restored as the legislation that manages Aboriginal heritage in Western Australia (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 AHA, 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 1984 (Cth)* for the protection and preservation of that area.

12.1.6.1 Submerged Cultural Heritage

It is understood that 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; UWA 2021). At its lowest level during Indigenous occupation, the sea level 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).

Archaeological material preserved on the Ancient Landscape has the potential to provide further information about the earliest periods of human occupation (Veth et al 2019; UWA 2021).

Recent archaeological discoveries demonstrate that the now submerged landscape was occupied and inhabited, and can 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) which 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 (e.g. hills, particularly of igneous rock formations) that may have been foci for cultural activity (UWA 2021);
- karst depressions and other "catch points" where artefacts may accumulate following disturbances caused by inundation (UWA 2021, Nutley 2022, Nutley 2023a);
- Madeleine Shoals has been specifically identified by Murujuga Aboriginal Corporation (MAC) as an archaeologically prospective featuredue 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 (e.g. shallow declination shorelines in sheltered passages of the inner archipelago or on the leeward side of hard-rock/fringing reef cause-ways 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).

In recognition of this, Woodside considers the Ancient Landscape between the mainland and the ancient coastline KEF as an area where potential First Nations 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 1984*, *Underwate*r *Cultural Heritage Act 2018* or EPBC Act. However, these Acts only extend protection to First Nations heritage places specified by declaration or otherwise included on a statutory list. Woodside understands that there is currently no First Nations archaeology known to exist anywhere within Commonwealth waters and no areas subject to declarations or prescriptions under these Acts.

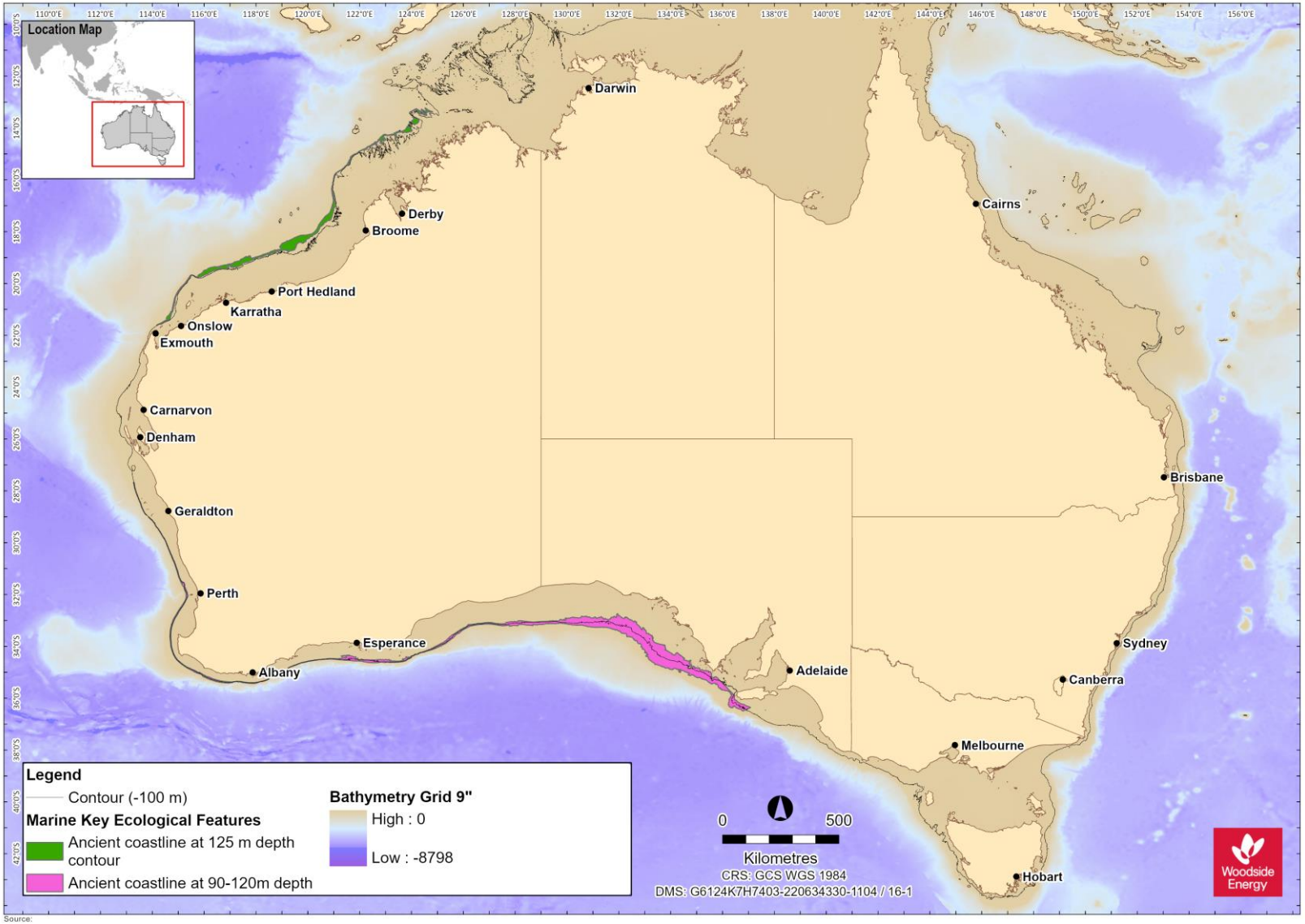


Figure 12-5 Indicative Bathymetry of the Ancient Submerged Landscape (data source: GA 2024, DCCEEW, 2024d)

12.1.6.2 First Nations 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. The area has one of the largest, densest, and most diverse collections of rock art in the world. It is estimated that the peninsula and surrounding islands contain over a million petroglyphs (rock engravings) covering a broad range of styles and subjects. The landscape also contains 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 places are linked to First Nations cosmology, Dreaming stories and songs through the stories, knowledge and customs that are still held by traditional custodians.

In 2007 the Dampier Archipelago (including the Burrup Peninsula) was included on the National Heritage List 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. Within the National Heritage Place, the Murujuga National Park covers 4,913 ha and is co-managed by the Murujuga Aboriginal Corporation and the Department of Biodiversity, Conservation and Attractions. The Murujuga Cultural Landscape was also added to Australia's Tentative World Heritage List in 2020, with full World Heritage Listing anticipated in 2024.

The Department of Planning, Lands and Heritage maintains a register of registered sites and heritage places. 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 *Environment Protection and Biodiversity Conservation Act 1999* (Cth). Murujuga National Park is managed under the *Conservation and Land Management Act 1984* (WA).

12.1.7 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 *Environment Protection and Biodiversity Conservation Act 1999* (Cth). 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 SWMR, NWMR and NWR.

12.1.8 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 2018* (Cth) 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 Western Australian waters before 1900 are protected by the *Maritime Archaeology Act 1973* (WA).

There are no known National Heritage listed shipwrecks in the NWMR and NMR (**Table 12-3** and **Table 12-4)**. The only known National heritage listed shipwrecks are within the SWMR and include:

- The HMAS Sydney II
- The HSK Kormoran
- The Batavia

Information on National Heritage listed shipwrecks in the SWMR can be found in **Table 12-5**.

Known historical shipwreck sites in Western Australian waters are listed in the WA Maritime Museum Shipwreck Database. Known historical shipwreck sites in Commonwealth waters are listed in Australasian Underwater Cultural Heritage Database. These databases only cover known historical sites. Known shipwrecks listed in these databases for the NWMR, NMR and SWMR are shown in **Figure 12-6**, **Figure 12-7**, and **Figure 12-8** respectively.

12.1.9 World, National and Commonwealth Listed Heritage Places

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) protects the heritage values of National Heritage Listed and World Heritage Listed places. Any action that will have or is likely to have a significant impact on the heritage values of these places are offences under Part 3, Division 1 of the EPBC Act unless the action is permitted under one of the mechanisms of the EPBC Act. These mechanisms include a number of exceptions set out in Part 4, approvals granted under Part 9 and ministerial decisions under Division 2 Part 7.

Australia's National Heritage Sites are those of outstanding natural, historic and/or Indigenous significance to Australia. Indigenous Protected Areas and National Heritage places classed as natural are discussed in **Section 11.3**. Historic and/or Indigenous National Heritage Listed Places of the NWMR and SWMR include:

- Dampier Archipelago (including Burrup Peninsula)
- Dirk Hartog Landing Site/Cape Inscription
- *HMAS Sydney II*, *HSK Kormoran* Shipwreck Sites
- *Batavia* Shipwreck Site and Survivor Camps Area 1629 – Houtman Abrolhos
- Cheetup Rock Shelter

Commonwealth Heritage Places are a collection of sites recognised for their Indigenous, historical and/or natural values, which are owned or controlled by the Australian Government. A number of these sites are owned or controlled by the Department of Defence, as well as Government agencies relating to maritime safety, customs and communication. Commonwealth Heritage places classed as natural are discussed in **Section 11.3**. Listed Heritage Places in the NWMR are all natural with two related to defence activities which include:

- Yampi Defence Area (**Table 11-6**)
- Learmonth Air Weapons Range Facility (**Table 11-6**)

World Heritage Properties are those sites that hold universal value which transcends any value that may be held by any one nation. These sites and their qualities are detailed in the Convention concerning the Protection of the World Cultural and Natural Heritage (the World Heritage Convention), to which Australia is a founding member. The Protected Matters Search Report (**APPENDIX A**. Protected Matter Search Reports for NWMR, SWMR and NMR) lists two natural World Heritage Properties in the NWMR (refer **Section 11.2**). There are no cultural heritage listings located within the NWMR.

Summary tables of heritage places for NWMR, SWMR and NMR are presented in **Table 12-3,Table 12-4**and **Table 12-5.**

Table 12-3 Heritage Places (Indigenous and Historic) within the NWMR

Heritage Places	Woodside Activity Area			Class	Description	Conservation Values
	Browse	NWS/S	NW Cape			
National Heritage Properties						
Dampier Archipelago (including Burrup Peninsula)	-	✓	-	Indigenous	The Dampier Archipelago (including the Burrup Peninsula) contains one of the densest concentrations of rock engravings in Australia with some sites containing thousands or tens of thousands of images.	The rock engravings comprise images of avian, marine and terrestrial fauna, schematised human figures, figures with mixed human and animal characteristics and geometric designs. At a national level it has an exceptionally diverse and dynamic range of schematised human figures some of which are arranged in complex scenes. The fine execution and dynamic nature of the engravings, particularly some of the composite panels, exhibit a degree of creativity that is unusual in Australian rock engravings.
Dirk Hartog Landing Site 1616 – Cape Inscription Area	-	-	✓	Historic	Cape Inscription is the site of the oldest known landings of Europeans on the WA coastline.	The Cape Inscription area displays uncommon aspects of Australia's cultural history because of the cumulative effect its association with these explorers and surveyors had on growing knowledge of the great southern continent in Europe. The association of the site with these early navigators stimulated the development of the European view of the great southern continent at a time when they began to look at the world with a modern scientific outlook.
Commonwealth Heritage Properties						
None						

Table 12-4 Heritage Places (Indigenous and Historic) within the NMR

Heritage Places	Class	Description	Conservation Values
National Heritage Properties			
None			
Commonwealth Heritage Properties			
None			

Table 12-5 Heritage Places (Indigenous and Historic) within the SWMR

Heritage Places	Class	Description	Conservation Values
National Heritage Properties			
Cheetup Rock Shelter	Indigenous	Cheetup, meaning "place of the birds", is the name of a spacious rock shelter located in Cape Le Grand National Park, about 55 km east of Esperance in WA. First Nations people associated with the place identify themselves as Nyungar/Noongar, Ngadju (shortened from Ngadjunmaia) or Mirning.	Cheetup rock shelter provides outstanding evidence for the antiquity of processing and use of cycad seeds by First Nations people. The seeds of the cycad are extremely toxic and can cause speedy death if eaten fresh without proper preparation to remove the toxins. The presence of *Macrozamia riedlei* seeds in a pit lined with Xanthorrhoea (grass tree) leaf bases indicates that First Nations people in the Esperance region had the knowledge to remove the toxins of this important source of carbohydrate and protein at least 13,200 years ago.
Batavia Shipwreck Site and Survivor Camps Area 1629 – Houtman Abrolhos	Historic	The Batavia and its associated sites hold an important place in the discovery and delineation of the WA coastline. The wreck of the Batavia, and other Dutch ships like her, convinced the VOC (Dutch East India Company) of the necessity of more accurate charts of the coastline and resulted in the commissioning of Vlamingh's 1696 voyage.	Because of its relatively undisturbed nature the archaeological investigation of the wreck itself has revealed a range of objects of considerable value as well as to artefact specialists and historians.
HMAS Sydney II and HSK Kormoran Shipwreck Sites	Historic	The naval battle fought between the Australian warship HMAS Sydney II and the German commerce raider HSK Kormoran off the WA coast during World War II was a defining event in Australia's cultural history. HMAS Sydney II was Australia's most famous warship of the time and this battle has forever linked the stories of these warships to each other. The loss of HMAS Sydney II along with its entire crew of 645 following the battle with HSK Kormoran, remains as Australia's worst naval disaster.	The shipwreck sites of HMAS Sydney II and HSK Kormoran have outstanding heritage value to the nation because of their importance in a defining event in Australia's cultural history and for their part in development of the process of the defence of Australia.

Heritage Places	Class	Description	Conservation Values
Commonwealth Heritage Properties			
Cliff Point Historic Sites	Historic	Cliff Head is a limestone bluff on the east coast of Garden Island. Evidence of occupation has been reported from the beach just north of the head, the immediate hinterland, the ridge above and on the south face of the ridge.	The Cliff Point Historic Site, individually significant within the area of Garden Island, is important as the first site inhabited by Governor Stirling's party in 1829 when founding the colony of WA, and as WA's first official non-convict settlement. The site was occupied in the first instance by Captain Charles Fremantle before the arrival of Captain Stirling. The party occupied the site for two months before a move was made to the Swan River settlement on the mainland.
HMAS Sydney II and HSK Kormoran Shipwreck Sites	Historic	As above.	As above.
J Gun Battery	Historic	J Battery comprised two 155 mm long range guns, the other similar battery being at Cape Peron on the mainland at the entrance to Cockburn Sound. Located in the dune systems at the north western corner of Garden Island, elements of the J Battery complex are now covered in part by sand.	J Gun Battery (1942) is individually significant within the area of Garden Island (Register No. 019544) and is historically important as the first gun battery constructed on Garden Island and as one of two long range gun batteries which played a strategic role in the coastal defences of Cockburn Sound and Fremantle following the entry of Japan into the Second World War (1939-45).

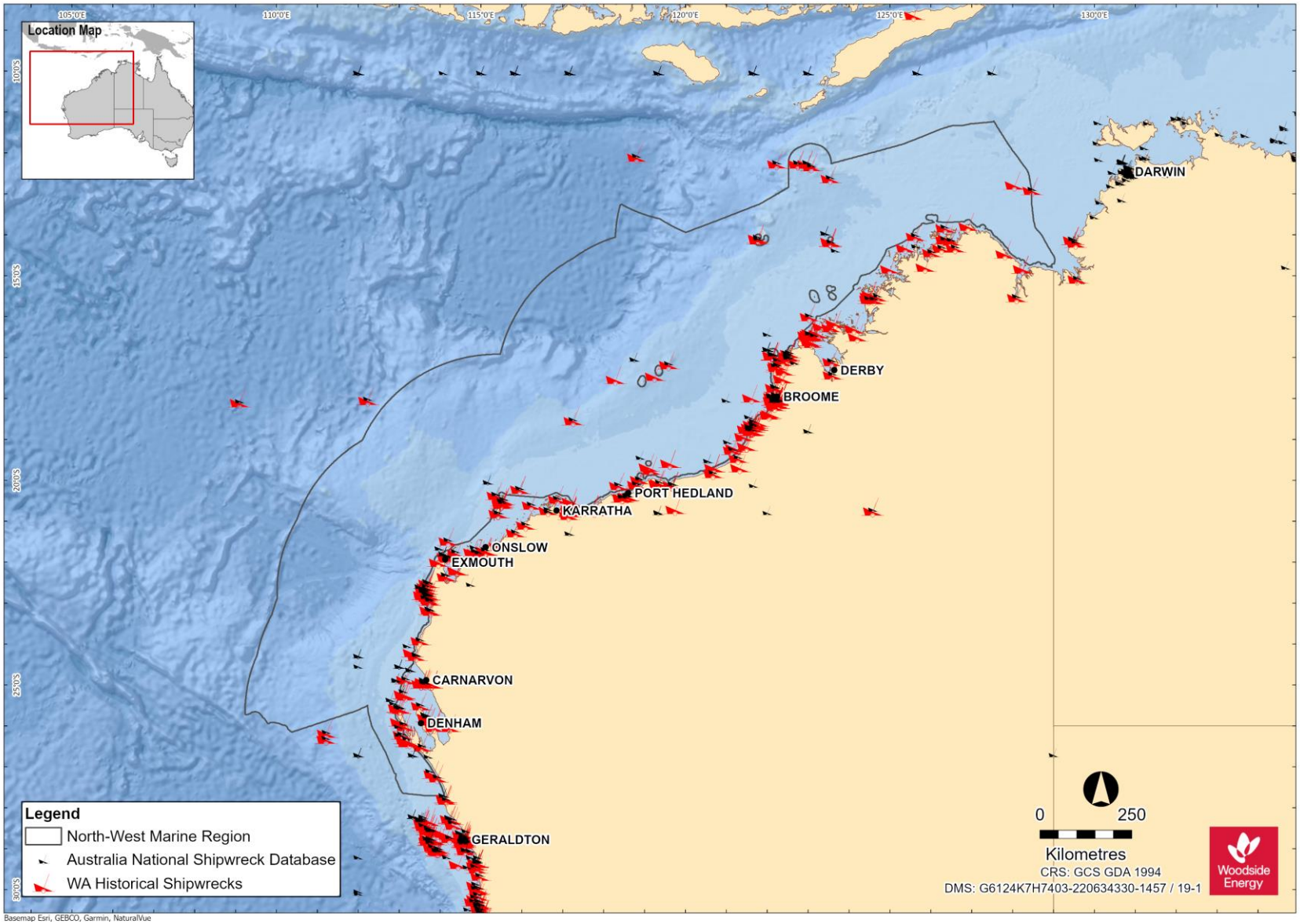


Figure 12-6 Shipwrecks in the NWMR (data source: WAM, 2018 and AODN, 2008)

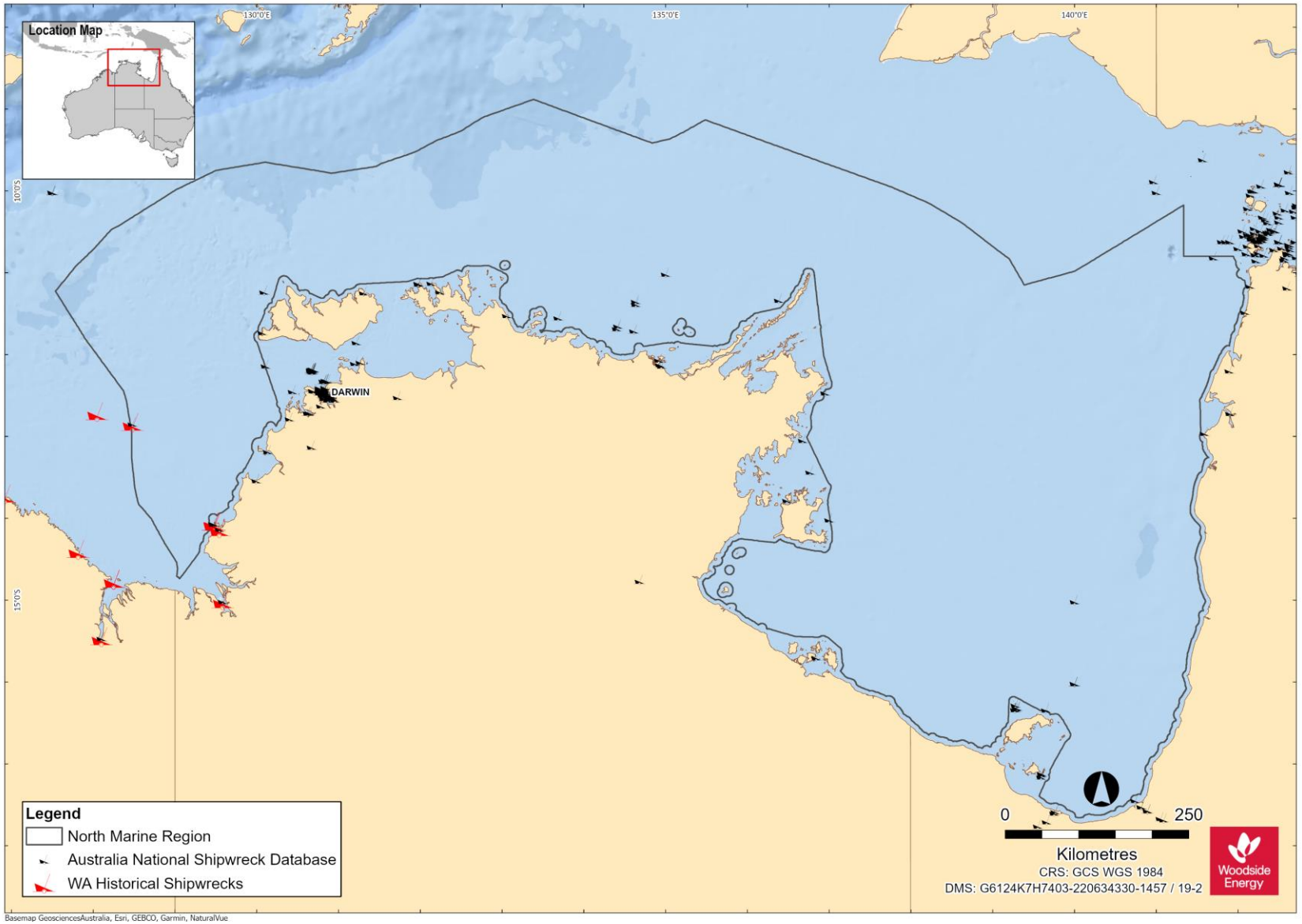


Figure 12-7 Shipwrecks in the NMR (data source: WAM, 2018 and AODN, 2008)

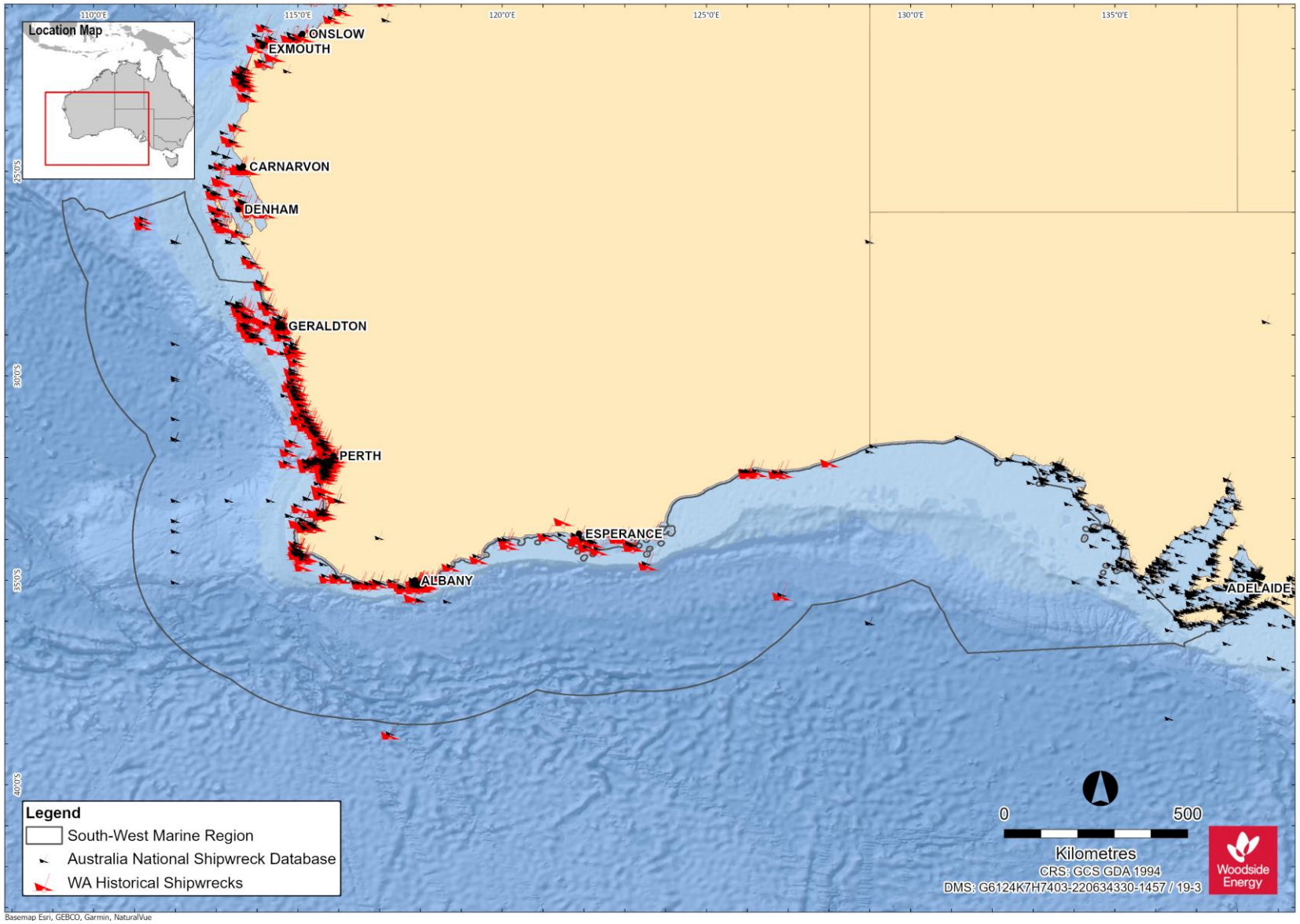


Figure 12-8 Shipwrecks in the SWMR (data source: WAM, 2018 and AODN, 2008)

12.2 Socio-Economic Values

Socio-economic values include commercial and traditional fishing, tourism and recreation, shipping, oil and gas activities and defence activities.

12.2.1 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* (Cth).

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 licensed to operate within the NWMR are summarised in **Table 12-6**.

Table 12-6 Commonwealth and State managed fisheries

Fishery	Woodside Activity Area			Description			
	Browse	NWS/S	NW Cape				
Commonwealth Managed Fisheries							
Southern Bluefin Tuna Fishery	✓	✓	✓	**Management area**	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 area.		
				Species targeted	**Fishing methods**	**Fishing depth**	
				Southern bluefin tuna (*Thunnus maccoyii*)	Longline, purse seine fishing, and minor line (troll and poling).	Southern bluefin tuna is a pelagic species which can be found to depths of 500 m (AFMA, 2021a).	
				Fishing effort	Most of the Australian fishing effort is by purse-seine vessels in the Great Australian Bight and waters off South Australia during summer months, and by longline off the New South Wales coastline during winter months (Patterson and Dylewski, 2023a). The Southern Bluefin Tuna Fishery is shared amongst countries. Australia currently has a 35% share of the total global allowable catch. Whilst wild capture fishing in Australia to sell directly to market can occur anywhere throughout the fisheries range, currently most of that quota is value-added through ranching (on-growing the wild captured fish for an extra 5-6 months). Ranching requires significant infrastructure, a resident labour force, plus proximity to a fishery able to supply a large quantity of natural feed/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 (1–4 years of age) move from the spawning ground in the north-east Indian Ocean into the Australian EEZ and southwards along the Western Australian coast (Patterson and Dylewski, 2023). The stock is classified as not overfished (Patterson and Dylewski. 2023a). A total of 5,972 t bluefin tuna catch was recorded for the 2021-22 fishing season, an increase from 5,646 t in the 2020-21 period (Patterson and Dylewski, 2023a). Of the total catch, 4,957 t were collected using purse seine and 1,015 from pelagic longline.	
				Active licences/vessels	Eight purse seine vessels and 22 longline vessels, an increase from 7 purse seine vessels and 20 longline vessels in the 2020-21 period (Patterson and Dylewski, 2023a).		

Fishery	Woodside Activity Area			Description			
	Browse	NWS/S	NW Cape				
Western Skipjack Tuna Fishery	✓	✓	✓	**Management area**	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.		
				Species targeted		**Fishing methods**	**Fishing depth**
				Western skipjack tuna (*Katsuwonus pelamis*)		Fishers use purse seine gear (about 98% of catch) and sometimes pole and line when fishing for skipjack tuna.	Western skipjack tuna is a pelagic species that can be found to depths of 260 m (AFMA, 2021b).
				Fishing effort:	The Skipjack Tuna Fishery has not been actively fished since the 2008-2009 fishing season (Patterson and Delewski, 2023b). The management arrangements for this fishery will be reviewed if active boats re-enter the fishery.		
				Active licences/vessels:	No active vessels operating since 2009 (Patterson and Delewski, 2023b).		
Western Tuna and Billfish Fishery	✓	✓	✓	**Management area**	The Western Tuna and Billfish Fishery extends to the Australian EEZ boundary in the Indian Ocean.		
				Species targeted		**Fishing methods**	**Fishing depth**
				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., 2022a).		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.	Species have a broad depth distribution, with tuna occurring at 150 – 300 m, striped marlin at 150 m and swordfish at up to 600 m (BRS, 2007).
				Fishing effort:	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., 2023).		

<table>
<tr><th rowspan="2">Fishery</th><th colspan="3">Woodside Activity Area</th><th colspan="4">Description</th></tr>
<tr><th>Browse</th><th>NWS/S</th><th>NW Cape</th><th colspan="4"></th></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td colspan="3">A total of 145 t catch was landed in the 2021-22 seasons, a decrease from 252 t in the 2020-21 period (Patterson, et al., 2023).
The striped marlin, bigeye tuna, and yellowfin tuna are classified as subject to overfishing (Patterson et al., 2023).</td></tr>
<tr><td></td><td></td><td></td><td></td><td>Active licences/vessels:</td><td colspan="3">Two pelagic longline and 3 minor line vessels were active during the 2021-22 season (Patterson, et al., 2023).</td></tr>
<tr><td>Western Deepwater Trawl Fishery</td><td></td><td></td><td>✓</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 Australian Fishing Zone (AFZ). (Blake et.al. 2021).</td></tr>
<tr><td></td><td></td><td></td><td></td><td colspan="2">Species targeted</td><td>Fishing methods</td><td>Fishing depth</td></tr>
<tr><td></td><td></td><td></td><td></td><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></td><td></td><td></td><td></td><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 deep-water bugs (Patterson et al., 2020).
Total trawl hours have been variable but relatively low since 2005-06. In 2021-22, 76 trawl-hours were recorded in the fishery, down from a recent peak of 1,108 in 2017-18 (Keller et al., 2023)</td></tr>
</table>

<table>
<tr><th rowspan="2">Fishery</th><th colspan="3">Woodside Activity Area</th><th colspan="4">Description</th></tr>
<tr><th>Browse</th><th>NWS/S</th><th>NW Cape</th><th colspan="4"></th></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td colspan="3">The total catch was 12 t in the 2021-22 season, up from 5 t in the 2020-21 season and no deepwater bugs were caught between 2020 and 2022 (Keller et al., 2023). Ruby snapper made up 40% of the catch in 2021-22 and 31% in 2020-21 (Keller et al., 2023).
Ruby snapper and deepwater bugs stock are considered not subject to overfishing but the biomass status of deepwater bugs are classified as uncertain (Keller, et al., 2023).</td></tr>
<tr><td></td><td></td><td></td><td></td><td>Active licences/vessels:</td><td colspan="3">Since 2004-05, 1-3 vessels have been active in the fishery, with 2 active vessels in 2021-22 (Keller, et al., 2023).</td></tr>
<tr><td>North-west Slope Trawl Fishery</td><td>✓</td><td>✓</td><td></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 AFZ (200 nm from the coastline, which is the boundary of the Australian EEZ).</td></tr>
<tr><td></td><td></td><td></td><td></td><td colspan="2">Species targeted</td><td>Fishing methods</td><td>Fishing depth</td></tr>
<tr><td></td><td></td><td></td><td></td><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></td><td></td><td></td><td></td><td>Fishing effort:</td><td colspan="3">The North-west Slope Trawl Fishery commenced in 1985 and the number of active vessels peaked at 21 in the 1986-1987 season, decreasing to between 1 and 6 vessels per year since 2005-06 (Keller and Curtotti, 2023).
A total catch of 85.8 t was recorded in 2021-22, a decrease from 87.05 t in 2020-21 (Keller and Curtotti, 2023). Of the total catch, the Australian scampi species comprised of approximately 33% (29 t), down from 50% (44 t) in 2020-21.
The stock assessment of scampi in the fishery are classified as not subject to overfishing (Keller and Curtotti, 2023).</td></tr>
</table>

Fishery	Woodside Activity Area			Description			
	Browse	NWS/S	NW Cape				
				Active licences/vessels:	Three vessels were active in the 2021-22 season, decline from 4 in the 2021-22 season, and trawl-hours decreased from 4,420 in 2020-21 to 3,950 in 2021-22 (Keller and Curtottie, 2023).		
State Managed Fisheries							
Pilbara Fish 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., 2021a).		
				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 (DPIRD, 2020).		Demersal trawl. The fishery operates with standard stern trawling gear (single net with extension sweeps) (Newman et al., 2021a).	The fishery operates in waters between 50 and 200 m water depth (Allen et al., 2014, Newman et al. 2015).
				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 1784 t in 2022,1928 t in 2021, 2087 t in 2020, 2142 t in 2019, 1996 t in 2018, 1780 t in 2017, 1529 t in 2016, 1172 t in 2015 and 1105 t in 2014. (Wakefield et al., 2023a) The fishery landed 72% of total commercial catches of the demersal scale fish in the Pilbara in 2022. Increasing catch rates and fishing mortality spawning biomass estimates indicate that imposed effort reductions since 2008 have resulted in increased fish abundance and stock rebuilding in the fishery (Wakefield et al., 2023a). In 2021, the total catch of the indicator species red emperor in the Pilbara Demersal Scalefish Fisheries (includes trawl, trap and line sectors) was 192 t, which is within the acceptable catch range (Wakefield et al., 2023).		

Fishery	Woodside Activity Area			Description			
	Browse	NWS/S	NW Cape				
					The biological stocks for the Pilbara Demersal Scalefish Fisheries are classified as sustainable-adequate (Wakefield et al., 2023a).		
				Active licences/vessels:	Four active vessels in the trawl sector in 2022 (Wakefield et al., 2023a).		
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.		
				Species targeted		**Fishing methods**	**Fishing depths**
				The catch is made up of around 45-50 different 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 (DPIRD, 2020).		Demersal fish traps.	Approximately 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 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., 2023a) The total catch of 597 t in 2022 made up 24% of the total catch by the Pilbara Demersal Scale Fishery and exceeded the acceptable catch range for the total catch (Wakefield et al., 2023a).		
				Active licences/vessels	Three active vessels in the trap sector in 2022 (Wakefield et al., 2023a).		
		✓	✓	**Management area**	The Pilbara Line Managed Fishery boat licences are permitted to operate anywhere within "Pilbara water", bounded by a line commencing at the intersection of 21° 56'S latitude and the high-water mark on the western side		

Fishery	Woodside Activity Area			Description			
	Browse	NWS/S	NW Cape				
Pilbara Line Managed Fishery					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.		
				Species targeted		**Fishing method**	**Fishing depths**
				The Pilbara Line Managed Fishery catch is made up around 45-50 different 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 (DPIRD, 2020).		Demersal long line.	Information not available.
				Fishing effort	Based on State of the Fisheries annual reports provided by DPIRD, catch trends are as follows: The Pilbara Line Managed Fishery caught 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., 2023a) The total catch of 104 t in 2022 made up 4% of the total catch by the Pilbara Demersal Scalefish Fishery and was within the acceptable catch range (Wakefield et al., 2023a).		
				Active licences/vessels	Four active vessels in 2022 (Wakefield et al., 2023a).		
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 (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) (Lewis et al., 2020).		
				Species targeted		**Fishing methods**	**Fishing depth**
				Spanish mackerel (*Scomberomorus commerson*) Grey mackerel (*S. semifasciatus*)		Trolling, baits or lures cast, jigging (Lewis et al., 2020).	Information not available.

Fishery	Woodside Activity Area			Description		
	Browse	NWS/S	NW Cape			
				Other species from the genus *Scomberomorus*		
				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: 212 t in 2022, 310 t in 2021, 290 t in 2020, 291 t in 2019, 214 t in 2018 (the lowest on record (Lewis et al., 2020), 283 t in 2017, 276 t in 2016, 302 t in 2015 and 322 t in 2014. (Lewis, P., Rynvis, L. 2023) The landed catch in 2021 was 238 t for Spanish mackerel and 10 t for grey mackerel (Lewis and Watt. 2023). The commercial landings for other large pelagic species, such as the amberjack and cobia were 19.7t and 18.2t, and other species contributed to the remaining <10t of the total catch (Lewis and Watt. 2023). All species stocks are sustainable-adequate (Lewis, P., Rynvis, L. 2023).	
				Active licences/vessels:	There were 16 vessels in 2022, primarily from May to November (Lewis, P., Rynvis, L. 2023).	
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., 2023a)	
				Species targeted	**Fishing methods**	**Fishing depth**
				Finfish, hard coral, soft coral, tridacnid clams, syngnathids (seahorses and pipefish), other invertebrates (including molluscs, crustaceans, echinoderms etc.), algae, seagrasses and 'live rock'. The resource potentially includes over 1500 species of marine aquarium fishes (Newman et al., 2021b).	The fishery is diver-based, which typically restricts effort to safe diving depths (less than 30 m).	Information not available.

Fishery	Woodside Activity Area			Description			
	Browse	NWS/S	NW Cape				
				Fishing effort:	Total catch for the Marine Aquarium Fish Managed Fishery in 2022 was 98,694 fishes and invertebrates, 17.83 t of coral, live rock, and living sand, and 39L of marine plants and live feed. (Newman et al., 2023a) In 2021, the total catch for the Marine Aquarium Fish Managed Fishery was 92,227 fishes (including syngnathids, invertebrates and sponges), 27.97 t of coral. Live rock, and living sand, and 42 L of marine plants and live feed (Newman et al., 2023). In 2020 was 89,925 fishes, 32.12 t of coral, live rock & living sand and <20L of marine plants and live feed (Newman et al., 2021b). 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., 2023a). The breeding stocks of landed species are classified as sustainable-adequate (Newman et al., 2023a)		
				Active licences/vessels:	13 licences were active in 2022 across the Marine Aquarium Fish Managed Fishery and the Hermit Crab Fishery (Newman et al., 2023a).		
Western Australian Sea Cucumber Fishery (formerly Beche-de-mer Fishery)	✓	✓	✓	**Management area**	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).		
				Species targeted		**Fishing methods**	**Fishing depth**
				The Western Australian Sea Cucumber Fishery targets two main species: sandfish (*Holothuria scabra*) and redfish (*Actinopyga echinites*).		Diving and wading. Collected by hand.	The targeted species typically inhabit nearshore in shallow depths.
				Fishing effort	Previous years catch based on State of the Fisheries annual reports provided by DPIRD: The Western Australian Sea Cucumber Fishery caught 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. In 2022, 45.2 t of the total catch consisted of sandfish (*Holothuria scabra*), 10.8 t deepwater redfish (*Actinopyga echinites*), and 0.5 t of black teatfish (*Holothuria whitmaei*) (Newman et al., 2023d). Sandfish were collected from the Kimberley only, which was last fished in 2017 (Hart et al., 2023).		

Fishery	Woodside Activity Area			Description			
	Browse	NWS/S	NW Cape				
					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., 2023). The stock status of sandfish, in the Kimberly, and red fish species landed are considered to be sustainable-adequate, while the sandfish in the Pilbara are not sustainable – inadequate. (Hart et al., 2023f).		
				Active licences/vessels	2 operating vessels operating 2022 (Hart et al., 2023f)		
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**
				The fishery targets: • 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 in 2022 are not available due to data confidentiality (Wilkin, et al. 2023b). In 2021 were less than the target catch range of 60 t (Kangas et al.,2023a). 37 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 (Kangas et al., 2023a).		
				Active licences/vessels:	One vessel active in 2021 (Kangas et al., 2023a).		
Pearl Oyster	✓	✓	✓	**Management area**	The Pearl Oyster Managed Fishery is located 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* (Hart et al., 2023b)		

Fishery	Woodside Activity Area			Description		
	Browse	NWS/S	NW Cape			
Managed Fishery				**Species targeted**	**Fishing methods**	**Fishing depth**
				Silver lipped pearl oysters (*Pinctada maxima*).	Drift diving.	Fishing effort is mostly focused in shallow coastal waters (10-15 m depth), with a maximum depth of 35 m (Lulofs et al., 2002).
				Fishing effort:	In 2021, catch was taken from Zones 2 and 3 only with no fishing in Zone 1, which has not been fished from 2017 to 2021 (Hart et al., 2023b). In 2022, the number of wild-caught pearl oysters was 756,531 (Hart et al., 2023d). Total dive hours increased in 2022 from 8,175 hours in 2021 to 10.906 hours due to a 28% increase in harvest. (Hart et al., 2023d). Zones one to three are all considered to be sustainable – adequate (Hart et al., 2023b).	
				Active licences/vessels:	Six active vessels in 2022 (Hart et al., 2023b).	
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 (Johnston et al., 2020b). 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, 2018b).	
				Species targeted	**Fishing methods**	**Fishing depth**
				Blue swimmer crab (*Portunus armatus)* (Johnston et al*.,* 2021).	Hourglass traps (Johnston et al., 2021).	Up to 50m deep (Johnston et.al., 2020a).
				Fishing effort:	Previous years catch based on State of the Fisheries annual reports provided by DPIRD: Catch for the Pilbara Crab Managed Fishery was 11.2 t in 2022, 9.7 t in 2021, 0.6 t in 2020 and 19.3 t in 2019. (Johnston et al., 2023a). The total catch in 2021 was a substantial increase from the 2.1 t caught in 2020, which was the lowest landed catch in 20 years (Johnston et al., 2023a). In 2022 the blue swimmer crab catch accounted for 2% of the State commercial catch, all taken by the fishery (Johnston et al., 2023a). The blue swimmer crab stock status is considered sustainable – adequate (Johnston et al., 2023a).	

Fishery	Woodside Activity Area			Description			
	Browse	NWS/S	NW Cape				
				Active licences/vessels:	No information available currently.		
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/Northern Territory border), as advised by WAFIC. The commercial catch for the entire West Coast Nearshore and Estuarine Finfish resource was 302.5 t in 2022. The total catch of Western Australian salmon was 82.9 t in 2022, a decrease from 88.5 t in 2021. The Western Australian Salmon stock status is considered sustainable – adequate. (Duffy et al., 2023c).		
				Active licences/vessels:	The number of active vessels or licences in 2021 is unknown however there were approximately 12 commercial fishers employed in 2018 (Duffy et al., 2023)		
Specimen Shell Managed Fishery	✓	✓	✓	**Management area**	The Specimen Shell Managed 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 (Hart et al., 2023c). 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 (Hart et al., 2023c).		
				Species targeted		**Fishing methods**	**Fishing depth**
				The Specimen Shell Managed Fishery targets the collection of specimen shells for display, collection, cataloguing and sale. About 200 species of Specimen Shell are collected each year. There is some focus of effort on mollusc families that are most		Collection is predominantly by hand when diving to wading in shallow, coastal waters, though in deeper water collection may be conducted by remotely operated vehicles (limited to one per licence).	For collection by hand, (diver-based) this typically restricts effort to safe diving depths (less than 30 m). ROV collection could enable depths up to 300 m (Hart et al., 2023c).

Fishery	Woodside Activity Area			Description		
	Browse	NWS/S	NW Cape			
				popular with shell collectors, such as cowries, cones, murexes and volutes (Hart et al., 2023c).		
				Fishing effort:	A total of 5,074 specimen shells were collected in 2022, distributed over 200 species. (Hart et al., 2023f) A total of 5,443 specimen shells were collect distributed over 200 species in 2021 (Hart et al., 2023b). Total number of specimen shells collected in 2020 was 4,258 shells, across 206 species (Hart et al., 2021c). Stocks of landed species in the Specimen Shell Managed Fishery are classified at sustainable-adequate (Hart et al., 2023f).	
				Active licences/vessels:	An exemption for the trial of remotely operated underwater vehicles (limited to one per licence) was in place during 2021 (Hart et al., 2023c). There was a total of 30 licences in the fishery, of which 16 licences were fished in 2022. (Hart et al., 2023f). Effort in 2022 was 388 days (Hart et al., 2023f).	
West Australian Abalone Fishery	✓	✓	✓	**Management area**	The Western Australian Abalone Managed Fishery includes all coastal waters from the WA and SA border to the WA and 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 1-4 and the Roe's abalone fishery operates in areas 1, 2, 5, 6, 7 and 8 (DoF, 2011).	
				Species targeted	**Fishing methods**	**Fishing depth**
				Greenlip abalone (*Haliotis laevigata*) Brownlip abalone (*Haliotis conicopora*) Roe's abalone (*Haliotis roei*)	Divers.	Distribution to 5 m depth for Roe's abalone and 40 m depth for greenlip / brownlip abalone (DOF, 2011).
				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 2022 was 40.1 t whole weight (26.6 t Greenlip and 13.5 t Brownlip), (Strain et al., 2023d), an increase from 2021 which was 39 t whole weight (greenlip 25.9 t and brownlip 13.1 t) (Strain et al., 2023a). The total catch in 2021 was the lowest catch recorded for Greenlip/Brownlip in 53 years (Strain et al., 2023d). The Roe's abalone resource catch for 2022 was 28.9 t, a 2.6% decrease from the previous season. (Strain et al., 2023c) In 2021 was 29.7 t whole weight, an increase from 18.2 t whole weight in 2020 (Strain et al., 2023a).	

Fishery	Woodside Activity Area			Description			
	Browse	NWS/S	NW Cape				
					The stock status of greenlip abalone is considered inadequate and brownlip abalone is adequate (Strain et al., 2023a). The stock status of the Roe's abalone is considered adequate (Strain et al., 2023c).		
				Active licences/vessels:	There were 16 registered vessels in 2022 for Greenlip and Brownlip Abalone Fishery (Strain et al., 2023d) and 21 for Roe's, however only a small proportion were active (Strain et al., 2023c).		
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 Northern Territory border.		
				Species targeted		**Fishing methods**	**Fishing depth**
				Blacktip sharks (*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 2008/2009 (Braccini and Watt. 2023).		
				Active licences/vessels	Information not available.		
West Coast Deep Sea Crustacean Managed Fishery	✓	✓	✓	**Management area**	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.		
				Species targeted		**Fishing methods**	**Fishing depth**
				The fishery targets deepwater crustaceans: • Crystal (snow) crab (*Chaceon albus*)		Baited pots, or traps, are operated in long-lines which have between 80 and 180 pots attached to a main line marked by a float at each end.	Deeper than 150 m (and mostly at depths of between 500 m – 800 m). Most of the

<table>
<tr><th rowspan="2">Fishery</th><th colspan="3">Woodside Activity Area</th><th colspan="3">Description</th></tr>
<tr><th>Browse</th><th>NWS/S</th><th>NW Cape</th><th colspan="3"></th></tr>
<tr><td></td><td></td><td></td><td></td><td>• Giant (king) crab (Pseudocarcinus gigas)
• Champagne (spiny) crabs (Hypothalassia acerba)
Catches are dominated by crystal crabs of which 99% of their Total Allowable Catch (TAC) was landed in 2020 (How and Baudains, 2021).</td><td></td><td>commercial Crystal crab catch is taken in depths of 500 m – 800 m (WAFIC[23]).</td></tr>
<tr><td></td><td></td><td></td><td></td><td>Fishing effort:</td><td colspan="2">Previous years catch based on State of the Fisheries annual reports provided by DPIRD:
The total landings were 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 2022 was dominated by crystal crabs (123.2 t). A further 10 t of champagne crabs and 0.1 t of giant crab were also landed in 2022 (How, et al. 2023c).
The stock status for crystal crab is considered adequate. However, it is likely that the stock biomass is near or below its threshold level, but above its limit level (How and Wiberg. 2023a).</td></tr>
<tr><td></td><td></td><td></td><td></td><td>Active licences/vessels:</td><td colspan="2">There were seven licence holders with five vessels active in 2022 (How, et al. 2023c).</td></tr>
<tr><td rowspan="4">Abrolhos Islands and Mid-West Trawl Fishery</td><td rowspan="4"></td><td rowspan="4"></td><td rowspan="4">✓</td><td>Management area</td><td colspan="2">The Abrolhos Islands and Mid-West Trawl Fishery operates around the Abrolhos Islands within the SWMR.</td></tr>
<tr><td colspan="2">Species targeted</td><td>Fishing methods</td><td>Fishing depth</td></tr>
<tr><td colspan="2">Saucer scallops (Ylistrum balloti, formerly Amusium balloti)</td><td>Otter trawl.</td><td>Saucer Scallops occur in inshore waters around 40m depth at the Abrolhos Islands (Kangas et.al., 2021a).</td></tr>
<tr><td>Fishing effort:</td><td colspan="2">Previous years catch based on State of the Fisheries annual reports provided by DPIRD:
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, 238.6 t meat</td></tr>
</table>

[23] https://www.wafic.org.au/fishery/west-coast-deep-sea-crustacean-fishery/

Fishery	Woodside Activity Area			Description			
	Browse	NWS/S	NW Cape				
					weight (1192.8 t whole weight) in 2020, 159.1 t meat weight (795.6 t whole weight) in 2019 and 31.0 t meat weight (154.8 t whole weight) in 2018. Between 2011 and 2015, the annual pre-season surveys showed very low recruitment (1-year old), due to the 2011 extreme marine heatwave and subsequent poor pawning stock (Kangas et al., 2020). The fishery was closed in 2009, and between 2011 and 2016 (Kangas et al., 2023b).		
				Active licences/vessels:	The number of vessels is unreported. There were 10 licenses in 2021 (Kangas et al., 2023b).		
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*) Blue endeavour prawns (*Metapenaeus endeavouri*)		Low opening, otter prawn trawl systems	Trawling is generally in waters between 30 and 60 m deep, however can occur down to 100 m (DOEH, 2004).
				Fishing effort:	The DPIRD state of 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 (Kangas et al., 2023a).		
				Active licences/vessels:	No boats undertook trial fishing activities in 2022 (Wilkin, et al. 2023b).		
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 4000 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*)		The fishery uses low opening, otter prawn trawl systems (Kangas et.al., 2021c).	Information not available.

Fishery	Woodside Activity Area			Description		
	Browse	NWS/S	NW Cape			
				Blue endeavour prawn (*Metapenaeus endeavouri*) Banana prawn (*Penaeus merguinensis*)		
				Fishing effort:	Previous years catch based on State of the Fisheries annual reports provided by DPIRD: The Exmouth Gulf Prawn Managed Fishery landed 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. (Wilkin et al., 2023c) The total catch comprised of 411 t of brown tiger prawns, 218 t of western king prawns, and 269 t of blue endeavour prawns (Wilkin et al., 2023c). Stock status of landed species is considered sustainable-adequate (Kangas et al., 2023c).	
				Active licences/vessels:	The number of participation vessels is six. Approximately 126 people, including skippers and other crew were employed in 2022 (Wilkin et al., 2023c).	
Gascoyne Demersal Scalefish Managed Fishery			✓	**Management area**	The Gascoyne Demersal Scalefish Managed Fishery is located between the southern Ningaloo Coast to south of Shark Bay with a closure area at Point Maud to Tantabiddi (WAFIC[24]).	
				Species targeted	**Fishing methods**	**Fishing depth**
				Pink snapper (*Chrysophrys auratus*) Goldband snapper (*Pristipomoides multidens*) Other demersal species caught include: • Tropical snappers, • Emperors, • Cods, • Mulloway Trevallies.	Mechanised handlines.	The target species inhabit waters deeper than 20m (Jackson et.al., 2021a).
				Fishing effort:	Previous years catch based on State of the Fisheries annual reports provided by DPIRD:	

[24] https://www.wafic.org.au/fishery/gascoyne-demersal-scalefish-fishery/

<table>
<tr><th rowspan="2">Fishery</th><th colspan="3">Woodside Activity Area</th><th colspan="3">Description</th></tr>
<tr><th>Browse</th><th>NWS/S</th><th>NW Cape</th><th colspan="3"></th></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td colspan="2">The Gascoyne Demersal Scalefish Managed Fishery reported a total commercial catch of 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.
The total of commercial catches comprised 42 t of pink snapper, 83 t goldband snapper, and 41 t of other mixed species (Jackson et.al., 2023c).
The stock status for pink snapper is considered recovering, with goldband snapper considered sustainable-adequate (Jackson et.al., 2023c).</td></tr>
<tr><td></td><td></td><td></td><td></td><td>Active licences/vessels:</td><td colspan="2">Ten vessels fished during 2022, six of which fished for more than 10 days during peak pink snapper season (Jackson et.al., 2023c).</td></tr>
<tr><td rowspan="5">Kimberley Crab Managed Fishery (formerly Kimberley Developing Mud Crab Fishery)</td><td rowspan="5">✓</td><td rowspan="5"></td><td rowspan="5"></td><td>Management area</td><td colspan="2">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).</td></tr>
<tr><td colspan="2">Species targeted</td><td>Fishing methods</td><td>Fishing depth</td></tr>
<tr><td colspan="2">Brown mud crab (Scylla olivacea)
Green mud crab (Scylla serrata)</td><td>Trap.
Exemption holders use crab traps and drop nets in waters adjacent to native title lands (Johnston et al., 2023).</td><td>Information not available.</td></tr>
<tr><td>Fishing effort:</td><td colspan="2">Previous years catch based on State of the Fisheries annual reports provided by DPIRD:
The total crab landed was 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 2022, Kimberley Crab Managed Fishery landed a total catch of 2.4 t of brown mud crab represented the entire reported commercial mud crab catch (Johnston et al., 2023a).
Mud crab species in the managed fishery is considered sustainable-adequate (Johnston et al., 2023a).</td></tr>
<tr><td>Active licences/vessels:</td><td colspan="2">There is an allocation of 1200 units (equivalent to 600 traps) to license 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 1994.
Two people were employed in 2022 between August and Octobrt (Johnston et al., 2023a).</td></tr>
</table>

Fishery	Woodside Activity Area			Description			
	Browse	NWS/S	NW Cape				
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*) 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 51 t in 2022, 123.4 t in 2021, 202.4 t in 2020, 254 t in 2019 and 81 t in 2018. (Wilkin, et al. 2023b) Of the total landings in 2022, landings were dominated by 42 t banana prawns and 7 t brown tiger, and 2 t Blue Endeavour (Wilkin, et al. 2023b). Fishing effort was 62 boat days, a decrease from 175 days in 2021 (Wilkin, et al. 2023b). The banana prawn stock status within the Nickol Bay Prawn Managed Fishery is considered sustainable-adequate (Wilkin, et al. 2023b).		
				Active licences/vessels:	There were three participating vessels in 2022 (Wilkin, et al. 2023b).		
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).		
				Species targeted		**Fishing methods**	**Fishing depth**

Fishery	Woodside Activity Area			Description		
	Browse	NWS/S	NW Cape			
				Goldband snapper (*Pristipomoides multidens*) Blue-spotted emperor (*Lethrinus punctulantus*) Red emperor (*Lutjanus sebae*) 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 1,458 t in 2022, 1,544 t in 2021, 1,419 t in 2020, 1,507t in 2019, and 1,297 t in 2018. In 2022, the majority of the catch was landed from Zone B, with 1,235 t in 2022. The 2022 catch of jobfish group (*Pristipomoides spp*.) was 552 t, 91% of which was goldband snapper (Wakefield et al., 2023a). The stock status of landed species in the managed fishery is classified as sustainable-adequate (Wakefield et al., 2023a).	
				Active licences/vessels:	Eight active vessels in 2022 (Wakefield et al., 2023a).	
Octopus Interim Management Fishery	-	-	-	**Management area**	The Octopus Interim Management 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) (Hart et al., 2023d).	In inshore waters to a depth of 70 m (DPIRD, 2018a).
				Fishing effort:	Previous years catch based on State of the Fisheries annual reports provided by DPIRD: Commercial catch for the Octopus Interim Management Fishery was 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 (Hart et al., 2023g). In 2022, the total catch of octopus was 744 t live weight, which was 53% higher than 2021 with a total catch of 487 t (Hart et al., 2023g).	

Fishery	Woodside Activity Area			Description			
	Browse	NWS/S	NW Cape				
					Octopus stock status in 2022 is considered sustainable-adequate (Hart et al., 2023g).		
				Active licences/vessels:	27 active vessels in 2022 (Hart et al., 2023g).		
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*) 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 2022,135 t in 2021, 171 t in 2020, 175 t in 2019 and 176 t in 2018. Of the total catch in 2022, 78 t consisted of whiting, 25 t of sea mullet, 16 t of western yellowfin bream, 6 t of tailor, and 1.5 t of pink snapper (Jackson et al., 2023b). The stock status of targeted species is sustainable - adequate (Jackson et al., 2023b).		
				Active licences/vessels:	Five vessels were active in 2022 (Jackson et al., 2023b).		
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:		

<table>
<tr><th rowspan="2">Fishery</th><th colspan="3">Woodside Activity Area</th><th colspan="4">Description</th></tr>
<tr><th>Browse</th><th>NWS/S</th><th>NW Cape</th><th colspan="4"></th></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td colspan="3">The fishery landed 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.
The fishery closed for a period of 18 months in 2012 and 2013 to promote stock recovery, following a series of adverse environmental conditions between 2010 and 2011 (Chandrapavan et al., 2023). Limited commercial fishing resumed under a national quota management system between 2013 and 2017 (Chandrapavan et al., 2023).
The current stock status is sustainable-adequate (Chandrapavan et al., 2023).</td></tr>
<tr><td></td><td></td><td></td><td></td><td>Active licences/vessels:</td><td colspan="3">In the trawl sector in 2022 there were 10 licenced vessels based in Carnarvon with an additional eight vessels traveling to Carnarvon. There were three trap vessels. (Chandrapavan et al., 2023a).</td></tr>
<tr><td rowspan="4">Shark Bay Prawn and Scallop Managed Fishery</td><td rowspan="4">-</td><td rowspan="4">-</td><td rowspan="4">-</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 Western Australia’s most valuable scallop fishery (Kangas et al., 2021b).</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 prawns (Metapenaeus endeavouri)
Coral prawns (Metapenaeopsis sp.)
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 831 t in 2022, 1,303 t in 2021, 1268 t in 2020, 1214 t in 2019, 1091 t in 2018 and 1608 t in 2017.
Of the total landings, 503 t comprised of western king prawn, 326 t of brown tiger prawn, and 2 t of blue endeavour prawn (Wilkin et al., 2023d).
The Shark Bay Scallop Managed Fishery has been managed under a quota management framework since the fishery reopened in 2015 (Kangas et al., 2021b). Scallop landings for Shark Bay were 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 (Wilkin et al., 2023a).</td></tr>
</table>

Fishery	Woodside Activity Area			Description			
	Browse	NWS/S	NW Cape				
				Active licences/vessels:	In the trawl sector in 2022 there were 10 licenced vessels based in Carnarvon with an additional eight vessels traveling to Carnarvon (Wilkin et al., 2023d). In the Shark Bay Scallop Managed Fishery there are boats licensed to take scallops (11 Class A licenses) and boats that also fish for prawns (18 Class B licenses). There were eight vessels. (Wilkin et al., 2023a).		
South Coast Crustacean Managed Fishery	-	-	-	**Management area**	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.		
				Species targeted		**Fishing methods**	**Fishing depth**
				Southern rock lobster (*Jasus edwardsii*) Western rock lobster (*Panulirus cygnus*) Giant crab (*Pseudocarcinus gigas*) Crystal crab (*Chaceon albus*) Champagne crab (*Hypothalassia acerba*)		Pots.	Information not available.
				Fishing effort:	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 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 2022, the total crustacean landings comprised of champagne crabs (3.6 t), southern rock lobster (6.4 t), giant crabs (5.7 t), western rock lobster (5 t), and crystal crabs (3.1 t) (How, et al, 2023d). The stock status is sustainable-adequate (How and Wiberg, 2023b).		
				Active licences/vessels:	The South Coast Crustacean Managed Fishery is based on mobile vessels that employ a skipper and one to three crew. In 2022, there were nine participating vessels. (How, et al, 2023d).		
South Coast Purse Seine Managed Fishery	-	-	-	**Management area**	The South Coast Purse Seine Managed Fishery is active in coastal waters between Cape Leeuwin and the South Australia 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 Blazeski et al., 2023a).		

Fishery	Woodside Activity Area			Description		
	Browse	NWS/S	NW Cape			
				Species targeted	**Fishing methods**	**Fishing depth**
				Small pelagic finfish. Australian sardine (pilchards, *Sardinops sagax*) Yellowtail scad (Trachurus novaezelandiae) Australian anchovy (*Engraulis australis*) Scaly mackerel (*Sardinella lemuru*) Maray (*Etrumeus jacksoniensis*). Entitled to take sandy sprat (*Hyperlophus vittatus*) and blue sprat (*Spratelloides robustus*), however not reported caught since 1993/94	Purse seine nets from vessels.	Information not available.
				Fishing effort:	Previous years catch based on State of the Fisheries annual reports provided by DPIRD: The South Coast Purse Seine Managed Fishery landed 1,636 t in 2022, 1,255 t in 2020-21, 1498 t in 2019-20, 1064 t in 2018-19 and 2168 t in the 2017-18 season. The total catch in 2022, consisted of >99% of Australian sardines (Norriss and Blazeski et al., 2023c). Fishing effort in 2022 was 576 boat days. (Norriss and Blazeski et al., 2023c). The stock status for the Australian sardine is considered sustainable-adequate (Norriss and Blazeski et al., 2023c).	
				Active licences/vessels:	Seven active vessels in 2022 (Norriss and Blazeski et al., 2023c).	
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**

Fishery	Woodside Activity Area			Description		
	Browse	NWS/S	NW Cape			
				Scallops (*Ylistrum balloti,* formerly *Amusium balloti*) and associated by-products In years of low scallop catches licensees may use trawl gear to target fin-fish 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 2021 <1% of the allowable area was trawled in the South-west Trawl Managed Fishery (Kangas et al., 2023b). The stock status of scallops is considered sustainable-adequate (Wilkin et al., 2023a).	
				Active licences/vessels:	One vessel fished in 2022 (Wilkin et al., 2023a).	
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**
				Western Australian 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*) 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:	

Fishery	Woodside Activity Area			Description			
	Browse	NWS/S	NW Cape				
					Total catch for the South Coast Estuarine and Nearshore Scalefish and Invertebrates Resource was 267.6 t for 2022, 275.1 t in 2021 and 334 t in 2020. Of this, the South Coast Salmon Managed Fishery landed 48.5 t of Western Australian salmon in 2021, 76 t in 2020 and 56.5 t in 2019. The stock status of target species is sustainable-adequate (Duffy et al., 2023b).		
				Active licences/vessels:	Catch was recorded against eight licences in 2022 (Duffy et al., 2023d).		
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 2022 was 23.3 t, an increase from 21.3 t in 2021 (Duffy et al., 2023c). The fishery continues to be environmentally limited with stocks recovering from the 2010/11 marine heat wave (Duffy et al., 2023a). The stock status is inadequate – environmentally limited (Duffy et al., 2023c).		
				Active licences/vessels:	The number of active vessels in 2021 is unknown, however five licensees reported landings of whitebait in 2011 (Smith, et al., 2011)		
West Coast Demersal Gillnet and Demersal Longline (Interim) Managed Fishery	-	-	-	**Management area**	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).		
				Species targeted		**Fishing methods**	**Fishing depth**
				Gummy shark (*Mustelus antarcticus*) Dusky shark (*Carcharhinus obscurus*) Whiskery shark (*Furgaleus macki*)		Gillnet and longline.	Information not available.

Fishery	Woodside Activity Area			Description		
	Browse	NWS/S	NW Cape			
				Sandbar shark (*C. plumbeus*) Scalefish are a byproduct.		
				Fishing effort:	Catches of elasmobranchs and fishing effort for the Temperate Demersal Gillnet and Demersal Longline 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 $0.23 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. 2023).	
				Active licences/vessels:	Vessel and license data is not available. There were approximately 10 to 11 skippers and crew employed during 2020-22 period (Braccini and Rynvis. 2023).	
West Coast Demersal Scalefish Interim Managed Fishery	-	-	-	**Management area**	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.	
				Species targeted	**Fishing methods**	**Fishing depth**
				The resource comprises over 100 species, including: • Baldchin groper (*Choerodon rubescens*) • Dhufish (*Glaucosoma hebraicum*) • Pink snapper *(Pagrus auratus*).	Lines.	Information not available.
				Fishing effort:	Previous years catch based on State of the Fisheries annual reports provided by DPIRD: The West Coast Demersal Scalefish Interim Managed Fishery retained 240 t in 2022, 259 t in 2021, 227 t in 2020, 254 t in 2019 and 230 t in 2018.	

Fishery	Woodside Activity Area			Description			
	Browse	NWS/S	NW Cape				
					Management commenced 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., 2023a).		
				Active licences/vessels:	30 licenced vessels operated in 2022 (Fisher et al., 2023a).		
West Coast Purse Seine Managed Fishery	-	-	-	**Management area**	Most of the catch in the West Coast Purse Seine Managed fishery are taken from between Cape Leeuwin and Geraldton. This region is separated into three zones (Northern Development Zone, Perth Metropolitan, and Southern Development zone (Norriss and Blazeski. 2023b).		
				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 licensees was 259 t in 2022, 504 t in 2021, 493 t in 2020, 527 t in 2019 and 340 t in 2018. In 2022, the total catch consisted of 66% scaley mackerel and 31% Australian sardine (Norriss and Blazeski. 2023d). Both the scaley mackerel and Australian sardine have a stock status classified as sustainable-adequate (Norriss and Blazeski. 2023d).		
				Active licences/vessels:	Five active vessels in 2022 (Norriss and Blazeski. 2023d).		
West Coast Rock Lobster			✓	**Management area**	The West Coast Rock Lobster 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.		

Fishery	Woodside Activity Area			Description		
	Browse	NWS/S	NW Cape			
Managed Fishery				**Species targeted**	**Fishing methods**	**Fishing depth**
				Western rock lobster (*Panulirus cygnus)*	Baited pots.	Information not available.
				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 Fishery was 6342 t in 2022. (De Lestang, S., and Walsh, A. 2023). 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 – 14 Jan 2022) (How and Wiberg, L. 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- 14 Jan 2021) were 5,696 t. The fishery landed 6397 t in 2019 and 6400 t in 2018 and 2017. The stock status for the western rock lobster is classified as sustainable-adequate (How and Wiberg, 2023a).	
				Active licences/vessels:	218 vessels were active in the 2022 season (De Lestang, S., and Walsh, A. 2023).	

12.2.1.1 Fish Habitat Protection Areas

Fish Habitat Protection Areas (FHPA's) are areas of special protection and management in Western Australian waters. They are established in areas identified as having a particular value for the protection of fish and their habitats, education and/or aquaculture and which is considered to require a higher level of protection than other parts of the marine environment (DPIRD, 2013). They are set under section 115 of the *Fish Resources Management Act 1994* (WA) for the following purposes:

- the conservation and protection of fish, fish breeding areas, fish fossils or the aquatic eco-system,
- 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 1984* (WA) cannot exist in the same area (DPIRD, 2013).

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 to be inconsistent with the purpose of the FHPA; for example, if there is a risk to damage of fragile marine formations such as coral reefs. Protection may also involve the management of human activities such as dredging, draining of wetlands, and fishing or diving near sensitive marine habitats (DPIRD, 2013). Western Australia has six FHPA's (four within the NWMR and 2 within the SWMR):

- Abrolhos Islands
- Kalbarri Blue Holes
- Miaboolya Beach
- Point Quobba
- Cottesloe Reef
- Lancelin Island Lagoon.

FHPAs within the NWMR

Abrolhos Islands

The Houtman Abrolhos Islands (Abrolhos) is an archipelago of up to 210 small islands and associated reefs located approximately 65-90 km offshore from Geraldton, Western Australia (WA) (Evans *et. al*, 2022). The Abrolhos FHPA includes all waters from the high-water mark of the Abrolhos Islands out to three nautical miles; an area of about 2500 km^2 (Evans *et. al,* 2022).

The islands and waters of the Abrolhos are of significance for both land based (e.g., seabird breeding, migratory shorebirds, carpet pythons, tammar wallabies, and significant flora and vegetation) and marine based values (e.g., diverse and unique range of fish and marine aquatic species, significant commercial and recreational fisheries, aquaculture and marine tourism) (Evans et al., 2022). The reefs of the Abrolhos are extremely diverse, with approximately 184 species of coral, 295 species of marine algae and 389 species of fish (Evans et al., 2022).

The Abrolhos Includes specific regulations such as:

- temporal (seasonal) closures (e.g., closed season for baldchin groper, *Choerodon rubescens*, between the 1st of November and 31st of January),
- spatial closures (e.g., Reef Observation Areas (ROAs) ~64.3km^2 or 2.6% of Abrolhos FHPA),

- recreational fishing specific bag and possession limits (Evans et al., 2022).

The marine state territorial waters of the Abrolhos continue to be managed by the Department of Primary Industries and Regional Development.

Kalbarri Blue Holes

The Blues Holes form part of an inshore coastal limestone reef system to the west of the town of Kalbarri. The northern boundary of the FHPA is located immediately west of the northern end of the Blue Holes car park and extends south from this point for approximately 420 m. The width of the FHPA varies from around 130 m wide at the southern end, to approximately 140 m wide at the northern end (DoF, 2007).

The Kalbarri Blue Holes FHPA includes part of a near-shore limestone reef system, which stretches intermittently from Red Bluff in the South to the Murchison River Mouth in the North (DoF, 2007). To First Nations people, access to the reef system – near to the river mouth – is likely to have made it a significant site for hunting fish and gathering seafood. The river mouth beside Kalbarri, is called 'Wudumalu' or 'Wutumalu' by the local Nhanda language group (DoF, 2014a).

The reef provides a base for a range of recreational activities including swimming, scuba diving and snorkelling. There is an abundance of finfish, shellfish, crustaceans, corals, seagrasses and sponges living there. There are up to 70 species of finfish, 10 types of sponge, and 11 species of coral found in the reef system (DoF, 2014a).

Regulations for protection of Kalbarri Blue Holes include:

- All marine life is protected, and no fishing activities are permitted.
- The use of all motorised vessels (boats and jet skis) is prohibited within the FHPA's waters (DoF, 2014a).

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. In addition, it includes the adjoining mangrove system, associated seasonal creeks and salt marshes (DoF, 2003).

The Miaboolya system has regional importance as a fish nursery and general fish habitat. Native fauna includes juvenile finfish species such as tailor (*Pomatomus saltatrix*), mulloway (*Argyrosomus spp.*) and sand whitin308iliate*ago 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 (DoF, 2003).

The Miaboolya area is of important cultural and historical value to the Gnulli native title group. The area is a place for traditional food collection and gathering for social occasions (DoF, 2003).

Recreational fishing is permitted however there are restrictions in place by the Department of Fisheries (DoF, 2014b).

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 (DoF, 2004).

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 (DoF, 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 (DoF, 2015)

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 (DoF, 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 (DoF, 2015).

FHPAs within the SWMR

Cottesloe Reef

The Cottesloe reef system stretches intermittently for approximately 4.4 km from a point 300 m south of the artificial surfing reef at the Cable Station to North Street, Cottesloe. It is located on a limestone shelf, which is known locally as the Cottesloe Fringing Bank. This shelf extends approximately 1.5 km offshore from the beach. Limestone pinnacles, elevated platforms, and water-eroded limestone outcrops form most of the surface reef structure. In places, sea-grass patches and kelp beds occur within 100 m of the shoreline (DoF, 2001a).

The reef is readily accessible to the public and intensively used by locals and other Perth metropolitan residents and is therefore vulnerable to human impacts. The reef system and its waters are highly popular for recreational activities including surfing, windsurfing, swimming, paddle skiing, line fishing, spear fishing, snorkelling and scuba diving.

The Cottesloe Reef system contains a unique and diverse range of marine habitats. These include sand, sand with seagrass, limestone reef with large kelp and macroalgae, sponge beds and garden bottoms. In deeper water, corals, sea cucumbers and sponge gardens thrive and the slope of the reef platform at Mudurup Rocks provides habitat for animals such as feather stars and small molluscs, which are protected from heat and drying during low summer tides. An abundance of finfish can be found in and around the reef system, including herring, tailor, skipjack (silver trevally), whiting, morwong and tarwhine (silver bream). The reef is also a breeding ground for squid, Port Jackson sharks and other elasmobranchs including stingrays (DoF, 2001a; DoF 2010).

Regulations for protection of Cottesloe Reef include:

- Spearfishing is prohibited throughout the FHPA.
- Commercial fishing is prohibited throughout the FHPA.
- Recreational fishing (except net fishing) for fish such as tailor, herring, whiting, skipjack and garfish is permitted in the FHPA, subject to recreational fishing rules for the West Coast region.
- Anchoring of any craft in the FHPA is prohibited.
- Five yellow moorings have been provided within the FHPA for use by boats up to 12 m. These moorings are removed during winter (April – November) to prevent damage from winter storms (DoF, 2010).

Lancelin Island Lagoon

Lancelin Island is an emergent limestone feature of the coastal marine environment of the mid-west coast of Western Australia. The island is located approximately 110 km north of Perth and 800 m offshore from the Lancelin town site (DoF, 2001b).

The Lancelin Island Lagoon is a small area of reef habitat on the western side of Lancelin Island and a popular snorkelling and diving destination. Water depth ranges from less than 0.3 m on the intertidal reefs to less than 3 m on the sand or seagrass-covered bottom. The area has a diverse array of benthic marine habitat. During a marine survey of the area, over 200 flora and fauna species

were positively identified, with more remaining unidentified due to the diversity of species (DoF, 2001a).

The management strategy for the Lancelin Island Lagoon includes the following regulations:

- Prohibit all recreational and commercial fishing, aquaculture and collecting in the FHPA.
- Prohibit boat anchorage within the FHPA.
- Investigate the means to prohibit mining and exploration within the FHPA and in adjacent areas where the environmental values of the FHPA may be compromised (DoF, 2001a).

12.2.2 Aquaculture

Aquaculture operations in the northwest are typically restricted to inland and shallow coastal waters.

West Coast Bioregion

Aquaculture activities in the West Coast bioregion, defined by the Department of Primary Industries and Regional Development (DPIRD) (as the government body responsible management of primary industries in WA) are focused on blue mussels and edible oysters (mainly in Cockburn Sound) and marine algae for production of beta-carotene, used as a food additive and as a nutritional supplement. Offshore marine finfish production is also being developed, initially focusing on yellowtail kingfish near Geraldton.

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 (DPIRD, 2023).

Gascoyne Coast Bioregion

In the Gascoyne Coast bioregion, aquaculture activities are focused on the blacklip oyster (*Pinctada margaritifera*) and Akoya pearl oyster (*Pinctada imbricata*) (Gaughan and Santoro, 2020). Several hatcheries supply *P. margaritifera* juveniles to the region's developing black pearl farms.

Other aquaculture developments in the Gascoyne Coast bioregion include emerging producers of coral and live rock species for aquariums (DPIRD, 2023).

North Coast Bioregion

Aquaculture activities in the North Coast bioregion is dominated by the production of pearls (from the *Pinctada margaritifera* oyster). A large number of 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 (DPIRD, 2023). Primary spawning of the pearl oyster occurs from mid-October to December. A smaller secondary spawning occurs in February and March (Gaughan and Santoro, 2020).

Finfish aquaculture in the Kimberley region is dominated by Barramundi located in the Kimberley Aquaculture Development Zone which lies approximately 200 km north-east of Broome. Rock oyster trials are nearing completion near Karratha in the Pilbara region, however there is no commercial production of the species in this region at this stage (DPIRD, 2023).

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 (DPIRD, 2023).

South Coast Bioregion

Aquaculture activities in the South Coast bioregion is dominated by the production of edible oysters (Akoya and rock oysters) and mussels within King George Sound in Albany. Other forms of private aquaculture in the region include sea cage farming of abalone, which are restricted to the South Coast near Augusta (Flinders Bay) and Esperance (Wylie Bay) (DPIRD, 2023).

12.3 Fisheries – Traditional

Traditional or customary fisheries are typically restricted to shallow coastal waters and/or areas with structures such as reef. The Western Australia Recreational Fishing Guide (2024) states that First Nations 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.

Dugong, fish and marine turtles that move between coastal and Commonwealth waters are important components of the First Nations people's culture and diet. First Nations people continue to actively manage their sea country in coastal waters of WA in order to protect and manage the marine environment, its resources and cultural values.

Indonesian fishers can fish within designated areas under the Australia-Indonesia Memorandum of Understanding regarding the Operations of Indonesian Traditional Fishermen in Areas of the Australian Fishing Zone and Continental Shelf – 1974 (MoU 74). Traditional fishing is allowed within the MoU Box (Figure 12-9), 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 following their designation as Nature Reserves under the Commonwealth's *National Parks and Wildlife Conservation Act 1975* 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 74 Box and is utilised seasonally by Indonesian fishers 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 (ERM, 2009). Browse Island is also frequently visited by shark fishers who mostly fish along the eastern margin of the MoU 74 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, 2020a).

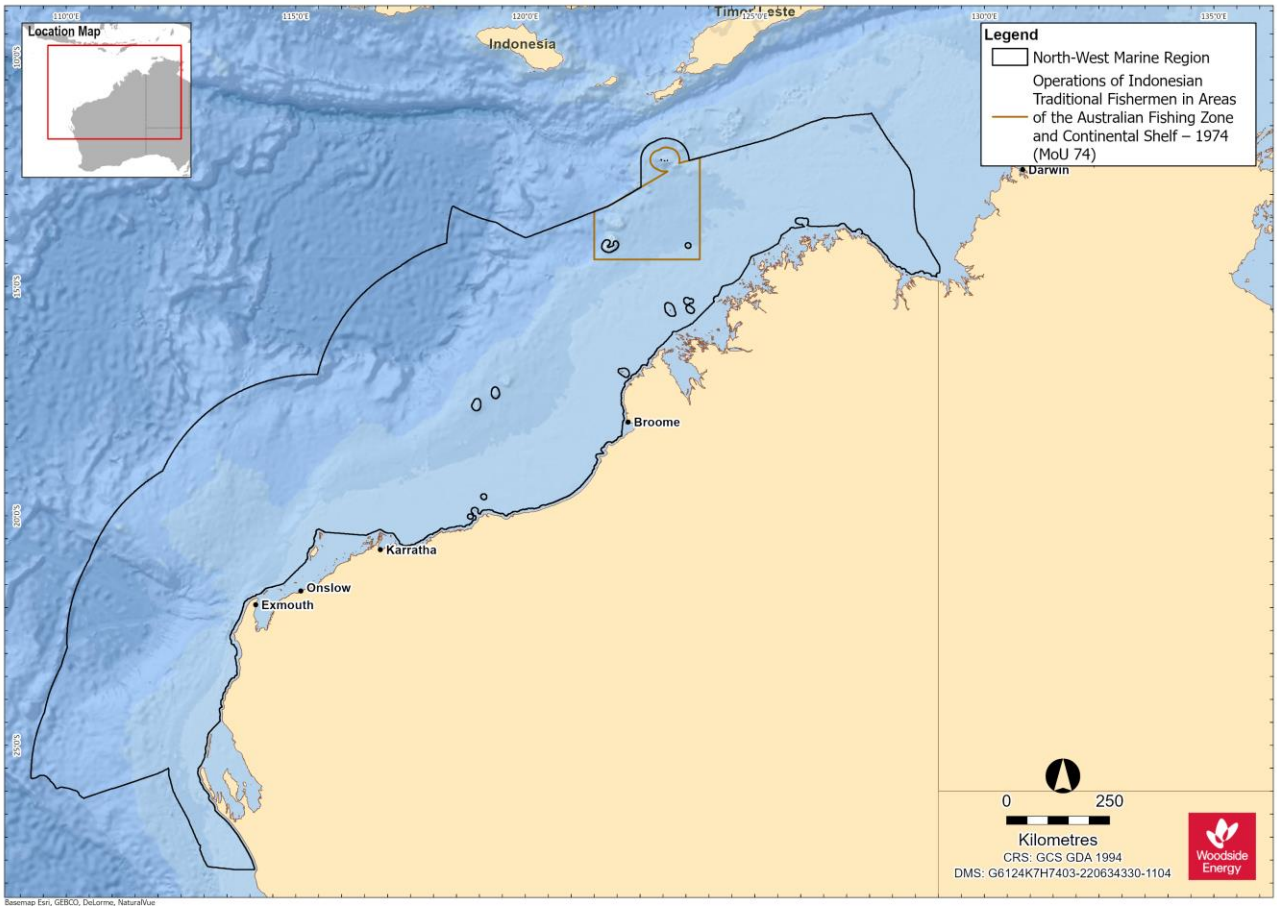


Figure 12-9: MOU 74 Box. Operations of Indonesian Traditional Fishermen in Areas of the Australian Fishing Zone and Continental Shelf – 1974

12.4 Tourism and Recreation

Western Australia's tourism sector is important to industry and the economy. In 2022-2023, tourism accounted for 6.8% of WA's total jobs and generated a Gross Total Value Added of $11.9 billion (Tourism Western Australia, 2024a).

The Kimberley, Pilbara and Gascoyne regions are popular visitor 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, 2024b).

Australia's Coral Coast and North West had a 27% and 22% growth respectively, in intrastate spend compared to 2019. The state's highest intrastate spend on record occurred with WA residents spending $9.3 billion on trips within the state (Tourism Western Australia, 2024b).

12.4.1 Gascoyne Region

Tourism has the fourth largest economic output of all the major industries of the Gascoyne region (GDC, 2023). It contributes significantly to the local economy in terms of both income and employment. In 2022, the region had over 271,100 overnight visitors and tourism had an average economic output of $182 million between 2021 and 2022 (GDC, 2023).

The COVID-19 pandemic disrupted the tourism industry of the Gascoyne region in previous years, particularly by reducing availability of the overseas workforce. However, the phasing out of restrictions has increased interstate and international travel, and visitor numbers have remained high with inter-state tourism numbers increasing in 2021 in comparison to 2020 (GDC, 2022). The main

attraction of the coastline for tourists is the quality of marine life. The region supports extensive scuba diving, snorkelling and fishing and 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 Exmouth Gulf, communities of Exmouth and Coral Bay, and adjacent proposed southern coastal reserves and pastoral leases) contributed an estimated $110 million in value added to the WA economy (DCBA, 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 (DCBA, 2020). More than 90% of this value added is attributed to the domestic and international tourists who visit Ningaloo each year (DCBA, 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 1,000's of visitors both interstate and international to the region in April 2023.

The first Cultural Tourism 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 WHA (GDC, 2022). The Aboriginal AstroTourism Project was launched where First Nations people were consulted on night sky constellations and trained in dark sky tourism. Through this program star gazing experiences were successfully delivered to approximately 665 visitors over 10 nights during the Ningaloo Eclipse (GDC, 2023).

12.4.2 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 1 million visitors to the region every year. Tourism visitation continued to grow in 2022, with the number of visitors to Karajini National Park in 2022 having doubled in comparison to 2020 (PDC, 2022). 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, 2023).

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).

12.4.3 Kimberley Region

Tourism is one of the main industries in the Kimberley region, alongside resources, construction, agriculture and retail (KDC, 2022).

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 (e.g. 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).

12.5 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 respective port authorities. These ports handle large tonnages of iron ore and petroleum exports in addition to salt, manganese, feldspar chromite and copper (DEWHA, 2008).

Heavy vessel traffic exists within the Pilbara Port Authority management area which recorded 9,594 vessel movements in the Port of Dampier, 6,786 vessel movements in the Port of Port Hedland, and 807 vessel movements in the Port of Ashburton in the 2022/23 reporting period (PPA, 2023). 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, AMSA established a network of shipping fairways off the northwest 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 LNG ships trading to the major ports into pre-defined routes to keep them clear of existing and planned offshore infrastructure (AMSA, 2013).

12.6 Petroleum Basins

The NWMR supports a number of 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 (GA, 2023). Of these, the Northern Carnarvon, Browse and Bonaparte basins hold large quantities of gas and comprise most of Australia's reserves of natural gas (DEWHA, 2008), 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 a number of fields within the NWMR.

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.

12.7 Defence

Key Australian Department of Defence (DoD) operational areas and facilities areas of the NWMR for training and operational activities, include:

- 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, 2008).
- 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 located in Karratha (DoD, 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 located 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 provides support for land, air and sea operations aimed to support Australia's northern approaches.
- The Naval Communications Station Harold E. Holt is located ~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, 2008).

- Areas may be subject to Unexploded Ordnance (UXO) as a result of military activities. These are offshore sites where ammunition and explosives have been dumped, or which have been used as live bombing or firing ranges. Defence maintains a record of sites confirmed as, or reasonably suspected of being affected by UXO. There are several suspected UXO sites in the NWMR (Australian Government Defence, n.d.).

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APPENDIX A. PROTECTED MATTER SEARCH REPORTS FOR 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.

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: 06-Jun-2024

Figure 1: NWMR PMST subarea 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:	2
National Heritage Places:	5
Wetlands of International Importance (Ramsar	2
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	9
Listed Threatened Ecological Communities:	1
Listed Threatened Species:	105
Listed Migratory Species:	97

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:	65
Commonwealth Heritage Places:	5
Listed Marine Species:	174
Whales and Other Cetaceans:	34
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	29
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:	78
Regional Forest Agreements:	None
Nationally Important Wetlands:	8
EPBC Act Referrals:	317
Key Ecological Features (Marine):	13
Biologically Important Areas:	92
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

World Heritage Properties		[Resource Information]
Name	State	Legal Status
Shark Bay, Western Australia	WA	Declared property
The Ningaloo Coast	WA	Declared property

National Heritage Places		[Resource Information]
Name	State	Legal Status
Historic		
Dirk Hartog Landing Site 1616 - Cape Inscription Area	WA	Listed place
Indigenous		
Dampier Archipelago (including Burrup Peninsula)	WA	Listed place
Natural		
Shark Bay, Western Australia	WA	Listed place
The Ningaloo Coast	WA	Listed place
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 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)
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)

Feature Name
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	Breeding known to occur within area
Aphelocephala leucopsis		
Southern Whiteface [529]	Vulnerable	Species or species habitat known to occur within area
Arenaria interpres		
Ruddy Turnstone [872]	Vulnerable	Roosting known to occur within area
Calidris acuminata		
Sharp-tailed Sandpiper [874]	Vulnerable	Roosting known to occur within area
Calidris canutus		
Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area
Calidris ferruginea		
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris tenuirostris		
Great Knot [862]	Vulnerable	Roosting known to occur within area

Scientific Name	Threatened Category	Presence Text
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known 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
Erythrura gouldiae Gouldian Finch [413]	Endangered	Species or species habitat known to occur within area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat known 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
Leipoa ocellata Malleefowl [934]	Vulnerable	Species or species habitat likely to occur within area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat known to 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 known to occur within area
Limosa limosa Black-tailed Godwit [845]	Endangered	Roosting known 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 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
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 known to occur within area
Papasula abbotti Abbott's Booby [59297]	Endangered	Species or species habitat may occur within area
Pezoporus occidentalis Night Parrot [59350]	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 known to occur within area
Pluvialis squatarola Grey Plover [865]	Vulnerable	Roosting known to occur within area

Scientific Name	Threatened Category	Presence Text
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 nereis nereis Australian Fairy Tern [82950]	Vulnerable	Breeding known 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 known to occur within area
Tyto novaehollandiae kimberli Masked Owl (northern) [26048]	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
[Xenus cinereus](#) Terek Sandpiper [59300]	Vulnerable	Roosting known 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		
[Milyeringa veritas](#) Cape Range Cave Gudgeon, Blind Gudgeon [66676]	Vulnerable	Species or species habitat known to occur within area
[Ophisternon candidum](#) Blind Cave Eel [66678]	Vulnerable	Species or species habitat known to occur within area
[Thunnus maccoyii](#) Southern Bluefin Tuna [69402]	Conservation Dependent	Breeding known 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
[Bettongia lesueur Barrow and Boodie Islands subspecies](#) Boodie, Burrowing Bettong (Barrow and Boodie Islands) [88021]	Vulnerable	Species or species habitat known to occur within area
[Bettongia lesueur lesueur](#) Burrowing Bettong (Shark Bay), Boodie [66659]	Vulnerable	Species or species habitat known to occur within area
[Bettongia penicillata ogilbyi](#) Woylie [66844]	Endangered	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Dasyurus geoffroii Chuditch, Western Quoll [330]	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 known to occur within area
Eubalaena australis Southern Right Whale [40]	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
Isoodon auratus barrowensis Golden Bandicoot (Barrow Island) [66666]	Vulnerable	Species or species habitat known to occur within area
Lagorchestes conspicillatus conspicillatus Spectacled Hare-wallaby (Barrow Island) [66661]	Vulnerable	Species or species habitat known to occur within area
Lagorchestes hirsutus bernieri Rufous Hare-wallaby (Bernier Island) [66662]	Vulnerable	Species or species habitat 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
Lagorchestes hirsutus dorreae Rufous Hare-wallaby (Dorre Island) [66663]	Vulnerable	Species or species habitat known to occur within area
Lagostrophus fasciatus fasciatus Banded Hare-wallaby, Merrnine, Marnine, Munning [66664]	Vulnerable	Species or species habitat known to occur within area
Leporillus conditor Wopilkara, Greater Stick-nest Rat [137]	Vulnerable	Translocated population known to occur within area

Scientific Name	Threatened Category	Presence Text
Macroderma gigas Ghost Bat [174]	Vulnerable	Species or species habitat known to occur within area
Macrotis lagotis Greater Bilby [282]	Vulnerable	Species or species habitat known to occur within area
Neophoca cinerea Australian Sea-lion, Australian Sea Lion [22]	Endangered	Species or species habitat may 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 known to occur within area
Petrogale concinna monastria Nabarlek (Kimberley) [87607]	Endangered	Species or species habitat known to occur within area
Petrogale lateralis lateralis Black-flanked Rock-wallaby, Mororong, Black-footed Rock Wallaby [66647]	Endangered	Species or species habitat known 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
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 known 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

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 may occur within area
PLANT		
[Caladenia barbarella](#) Small Dragon Orchid, Common Dragon Orchid [68686]	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
[Eucalyptus beardiana](#) Beard's Mallee [18933]	Vulnerable	Species or species habitat likely to occur within area
[Minuria tridens](#) Minnie Daisy [13753]	Vulnerable	Species or species habitat known to occur within area
REPTILE		
[Aipysurus apraefrontalis](#) Short-nosed Sea Snake, Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat known to occur within area
[Aipysurus foliosquama](#) Leaf-scaled Sea Snake, Leaf-scaled Seasnake [1118]	Critically Endangered	Species or species habitat known to occur within area
[Caretta caretta](#) Loggerhead Turtle [1763]	Endangered	Breeding known to occur within area
[Chelonia mydas](#) Green Turtle [1765]	Vulnerable	Breeding known to occur within area
[Ctenotus zastictus](#) Hamelin Ctenotus [25570]	Vulnerable	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area
Egernia stokesii badia Western Spiny-tailed Skink, Baudin Island Spiny-tailed Skink [64483]	Endangered	Species or species habitat known to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding known to occur within area
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Congregation or aggregation known to occur within area
Lerista nevinae Nevin's Slider [85296]	Endangered	Species or species habitat known to occur within area
Liasis olivaceus barroni Pilbara Olive Python [66699]	Vulnerable	Species or species habitat known to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area
Tiliqua scincoides intermedia Northern Blue-tongued Skink [89838]	Critically Endangered	Species or species habitat known to occur within area
Varanus mertensi Mertens' Water Monitor, Mertens's Water Monitor [1568]	Endangered	Species or species habitat known to occur within area
Varanus mitchelli Mitchell's Water Monitor [1569]	Critically Endangered	Species or species habitat likely to occur within area
SHARK		
Carcharias taurus (west coast population) Grey Nurse Shark (west coast population) [68752]	Vulnerable	Congregation or aggregation known to occur within area

Scientific Name	Threatened Category	Presence Text
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area
Centrophorus uyato Little Gulper Shark [68446]	Conservation Dependent	Species or species habitat likely to occur within area
Glyphis garricki Northern River Shark, New Guinea River Shark [82454]	Endangered	Breeding likely to occur within area
Pristis clavata Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Breeding known to occur within area
Pristis pristis Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat known to occur within area
Pristis zijsron Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Breeding known to occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Sphyrna lewini Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat known to occur within area
SPIDER		
Idiosoma nigrum Shield-backed Trapdoor Spider, Black Rugose Trapdoor Spider [66798]	Vulnerable	Species or species habitat known to occur within area

Listed Migratory Species		[Resource Information]
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

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 known to occur within area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat known 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]		Breeding known to occur within area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Breeding known to occur within area
Hydroprogne caspia Caspian Tern [808]		Breeding known 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 known to occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Breeding known to occur within area

Scientific Name	Threatened Category	Presence Text
Phaethon rubricauda Red-tailed Tropicbird [994]		Breeding known to occur within area
Sterna dougallii Roseate Tern [817]		Breeding known to occur within area
Sternula albifrons Little Tern [82849]		Breeding known to occur within area
Sula dactylatra Masked Booby [1021]		Breeding known to occur within area
Sula leucogaster Brown Booby [1022]		Breeding known to occur within area
Sula sula Red-footed Booby [1023]		Breeding known 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
Migratory Marine Species		
Anoxypristis cuspidata Narrow Sawfish, Knifetooth Sawfish [68448]		Species or species habitat known to occur within area

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
Carcharhinus longimanus Oceanic Whitetip Shark [84108]		Species or species habitat likely to occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding known 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	Foraging, feeding or related behaviour known to occur within area

Scientific Name	Threatened Category	Presence Text
Dugong dugon Dugong [28]		Breeding known to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding known 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
Lamna nasus Porbeagle, Mackerel Shark [83288]		Species or species habitat may occur within area
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Congregation or aggregation known 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 known to occur within area
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat known to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]		Breeding known 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 known to occur within area
Pristis pristis Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat known to occur within area
Pristis zijsron Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Breeding known to occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Sousa sahulensis as Sousa chinensis Australian Humpback Dolphin [87942]		Breeding known to occur within area
Tursiops aduncus (Arafura/Timor Sea populations) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat known 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 known to occur within area

Scientific Name	Threatened Category	Presence Text
[Motacilla cinerea](#) Grey Wagtail [642]		Species or species habitat known to occur within area
[Motacilla flava](#) Yellow Wagtail [644]		Species or species habitat known 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 known to occur within area
[Arenaria interpres](#) Ruddy Turnstone [872]	Vulnerable	Roosting known to occur within area
[Calidris acuminata](#) Sharp-tailed Sandpiper [874]	Vulnerable	Roosting known to occur within area
[Calidris alba](#) Sanderling [875]		Roosting known to occur within area
[Calidris canutus](#) Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area
[Calidris ferruginea](#) Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
[Calidris melanotos](#) Pectoral Sandpiper [858]		Species or species habitat known to occur within area
[Calidris pugnax as Philomachus pugnax](#) Ruff [91256]		Roosting known to occur within area
[Calidris ruficollis](#) Red-necked Stint [860]		Roosting known to occur within area

Scientific Name	Threatened Category	Presence Text
Calidris subminuta Long-toed Stint [861]		Species or species habitat known to occur within area
Calidris tenuirostris Great Knot [862]	Vulnerable	Roosting known to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Roosting known 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 known to occur within area
Limicola falcinellus Broad-billed Sandpiper [842]		Roosting known to occur within area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat known to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Limosa limosa Black-tailed Godwit [845]	Endangered	Roosting known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting known to occur within area
Numenius phaeopus Whimbrel [849]		Roosting known to occur within area
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Pluvialis fulva Pacific Golden Plover [25545]		Roosting known to occur within area
Pluvialis squatarola Grey Plover [865]	Vulnerable	Roosting known to occur within area
Thalasseus bergii Greater Crested Tern [83000]		Breeding known to occur within area
Tringa brevipes Grey-tailed Tattler [851]		Roosting known to occur within area
Tringa glareola Wood Sandpiper [829]		Species or species habitat known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Roosting known to occur within area
Tringa totanus Common Redshank, Redshank [835]		Roosting known to occur within area
Xenus cinereus Terek Sandpiper [59300]	Vulnerable	Roosting known 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
Defence	
Defence - EXMOUTH VLF TRANSMITTER STATION [50122]	WA
Defence - EXMOUTH VLF TRANSMITTER STATION [50123]	WA
Defence - LEARMONTH - RAAF BASE [50106]	WA
Defence - LEARMONTH - RAAF BASE [50109]	WA
Defence - LEARMONTH - RAAF BASE [50108]	WA
Defence - LEARMONTH - RAAF BASE [50101]	WA
Defence - LEARMONTH - RAAF BASE [50107]	WA
Defence - LEARMONTH - RAAF BASE [50097]	WA
Defence - LEARMONTH - RAAF BASE [50103]	WA
Defence - LEARMONTH - RAAF BASE [50100]	WA
Defence - LEARMONTH RADAR SITE - VLAMING HEAD EXMOUTH [50001]	WA
Defence - YAMPI SOUND TRAINING AREA [50145]	WA
Unknown	
Commonwealth Land - [51698]	WA
Commonwealth Land - [51699]	WA
Commonwealth Land - [51707]	WA
Commonwealth Land - [51704]	WA
Commonwealth Land - [51696]	WA
Commonwealth Land - [51705]	WA
Commonwealth Land - [51709]	WA
Commonwealth Land - [51700]	WA
Commonwealth Land - [51706]	WA

Commonwealth Land Name	State
Commonwealth Land - [52110]	WA
Commonwealth Land - [51695]	WA
Commonwealth Land - [51671]	WA
Commonwealth Land - [52104]	WA
Commonwealth Land - [51672]	WA
Commonwealth Land - [51670]	WA
Commonwealth Land - [51055]	WA
Commonwealth Land - [51054]	WA
Commonwealth Land - [51702]	WA
Commonwealth Land - [51053]	WA
Commonwealth Land - [51708]	WA
Commonwealth Land - [51703]	WA
Commonwealth Land - [52198]	WA
Commonwealth Land - [51716]	WA
Commonwealth Land - [52236]	WA
Commonwealth Land - [52099]	WA
Commonwealth Land - [52097]	WA
Commonwealth Land - [51719]	WA
Commonwealth Land - [52100]	WA
Commonwealth Land - [52195]	WA
Commonwealth Land - [52109]	WA
Commonwealth Land - [52098]	WA
Commonwealth Land - [51710]	WA
Commonwealth Land - [51714]	WA
Commonwealth Land - [51715]	WA
Commonwealth Land - [52106]	WA
Commonwealth Land - [52107]	WA

Commonwealth Land Name	State
Commonwealth Land - [51947]	WA
Commonwealth Land - [52108]	WA
Commonwealth Land - [52105]	WA
Commonwealth Land - [52103]	WA
Commonwealth Land - [52102]	WA
Commonwealth Land - [52101]	WA
Commonwealth Land - [51404]	WA
Commonwealth Land - [51403]	WA
Commonwealth Land - [51668]	WA
Commonwealth Land - [51666]	WA
Commonwealth Land - [51667]	WA
Commonwealth Land - [51718]	WA
Commonwealth Land - [51720]	WA
Commonwealth Land - [51717]	WA
Commonwealth Land - [51712]	WA
Commonwealth Land - [51713]	WA
Commonwealth Land - [51711]	WA

Commonwealth Heritage Places [Resource Information]

Name	State	Status
Natural		
Learmonth Air Weapons Range Facility	WA	Listed place
Mermaid Reef - Rowley Shoals	WA	Listed place
Ningaloo Marine Area - Commonwealth Waters	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		

Scientific Name	Threatened Category	Presence Text
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 known 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	Breeding known 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
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 known to occur within area
Arenaria interpres Ruddy Turnstone [872]	Vulnerable	Roosting known 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	Roosting known to occur within area

Scientific Name	Threatened Category	Presence Text
Calidris alba Sanderling [875]		Roosting known to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area overfly marine area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area overfly marine area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area overfly marine area
Calidris pugnax as Philomachus pugnax Ruff [91256]		Roosting known to occur within area overfly marine area
Calidris ruficollis Red-necked Stint [860]		Roosting known to occur within area overfly marine area
Calidris subminuta Long-toed Stint [861]		Species or species habitat known to occur within area overfly marine area
Calidris tenuirostris Great Knot [862]	Vulnerable	Roosting known to occur within area overfly marine area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat known 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 known to occur within area overfly marine area
Charadrius leschenaultii		
Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Charadrius mongolus		
Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area
Charadrius ruficapillus		
Red-capped Plover [881]		Roosting known to occur within area overfly marine area
Charadrius veredus		
Oriental Plover, Oriental Dotterel [882]		Roosting known to occur within area overfly marine area
Chroicocephalus novaehollandiae as Larus novaehollandiae		
Silver Gull [82326]		Breeding known 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]		Breeding known to occur within area
Fregata minor		
Great Frigatebird, Greater Frigatebird [1013]		Breeding known 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 known to occur within area overfly marine area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
Himantopus himantopus Pied Stilt, Black-winged Stilt [870]		Roosting known to occur within area overfly marine area
Hirundo rustica Barn Swallow [662]		Species or species habitat known to occur within area overfly marine area
Hydroprogne caspia as Sterna caspia Caspian Tern [808]		Breeding known to occur within area
Larus pacificus Pacific Gull [811]		Breeding known to occur within area
Limicola falcinellus Broad-billed Sandpiper [842]		Roosting known to occur within area overfly marine area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat known to occur within area overfly marine area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Limosa limosa Black-tailed Godwit [845]	Endangered	Roosting known 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	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 known to occur within area overfly marine area
Motacilla flava Yellow Wagtail [644]		Species or species habitat known to occur within area overfly marine area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting known to occur within area overfly marine area
Numenius phaeopus Whimbrel [849]		Roosting known to occur within area
Onychoprion anaethetus as Sterna anaethetus Bridled Tern [82845]		Breeding known to occur within area
Onychoprion fuscatus as Sterna fuscata Sooty Tern [90682]		Breeding known to occur within area
Pandion haliaetus Osprey [952]		Breeding known 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]		Breeding known to 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 Red-tailed Tropicbird [994]		Breeding known to occur within area
Pluvialis fulva Pacific Golden Plover [25545]		Roosting known to occur within area
Pluvialis squatarola Grey Plover [865]	Vulnerable	Roosting known 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 known 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 known to occur within area

Scientific Name	Threatened Category	Presence Text
Sternula albifrons as Sterna albifrons Little Tern [82849]		Breeding known to occur within area
Sternula nereis as Sterna nereis Fairy Tern [82949]		Breeding known to occur within area
Stiltia isabella Australian Pratincole [818]		Roosting known to occur within area overfly marine area
Sula dactylatra Masked Booby [1021]		Breeding known to occur within area
Sula leucogaster Brown Booby [1022]		Breeding known to occur within area
Sula sula Red-footed Booby [1023]		Breeding known 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 known to occur within area
Thalasseus bergii as Sterna bergii Greater Crested Tern [83000]		Breeding known to occur within area

Scientific Name	Threatened Category	Presence Text
Tringa brevipes as Heteroscelus brevipes Grey-tailed Tattler [851]		Roosting known to occur within area
Tringa glareola Wood Sandpiper [829]		Species or species habitat known to occur within area overfly marine area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area overfly marine area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Roosting known to occur within area overfly marine area
Tringa totanus Common Redshank, Redshank [835]		Roosting known to occur within area overfly marine area
Xenus cinereus Terek Sandpiper [59300]	Vulnerable	Roosting known to occur within area overfly marine area
Fish		
Acentronura australe Southern Pygmy Pipehorse [66185]		Species or species habitat may occur within area
Acentronura larsonae Helen's Pygmy Pipehorse [66186]		Species or species habitat may occur within area
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
Campichthys galei Gale's Pipefish [66191]		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 amplexus Fijian Banded Pipefish, Brown-banded Pipefish [66199]		Species or species habitat may occur within area
Corythoichthys flavofasciatus Reticulate Pipefish, Yellow-banded Pipefish, Network 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

Scientific Name	Threatened Category	Presence Text
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
Haliichthys taeniophorus Ribboned Pipehorse, Ribboned Seadragon [66226]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
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 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 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 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
Lissocampus fatiloquus Prophet's Pipefish [66250]		Species or species habitat may occur within area
Maroubra perserrata Sawtooth Pipefish [66252]		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
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
Phoxocampus belcheri Black Rock Pipefish [66719]		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 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

Scientific Name	Threatened Category	Presence Text
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
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]		Breeding known 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 known 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 known to occur within area

Scientific Name	Threatened Category	Presence Text
Aipysurus fuscus Dusky Sea Snake [1119]		Species or species habitat known 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 known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding known 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	Foraging, feeding or related behaviour known to occur within area
Emydocephalus annulatus Eastern Turtle-headed Sea Snake [1125]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Ephalophis greyae as Ephalophis greyi Mangrove Sea Snake [93738]		Species or species habitat may occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding known 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 [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
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

Scientific Name	Threatened Category	Presence Text
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 zweiffei 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	Congregation or aggregation known to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding known 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

Current Scientific Name	Status	Type of Presence
[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
[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
[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

Current Scientific Name	Status	Type of Presence
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]		Breeding known 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]		Breeding known to occur within area
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
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 known 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)
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)
Kimberley	Habitat Protection Zone (IUCN IV)

Park Name	Zone & IUCN Categories
Kimberley	Habitat Protection Zone (IUCN IV)
Abrolhos	Multiple Use Zone (IUCN VI)
Abrolhos	Multiple Use Zone (IUCN VI)
Argo-Rowley Terrace	Multiple Use Zone (IUCN VI)
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)
Kimberley	Multiple Use Zone (IUCN VI)
Montebello	Multiple Use Zone (IUCN VI)
Roebuck	Multiple Use Zone (IUCN VI)
Shark Bay	Multiple Use Zone (IUCN VI)
Abrolhos	National Park Zone (IUCN II)
Argo-Rowley Terrace	National Park Zone (IUCN II)
Dampier	National Park Zone (IUCN II)
Gascoyne	National Park Zone (IUCN II)
Kimberley	National Park Zone (IUCN II)
Mermaid Reef	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)
Argo-Rowley Terrace	Special Purpose Zone (Trawl) (IUCN VI)

Habitat Critical to the Survival of Marine Turtles		[Resource Information]
Scientific Name	Behaviour	Presence
Aug - Sep		

Scientific Name	Behaviour	Presence
[Natator depressus](#)		
Flatback Turtle [59257]	Nesting	Known to occur
Dec - Jan		
[Chelonia mydas](#)		
Green Turtle [1765]	Nesting	Known to occur
May - Jul		
[Lepidochelys olivacea](#)		
Olive Ridley Turtle [1767]	Nesting	Known to occur
Nov-Feb		
[Caretta caretta](#)		
Loggerhead Turtle [1763]	Nesting	Known to occur
Nov - May		
[Eretmochelys imbricata](#)		
Hawksbill Turtle [1766]	Nesting	Known to occur

Extra Information

State and Territory Reserves [Resource Information]

Protected Area Name	Reserve Type	State
Adele Island	Nature Reserve	WA
Airlie Island	Nature Reserve	WA
Bardi Jawi	Indigenous Protected Area	WA
Barrow Island	Nature Reserve	WA
Barrow Island	Marine Management Area	WA
Barrow Island	Marine Park	WA
Bedout Island	Nature Reserve	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 (South)	National Park	WA

Protected Area Name	Reserve Type	State
Coulomb Point	Nature Reserve	WA
Dambimangari	Indigenous Protected Area	WA
Dirk Hartog Island	National Park	WA
Eighty Mile Beach	Marine Park	WA
Faure Island	Private Nature Reserve	WA
Francois Peron	National Park	WA
Freycinet, Double Islands etc	Nature Reserve	WA
Gnandaroo Island	Nature Reserve	WA
Great Sandy Island	Nature Reserve	WA
Hamelin Pool	Marine Nature Reserve	WA
Jarrkunpungu	Nature Reserve	WA
Jurabi Coastal Park	5(1)(h) Reserve	WA
Karajarri	Indigenous Protected Area	WA
Koks Island	Nature Reserve	WA
Lacepede Islands	Nature Reserve	WA
Lalang-garram / Camden Sound	Marine Park	WA
Lalang-garram / Horizontal Falls	Marine Park	WA
Little Rocky Island	Nature Reserve	WA
Locker Island	Nature Reserve	WA
Lowendal Islands	Nature Reserve	WA
Miaboolya Beach	Fish Habitat Protection Area	WA
Montebello Islands	Conservation Park	WA
Montebello Islands	Marine Park	WA
Montebello Islands	Conservation Park	WA
Muiron Islands	Nature Reserve	WA

Protected Area Name	Reserve Type	State
Muiron Islands	Marine Management Area	WA
Nanga Station	NRS Addition - Gazettal in Progress	WA
Ningaloo	Marine Park	WA
North Kimberley	Marine Park	WA
North Lalang-garram	Marine Park	WA
North Sandy Island	Nature Reserve	WA
North Turtle Island	Nature Reserve	WA
Nyangumarta Warrarn	Indigenous Protected Area	WA
Nyingguulu (Ningaloo) Coastal Reserve	5(1)(h) Reserve	WA
Rocky Island	Nature Reserve	WA
Round Island	Nature Reserve	WA
Rowley Shoals	Marine Park	WA
Scott Reef	Nature Reserve	WA
Sedimentary Deposits Reserve	5(1)(g) Reserve	WA
Serrurier Island	Nature Reserve	WA
Shark Bay	Marine Park	WA
Swan Island	Nature Reserve	WA
Tanner Island	Nature Reserve	WA
Tent Island	Nature Reserve	WA
Thevenard Island	Nature Reserve	WA
Unnamed WA28968	5(1)(h) Reserve	WA
Unnamed WA36909	5(1)(h) Reserve	WA
Unnamed WA36913	Nature Reserve	WA
Unnamed WA36915	Nature Reserve	WA
Unnamed WA37168	5(1)(h) Reserve	WA

Protected Area Name	Reserve Type	State
Unnamed WA37338	5(1)(h) Reserve	WA
Unnamed WA37383	5(1)(h) Reserve	WA
Unnamed WA40322	5(1)(h) Reserve	WA
Unnamed WA40828	5(1)(h) Reserve	WA
Unnamed WA40877	5(1)(h) Reserve	WA
Unnamed WA41080	5(1)(h) Reserve	WA
Unnamed WA44665	5(1)(h) Reserve	WA
Unnamed WA44667	5(1)(h) Reserve	WA
Unnamed WA44669	5(1)(h) Reserve	WA
Unnamed WA44672	5(1)(h) Reserve	WA
Unnamed WA44673	5(1)(h) Reserve	WA
Victor Island	Nature Reserve	WA
Whalebone Island	Nature Reserve	WA
Yawuru	Indigenous Protected Area	WA
Yawuru Nagulagun / Roebuck Bay	Marine Park	WA
Y Island	Nature Reserve	WA

Nationally Important Wetlands	[Resource Information]
Wetland Name	State
Cape Range Subterranean Waterways	WA
Eighty Mile Beach System	WA
Exmouth Gulf East	WA
Hamelin Pool	WA
Leslie (Port Hedland) Saltfields System	WA
Mermaid Reef	EXT
Shark Bay East	WA
Yampi Sound Training Area	WA

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
Cockatoo Island Multi-User Supply Base, WA	2017/7986		Assessment
Gorgon Gas Development	2003/1294		Post-Approval
Koolan Island Operations	2022/09392		Assessment
Marine Route Survey for Subsea Fibre Optic Data Cable System - Australia West	2024/09826		Referral Decision
Midwest Offshore Wind Farm	2022/09264		Assessment
Ningaloo Lighthouse Development, 17km north west Exmouth, Western Australia	2020/8693		Post-Approval
North West Shelf Project Extension, Carnarvon Basin, WA	2018/8335		Approval
Ocean Barramundi Expansion Project	2022/09272		Assessment
Optimised Mardie Solar Salt Project	2022/9169		Approval
Project Highclere Cable Lay and Operation	2022/09203		Completed
Ridley Magnetite Project	2023/09477		Referral Decision
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
2-D seismic survey Scott Reef	2000/125	Controlled Action	Post-Approval
Anketell Point Iron Ore Processing & Export Port	2009/5120	Controlled Action	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
Balmoral South Iron Ore Mine	2008/4236	Controlled Action	Post-Approval
Binowee Iron Ore Project	2001/366	Controlled Action	Proposed Decision
Browse FLNG Development, Commonwealth Waters	2013/7079	Controlled Action	Post-Approval
Cape Lambert Port B Development	2008/4032	Controlled Action	Post-Approval
Conduct an exploration drilling campaign	2010/5718	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
Develop Ichthys gas-condensate field permit area W	2006/2767	Controlled Action	Completed
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
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

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
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
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
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
Nava-1 Cable System	2001/510	Controlled Action	Completed
Pluto Gas Project	2005/2258	Controlled Action	Completed
Pluto Gas Project Including Site B	2006/2968	Controlled Action	Post-Approval
Pluton Irvine Island Iron Ore Project	2011/6064	Controlled Action	Proposed Decision
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 West Pilbara Iron Ore Project	2009/4706	Controlled Action	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
Pyrenees Oil Fields Development	2005/2034	Controlled Action	Post-Approval
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
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
Torosa South Initial Appraisal Drilling	2007/3500	Controlled Action	Completed
Vincent Appraisal Well	2000/22	Controlled Action	Post-Approval
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
'Van Gogh' Oil Appraisal Drilling Program, Exploration Permit Area WA-155-P(1)	2006/3148	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
Airlie Island soil and groundwater investigations, Exmouth Gulf, offshore Pilbara coast	2014/7250	Not Controlled Action	Completed
APX-West Fibre-optic telecommunications cable system, WA to Singapore	2013/7102	Not Controlled Action	Completed
Aquaculture - Barramundi grow out, Yampi Sound	2005/2476	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
archaeological surveys & excavation at historic sites, Cape Inscription	2006/3027	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
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
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
Development of Mutineer and Exeter petroleum fields for oil production, Permit	2003/1033	Not Controlled Action	Completed
Drilling between Kalbarri and Cliff Head	2005/2185	Not Controlled Action	Completed
Drilling of an exploration well Gats-1 in Permit Area WA-261-P	2004/1701	Not Controlled Action	Completed
Drilling of exploration wells, Permit areas WA-301-P to WA-305-P	2002/769	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
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 Monkey Mia Resort	2003/1146	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
Extention to the existing Blind Strait Black Lip Pearl Oyster Farm	2004/1342	Not Controlled Action	Completed
Gulf Fishing Lodge	2010/5499	Not Controlled Action	Completed
Hadda 1,Flying Foam 1,Magnat 1 exploration drill	2004/1697	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
Koolan Island Mine - Reconstruction of seawall and capital dewatering of mine pit,130km northwest of	2016/7848	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
Marine Seismic Survey in WA-239-P	2000/24	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
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

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
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
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
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

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
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 in permit areas WA-274P and WA-281P	2004/1521	Not Controlled Action (Particular Manner)	Post-Approval
2D Seismic Survey Permit Area WA-352-P	2008/4628	Not Controlled Action (Particular Manner)	Post-Approval
2D seismic survey within permit WA-291	2007/3265	Not Controlled Action (Particular Manner)	Post-Approval
2 geotechnical surveys - preliminary and final	2006/2886	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 - Maxima 3D MSS	2006/2945	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
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, 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, WA	2008/4428	Not Controlled Action (Particular Manner)	Post-Approval
3D Seismic Survey in the Carnarvon Bsin on the North West Shelf	2002/778	Not Controlled Action (Particular Manner)	Post-Approval
3D sesmic survey	2006/2781	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
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

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
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
Aurora MC3D Marine Seismic Survey	2010/5510	Not Controlled Action (Particular Manner)	Post-Approval
Australia to Singapore Fibre Optic Submarine Cable System	2011/6127	Not Controlled Action (Particular Manner)	Post-Approval
Babylon 3D Marine Seismic Survey, Commonwealth Waters, nr Exmouth WA	2013/7081	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
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
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
Caswell MC3D Marine Seismic Survey	2012/6594	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
Conduct an exploration drilling campaign	2011/5964	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
DAVROS MC 3D marine seismic survey northwaet of Dampier, WA	2013/7092	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
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
Deep Water Northwest Shelf 2D Seismic Survey	2007/3260	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
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
Endurance 3D Marine Seismic Data Acquisition Survey	2007/3667	Not Controlled Action (Particular Manner)	Post-Approval
Enfield M3 & Vincent 4D Marine Seismic Surveys	2008/3981	Not Controlled Action (Particular	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
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
Exploration Drilling Program - Permit areas - WA-314-P, WA-315-P, WA-398-P.	2008/4064	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
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

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Gigas 2D Pilot Ocean Bottom Cable Marine Seismic Survey	2007/3839	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
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
Ichthys 3D Marine Seismic Survey	2010/5550	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)	
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
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
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

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular 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
Mariner Non-Exclusive 2D Seismic Survey	2011/6172	Not Controlled Action (Particular Manner)	Post-Approval
Millstream 20GL Pipeline, Bungaroo, Borefield Integration	2012/6379	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
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	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Offshore Drilling Campaign	2011/5830	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
Offshore Gas Exploration Drilling Campaign	2012/6384	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
Pilot Appraisal Well - Torosa South 1	2008/3991	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 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 Manner)	Post-Approval
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
Rosebud 3D Marine Seismic Survey in WA-30-R and TR/5	2012/6493	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	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
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 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
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
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

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
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
Torosa-5 Apraisal Well, WA-30-R	2008/4430	Not Controlled Action (Particular Manner)	Post-Approval
Tortilla 2D Seismic Survey, WA	2011/6110	Not Controlled Action (Particular Manner)	Post-Approval
Tridacna 3D Ocean Bottom Cable Marine Seismic Survey	2011/5959	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	2010/5679	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	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Useless Loop Port Maintenance Works and Infrastructure Upgrade	2009/4791	Not Controlled Action (Particular Manner)	Post-Approval
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
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	2007/3941	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)			
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			
3D Marine Seismic Survey in the offshore northwest Carnarvon Basin	2011/6175	Referral Decision	Completed
3D Seismic Survey	2008/4219	Referral Decision	Completed
Aurora extension MC3D Marine Seismic Survey	2011/5887	Referral Decision	Completed
Bianchi 3D Marine Seismic Survey, Carnavon Basin, WA	2013/7078	Referral Decision	Completed
BRSN08 3D Marine Seismic Survey	2008/4582	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
Experimental Study of Behavioural and Physiological Impact on Fish of Seismic Ex	2006/2625	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
Pilot Appraisal Well - Torosa South-1	2008/3985	Referral Decision	Completed
Rose 3D Seismic acquisition survey	2008/4220	Referral Decision	Completed
Seismic Data Acquisition, Browse Basin	2010/5475	Referral Decision	Completed
Stybarrow Baseline 4D Marine Seismic Survey (Permit Areas WA-255-P, WA-32-L, WA-	2008/4165	Referral Decision	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Referral decision			
Tidal Power Generation Turbine	2009/5235	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
Ancient coastline at 90-120m depth	South-west
Canyons linking the Argo Abyssal Plain with the Scott Plateau	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
Mermaid Reef and Commonwealth waters surrounding Rowley Shoals	North-west
Seringapatam Reef and Commonwealth waters in the Scott Reef Complex	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
Dolphins		
Orcaella heinsohni		
Australian Snubfin Dolphin [81322]	Breeding	Known to occur

Scientific Name	Behaviour	Presence
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Calving	Known to occur
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Foraging (high density prey)	Known to occur
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Foraging likely	Known to occur
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Resting	Known to occur
Sousa chinensis Indo-Pacific Humpback Dolphin [50]	Breeding	Likely to occur
Sousa chinensis Indo-Pacific Humpback Dolphin [50]	Breeding	Known to occur
Sousa chinensis Indo-Pacific Humpback Dolphin [50]	Calving	Known to occur
Sousa chinensis Indo-Pacific Humpback Dolphin [50]	Calving	Likely to occur
Sousa chinensis Indo-Pacific Humpback Dolphin [50]	Foraging	Likely to occur
Sousa chinensis Indo-Pacific Humpback Dolphin [50]	Foraging (high density prey)	Known to occur
Tursiops aduncus Indo-Pacific/Spotted Bottlenose Dolphin [68418]	Breeding	Known to occur
Tursiops aduncus Indo-Pacific/Spotted Bottlenose Dolphin [68418]	Calving	Known to occur
Tursiops aduncus Indo-Pacific/Spotted Bottlenose Dolphin [68418]	Foraging	Known to occur
Tursiops aduncus Indo-Pacific/Spotted Bottlenose Dolphin [68418]	Foraging likely	Known to occur

Scientific Name	Behaviour	Presence
Tursiops aduncus Indo-Pacific/Spotted Bottlenose Dolphin [68418]	Migration likely	Known to occur
Dugong		
Dugong dugon Dugong [28]	Breeding	Known to occur
Dugong dugon Dugong [28]	Calving	Known to occur
Dugong dugon Dugong [28]	Foraging	Known to occur
Dugong dugon Dugong [28]	Foraging	Likely to occur
Dugong dugon Dugong [28]	Foraging (high density seagrass beds)	Known to occur
Dugong dugon Dugong [28]	Migration	Known to occur
Dugong dugon Dugong [28]	Migration likely	Known to occur
Dugong dugon Dugong [28]	Nursing	Known to occur
Marine Turtles		
Caretta caretta Loggerhead Turtle [1763]	Foraging	Known to occur
Caretta caretta Loggerhead Turtle [1763]	Internesting	Known to occur
Caretta caretta Loggerhead Turtle [1763]	Internesting buffer	Known to occur
Caretta caretta Loggerhead Turtle [1763]	Nesting	Known to occur

Scientific Name	Behaviour	Presence
Chelonia mydas Green Turtle [1765]	Aggregation	Known to occur
Chelonia mydas Green Turtle [1765]	Basking	Known to occur
Chelonia mydas Green Turtle [1765]	Foraging	Known to occur
Chelonia mydas Green Turtle [1765]	Foraging	Likely to occur
Chelonia mydas Green Turtle [1765]	Internesting	Likely to occur
Chelonia mydas Green Turtle [1765]	Internesting	Known to occur
Chelonia mydas Green Turtle [1765]	Internesting buffer	Known to occur
Chelonia mydas Green Turtle [1765]	Mating	Known to occur
Chelonia mydas Green Turtle [1765]	Migration corridor	Known to occur
Chelonia mydas Green Turtle [1765]	Nesting	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Foraging	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Foraging	Likely to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Internesting	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Internesting buffer	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Mating	Known to occur

Scientific Name	Behaviour	Presence
Eretmochelys imbricata Hawksbill Turtle [1766]	Migration corridor	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Nesting	Known to occur
Natator depressus Flatback Turtle [59257]	Aggregation	Known to occur
Natator depressus Flatback Turtle [59257]	Foraging	Known to occur
Natator depressus Flatback Turtle [59257]	Internesting	Known to occur
Natator depressus Flatback Turtle [59257]	Internesting buffer	Known to occur
Natator depressus Flatback Turtle [59257]	Mating	Known to occur
Natator depressus Flatback Turtle [59257]	Migration corridor	Known to occur
Natator depressus Flatback Turtle [59257]	Nesting	Known to occur
River shark		
Pristis clavata Dwarf Sawfish [68447]	Foraging	Known to occur
Pristis clavata Dwarf Sawfish [68447]	Juvenile	Known to occur
Pristis clavata Dwarf Sawfish [68447]	Nursing	Known to occur
Pristis clavata Dwarf Sawfish [68447]	Pupping	Known to occur
Pristis pristis Freshwater Sawfish [60756]	Foraging	Known to occur

Scientific Name	Behaviour	Presence
Pristis pristis Freshwater Sawfish [60756]	Nursing	Likely to occur
Pristis pristis Freshwater Sawfish [60756]	Nursing	Known to occur
Pristis pristis Freshwater Sawfish [60756]	Pupping	Likely to occur
Pristis zijsron Green Sawfish [68442]	Foraging	Known to occur
Pristis zijsron Green Sawfish [68442]	Nursing	Known to occur
Pristis zijsron Green Sawfish [68442]	Pupping	Known to occur
Seabirds		
Ardenna pacifica Wedge-tailed Shearwater [84292]	Breeding	Known to occur
Ardenna pacifica Wedge-tailed Shearwater [84292]	Foraging (in high numbers)	Known to occur
Fregata ariel Lesser Frigatebird [1012]	Breeding	Known to occur
Fregata minor Greater Frigatebird [1013]	Breeding	Known to occur
Hydroprogne caspia Caspian Tern [808]	Foraging (provisioning young)	Known to occur
Onychoprion anaethetus Bridled Tern [82845]	Foraging (in high numbers)	Known to occur
Onychoprion fuscata Sooty Tern [82847]	Foraging	Known to occur
Pelagodroma marina White-faced Storm petrel [1016]	Foraging (in high	Known to occur

Scientific Name	Behaviour	Presence
	numbers)	
Phaethon lepturus White-tailed Tropicbird [1014]	Breeding	Known to occur
Puffinus assimilis tunneyi Little Shearwater [59363]	Foraging (in high numbers)	Known to occur
Sterna dougallii Roseate Tern [817]	Breeding	Known to occur
Sterna dougallii Roseate Tern [817]	Resting	Known to occur
Sternula albifrons sinensis Little Tern [82850]	Breeding	Known to occur
Sternula albifrons sinensis Little Tern [82850]	Resting	Known to occur
Sternula nereis Fairy Tern [82949]	Breeding	Known to occur
Sula leucogaster Brown Booby [1022]	Breeding	Known to occur
Sula sula Red-footed Booby [1023]	Breeding	Known to occur
Thalasseus bengalensis Lesser Crested Tern [66546]	Breeding	Known to occur
Sharks		
Rhincodon typus Whale Shark [66680]	Foraging	Known to occur
Rhincodon typus Whale Shark [66680]	Foraging (high density prey)	Known to occur
Whales		
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Distribution	Known to occur

Scientific Name	Behaviour	Presence
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Foraging	Known to occur
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Migration	Known to occur
Megaptera novaeangliae Humpback Whale [38]	Calving	Known to occur
Megaptera novaeangliae Humpback Whale [38]	Migration	Known to occur
Megaptera novaeangliae Humpback Whale [38]	Migration (north)	
Megaptera novaeangliae Humpback Whale [38]	Migration (north and south)	Known to occur
Megaptera novaeangliae Humpback Whale [38]	Nursing	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 are 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

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

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

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
- 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: 06-Jun-2024

NWMR PMST sub area 2 (North 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:	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:	53
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:	3
Commonwealth Heritage Places:	1
Listed Marine Species:	107
Whales and Other Cetaceans:	27
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	7
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:	14
Regional Forest Agreements:	None
Nationally Important Wetlands:	1
EPBC Act Referrals:	118
Key Ecological Features (Marine):	7
Biologically Important Areas:	57
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 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)
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	Breeding known to occur within area

Scientific Name	Threatened Category	Presence Text
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Erythrotriorchis radiatus Red Goshawk [942]	Endangered	Species or species habitat likely to occur within area
Erythrura gouldiae Gouldian Finch [413]	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 known 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 known to occur within area
Numenius madagascariensis		
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Papasula abbotti		
Abbott's Booby [59297]	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 known to occur within area
Rostratula australis		
Australian Painted Snipe [77037]	Endangered	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
Tyto novaehollandiae kimberli		
Masked Owl (northern) [26048]	Vulnerable	Species or species habitat likely to occur within area
FISH		
Thunnus maccoyii		
Southern Bluefin Tuna [69402]	Conservation Dependent	Breeding known 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

Scientific Name	Threatened Category	Presence Text
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 known 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 known 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
Petrogale concinna monastria Nabarlek (Kimberley) [87607]	Endangered	Species or species habitat known 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
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		

Scientific Name	Threatened Category	Presence Text
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 known to occur within area
Aipysurus foliosquama Leaf-scaled Sea Snake, Leaf-scaled Seasnake [1118]	Critically Endangered	Species or species habitat may occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding known 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	Foraging, feeding or related behaviour known to occur within area
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Foraging, feeding or related behaviour known to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area
Tiliqua scincoides intermedia Northern Blue-tongued Skink [89838]	Critically Endangered	Species or species habitat known to occur within area
Varanus mertensi Mertens' Water Monitor, Mertens's Water Monitor [1568]	Endangered	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
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 known to occur within area
Pristis clavata		
Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Species or species habitat known to occur within area
Pristis pristis		
Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat likely to occur within area
Pristis zijsron		
Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Species or species habitat known to occur within area
Rhincodon typus		
Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Sphyrna lewini		
Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat known to occur within area

Listed Migratory Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
Migratory Marine Birds		
Anous stolidus		
Common Noddy [825]		Breeding known 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 pacifica Wedge-tailed Shearwater [84292]		Breeding known to occur within area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat known to occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Breeding known to occur within area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Breeding known to occur within area
Hydroprogne caspia Caspian Tern [808]		Breeding known to occur within area
Onychoprion anaethetus Bridled Tern [82845]		Breeding known to occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Breeding known to occur within area
Phaethon rubricauda Red-tailed Tropicbird [994]		Breeding known to occur within area
Sterna dougallii Roseate Tern [817]		Breeding known to occur within area
Sternula albifrons Little Tern [82849]		Breeding known to occur within area
Sula dactylatra Masked Booby [1021]		Breeding known to occur within area
Sula leucogaster Brown Booby [1022]		Breeding known to occur within area
Sula sula Red-footed Booby [1023]		Breeding known to occur within area
Migratory Marine Species		

Scientific Name	Threatened Category	Presence Text
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
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 known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding known 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

Scientific Name	Threatened Category	Presence Text
Dugong dugon Dugong [28]		Breeding known to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Foraging, feeding or related behaviour known 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	Foraging, feeding or related behaviour known 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 known 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 known to occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]		Breeding known 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	Species or species habitat known to occur within area
Pristis pristis Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat likely to occur within area
Pristis zijsron Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Species or species habitat known to occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Sousa sahulensis as Sousa chinensis Australian Humpback Dolphin [87942]		Breeding known 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 known to occur within area
Hirundo rustica Barn Swallow [662]		Species or species habitat known to occur within area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat known to occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat known to occur within area
Migratory Wetlands Species		

Scientific Name	Threatened Category	Presence Text
Acrocephalus orientalis Oriental Reed-Warbler [59570]		Species or species habitat known to occur within area
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known 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 known 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 known to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Numenius madagascariensis		
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Pandion haliaetus		
Osprey [952]		Breeding known to occur within area
Thalasseus bergii		
Greater Crested Tern [83000]		Breeding known 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
Unknown	
Commonwealth Land - [52278]	ACI
Commonwealth Land - [52276]	ACI
Commonwealth Land - [52277]	ACI

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 known to occur within area overfly marine area
Actitis hypoleucos		
Common Sandpiper [59309]		Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Anous minutus Black Noddy [824]		Breeding known to occur within area
Anous stolidus Common Noddy [825]		Breeding known to occur within area
Anous tenuirostris melanops Australian Lesser Noddy [26000]	Vulnerable	Breeding known 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
Ardenna pacifica as Puffinus pacificus Wedge-tailed Shearwater [84292]		Breeding known 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 known to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area overfly marine area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area overfly marine area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat known 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 known to occur within area overfly marine area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known 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 known to occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Breeding known to occur within area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Breeding known 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 known to occur within area
Hirundo rustica Barn Swallow [662]		Species or species habitat known to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Hydroprogne caspia as Sterna caspia Caspian Tern [808]		Breeding known to occur within area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat known to occur within area overfly marine area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known 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 known to occur within area overfly marine area
Motacilla flava Yellow Wagtail [644]		Species or species habitat known to occur within area overfly marine area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Onychoprion anaethetus as Sterna anaethetus Bridled Tern [82845]		Breeding known to occur within area
Pandion haliaetus Osprey [952]		Breeding known 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]		Breeding known to occur within area

Scientific Name	Threatened Category	Presence Text
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]		Breeding known 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
Sterna dougallii		
Roseate Tern [817]		Breeding known to occur within area
Sternula albifrons as Sterna albifrons		
Little Tern [82849]		Breeding known to occur within area
Sula dactylatra		
Masked Booby [1021]		Breeding known to occur within area
Sula leucogaster		
Brown Booby [1022]		Breeding known to occur within area
Sula sula		
Red-footed Booby [1023]		Breeding known to occur within area
Thalasseus bengalensis as Sterna bengalensis		
Lesser Crested Tern [66546]		Breeding known to occur within area
Thalasseus bergii as Sterna bergii		
Greater Crested Tern [83000]		Breeding known 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

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 Reticulate Pipefish, Yellow-banded Pipefish, Network 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

Scientific Name	Threatened Category	Presence Text
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 taeniophorus Ribboned Pipehorse, Ribboned Seadragon [66226]		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

Scientific Name	Threatened Category	Presence Text
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
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 known to occur within area
Reptile		
Aipysurus apraefrontalis Short-nosed Sea Snake, Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat known to occur within area
Aipysurus duboisii Dubois' Sea Snake, Dubois' Seasnake, Reef Shallows Sea Snake [1116]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
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]		Species or species habitat known 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
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding known 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	Foraging, feeding or related behaviour known to occur within area

Scientific Name	Threatened Category	Presence Text
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 [1101]		Species or species habitat may occur within area
Hydrophis coggeri Cogger's 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
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
Hydrophis zweiffei 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	Foraging, feeding or related behaviour known to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding known 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 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

Current Scientific Name	Status	Type of Presence
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]		Breeding known 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

Current Scientific Name	Status	Type of Presence
Pseudorca crassidens False Killer Whale [48]		Species or species habitat likely to occur within area
Sousa sahulensis Australian Humpback Dolphin [87942]		Breeding known 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
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)

Park Name	Zone & IUCN Categories
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)
Oceanic Shoals	Special Purpose Zone (Trawl) (IUCN VI)

Habitat Critical to the Survival of Marine Turtles [Resource Information]

Scientific Name	Behaviour	Presence
Aug - Sep		
Natator depressus		
Flatback Turtle [59257]	Nesting	Known to occur
Dec - Jan		
Chelonia mydas		
Green Turtle [1765]	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
Balanggarra	Indigenous Protected Area	WA
Browse Island	Nature Reserve	WA
Dambimangari	Indigenous Protected Area	WA
Lalang-garram / Camden Sound	Marine Park	WA
Lesueur Island	Nature Reserve	WA
Low Rocks	Nature Reserve	WA
Niiwalarra Islands	National Park	WA
North Kimberley	Marine Park	WA
North Lalang-garram	Marine Park	WA

Protected Area Name	Reserve Type	State
Pelican Island	Nature Reserve	WA
Prince Regent	National Park	WA
Unnamed WA41775	5(1)(h) Reserve	WA
Unnamed WA44677	5(1)(h) Reserve	WA
Uunguu	Indigenous Protected Area	WA

Nationally Important Wetlands [Resource Information]

Wetland Name	State
Ashmore Reef	EXT

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		Referral Decision
Project Crux Cable Lay and Operation	2022/09441		Completed
Project Fitzroy Expansion Offshore Cable Lay	2023/09674		Referral Decision
Controlled action			
2-D seismic survey Scott Reef	2000/125	Controlled Action	Post-Approval
Audacious Oil Field Standalone Development	2001/407	Controlled Action	Completed
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

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
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
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 well Audacious-1 in AC/P17	2000/5	Not Controlled Action	Completed
Drilling of exploration wells, Permit areas WA-301-P to WA-305-P	2002/769	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
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
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
Puffin Oil wells 7, 8 & 9 development	2005/2336	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	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
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
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 or 3D Marine Seismic Survey in Petroleum Permit Area AC/P35	2009/4864	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

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
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 Manner)	Post-Approval
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
Auralandia 3D marine seismic survey	2011/5961	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	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
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
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
Deep Water Northwest Shelf 2D Seismic Survey	2007/3260	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

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
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 Manner)	Post-Approval
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	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
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
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

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
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
Songa Venus Drilling and Testing Operations	2009/5122	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
Ursa 3D Marine Seismic Survey	2008/4634	Not Controlled Action (Particular Manner)	Post-Approval
Vampire 2D Non Exclusive Seismic Survey, WA	2010/5543	Not Controlled Action (Particular Manner)	Post-Approval
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

Title of referral	Reference	Referral Outcome	Assessment Status
Referral decision			
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
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
Pinnacles of the Bonaparte Basin	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]	Breeding	Known to occur
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Calving	Known to occur
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Foraging	Known to occur
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Foraging (high density prey)	Known to occur

Scientific Name	Behaviour	Presence
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Resting	Known to occur
Sousa chinensis Indo-Pacific Humpback Dolphin [50]	Breeding	Known to occur
Sousa chinensis Indo-Pacific Humpback Dolphin [50]	Breeding	Likely to occur
Sousa chinensis Indo-Pacific Humpback Dolphin [50]	Calving	Known to occur
Sousa chinensis Indo-Pacific Humpback Dolphin [50]	Calving	Likely to occur
Sousa chinensis Indo-Pacific Humpback Dolphin [50]	Foraging	Known to occur
Sousa chinensis Indo-Pacific Humpback Dolphin [50]	Foraging	Likely to occur
Sousa chinensis Indo-Pacific Humpback Dolphin [50]	Foraging (high density prey)	Known to occur
Sousa chinensis Indo-Pacific Humpback Dolphin [50]	Foraging (high density prey)	Likely to occur
Sousa chinensis Indo-Pacific Humpback Dolphin [50]	Significant habitat	Known to occur
Sousa chinensis Indo-Pacific Humpback Dolphin [50]	Significant habitat - unknown behaviour	Likely to occur
Tursiops aduncus Indo-Pacific/Spotted Bottlenose Dolphin [68418]	Calving	Known to occur
Tursiops aduncus Indo-Pacific/Spotted Bottlenose Dolphin [68418]	Foraging	Known to occur
Dugong		
Dugong dugon Dugong [28]	Breeding	Known to occur

Scientific Name	Behaviour	Presence
Dugong dugon Dugong [28]	Calving	Known to occur
Dugong dugon Dugong [28]	Foraging	Known to occur
Dugong dugon Dugong [28]	Foraging (high density seagrass beds)	Known to occur
Dugong dugon Dugong [28]	Nursing	Known to occur
Marine Turtles		
Caretta caretta Loggerhead Turtle [1763]	Foraging	Known to occur
Chelonia mydas Green Turtle [1765]	Foraging	Likely to occur
Chelonia mydas Green Turtle [1765]	Foraging	Known to occur
Chelonia mydas Green Turtle [1765]	Internesting buffer	Known to occur
Chelonia mydas Green Turtle [1765]	Internesting buffer	Likely to occur
Chelonia mydas Green Turtle [1765]	Mating	Likely to occur
Chelonia mydas Green Turtle [1765]	Nesting	Known to occur
Chelonia mydas Green Turtle [1765]	Nesting	Likely to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Foraging	Likely to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Internesting buffer	Likely to occur

Scientific Name	Behaviour	Presence
Eretmochelys imbricata Hawksbill Turtle [1766]	Internesting buffer	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Nesting	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Nesting	Likely to occur
Lepidochelys olivacea Olive Ridley Turtle [1767]	Foraging	Known to occur
Natator depressus Flatback Turtle [59257]	Foraging	Known to occur
Natator depressus Flatback Turtle [59257]	Internesting buffer	Known to occur
Natator depressus Flatback Turtle [59257]	Nesting	Known to occur
Seabirds		
Ardenna pacifica Wedge-tailed Shearwater [84292]	Breeding	Known to occur
Fregata ariel Lesser Frigatebird [1012]	Breeding	Known to occur
Fregata minor Greater Frigatebird [1013]	Breeding	Known to occur
Phaethon lepturus White-tailed Tropicbird [1014]	Breeding	Known to occur
Sterna dougallii Roseate Tern [817]	Breeding	Known to occur
Sternula albifrons sinensis Little Tern [82850]	Breeding	Known to occur
Sternula albifrons sinensis Little Tern [82850]	Resting	Known to occur

Scientific Name	Behaviour	Presence
Sula leucogaster Brown Booby [1022]	Breeding	Known to occur
Sula sula Red-footed Booby [1023]	Breeding	Known to occur
Thalasseus bengalensis Lesser Crested Tern [66546]	Breeding	Known to occur
Sharks		
Rhincodon typus Whale Shark [66680]	Foraging	Known to occur
Whales		
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Distribution	Known to occur
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Foraging	Known to occur
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Migration	Known to occur
Megaptera novaeangliae Humpback Whale [38]	Calving	Known to occur
Megaptera novaeangliae Humpback Whale [38]	Migration	Known to occur
Megaptera novaeangliae Humpback Whale [38]	Nursing	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 are 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

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

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

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
- 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: 11-Jul-2024

Figure 1: NMR PMST 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:	3
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	82
Listed Migratory Species:	82

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:	6
Commonwealth Heritage Places:	None
Listed Marine Species:	145
Whales and Other Cetaceans:	25
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	21
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:	25
Regional Forest Agreements:	None
Nationally Important Wetlands:	7
EPBC Act Referrals:	80
Key Ecological Features (Marine):	10
Biologically Important Areas:	26
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	Roosting known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Roosting known to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris tenuirostris Great Knot [862]	Vulnerable	Roosting known to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area
Erythrotriorchis radiatus Red Goshawk [942]	Endangered	Species or species habitat likely to occur within area
Erythrura gouldiae Gouldian Finch [413]	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 may occur within area
Geophaps smithii smithii Partridge Pigeon (eastern) [64441]	Vulnerable	Species or species habitat known to occur within area
Hirundapus caudacutus White-throated Needletail [682]	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 known to occur within area
Limosa limosa Black-tailed Godwit [845]	Endangered	Roosting known 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

Scientific Name	Threatened Category	Presence Text
Numenius madagascariensis		
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to 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 known to occur within area
Probosciger aterrimus macgillivrayi		
Palm Cockatoo (Australian) [67033]	Vulnerable	Species or species habitat likely to occur within area
Rostratula australis		
Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
Tringa nebularia		
Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area
Tyto novaehollandiae kimberli		
Masked Owl (northern) [26048]	Vulnerable	Species or species habitat known to occur within area
Tyto novaehollandiae melvillensis		
Tiwi Masked Owl, Tiwi Islands Masked Owl [26049]	Endangered	Species or species habitat known to occur within area
Xenus cinereus		
Terek Sandpiper [59300]	Vulnerable	Roosting known to occur within area
FISH		
Thunnus maccoyii		
Southern Bluefin Tuna [69402]	Conservation Dependent	Species or species habitat may 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 known to occur within area
Dasyurus hallucatus Northern Quoll, Digul [Gogo-Yimidir], Wijingadda [Dambimangari], Wiminji [Martu] [331]	Endangered	Species or species habitat known 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
Isoodon auratus auratus Golden Bandicoot (mainland) [66665]	Vulnerable	Species or species habitat 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
Mesembriomys gouldii melvillensis Black-footed Tree-rat (Melville Island) [87619]	Vulnerable	Species or species habitat known 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

Scientific Name	Threatened Category	Presence Text
Notomys aquilo		
Northern Hopping-mouse, Woorrentinta [123]	Endangered	Species or species habitat may occur within area
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 likely to occur within area
Rhinolophus robertsi		
Large-eared Horseshoe Bat, Greater 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
Sminthopsis butleri		
Butler's Dunnart [302]	Vulnerable	Species or species habitat known to occur within area
Trichosurus vulpecula arnhemensis		
Northern Brushtail Possum [83091]	Vulnerable	Species or species habitat known to occur within area
Xeromys myoides		
Water Mouse, False Water Rat, Yirrkoo [66]	Vulnerable	Species or species habitat known to occur within area
PLANT		
Bruguiera x hainesii		
Haines's Orange Mangrove [91351]	Critically Endangered	Species or species habitat may occur within area
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
Calophyllum bicolor		
[11371]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
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
Dendrobium johannis Chocolate Tea Tree Orchid [13585]	Vulnerable	Species or species habitat likely to occur within area
Elaeocarpus miegei [65147]	Endangered	Species or species habitat may occur within area
Tarennoidea wallichii [65173]	Endangered	Species or species habitat likely to occur within area
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
Vappodes phalaenopsis Cooktown Orchid [78894]	Vulnerable	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
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
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding known to occur within area
Cryptoblepharus gurrmul Arafura Snake-eyed Skink [83106]	Endangered	Species or species habitat known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Congregation or aggregation known to occur within area
Egernia rugosa Yakka Skink [1420]	Vulnerable	Species or species habitat may 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 known to occur within area
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Breeding known to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding known 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, Mertens's 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		

Scientific Name	Threatened Category	Presence Text
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 known to occur within area
Glyphis glyphis		
Speartooth Shark [82453]	Critically Endangered	Species or species habitat known to occur within area
Pristis clavata		
Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Species or species habitat known to occur within area
Pristis pristis		
Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat known to occur within area
Pristis zijsron		
Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Species or species habitat known 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 known to occur within area

Listed Migratory Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
Migratory Marine Birds		
Anous stolidus		
Common Noddy [825]		Foraging, feeding or related behaviour known 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
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat known to occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Breeding known to occur within area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Breeding known to occur within area
Onychoprion anaethetus Bridled Tern [82845]		Breeding known to occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat may occur within area
Sterna dougallii Roseate Tern [817]		Breeding known to occur within area
Sterna sumatrana Black-naped Tern [800]		Breeding known to occur within area
Sternula albifrons Little Tern [82849]		Breeding known to occur within area
Sula leucogaster Brown Booby [1022]		Breeding known to occur within area
Migratory Marine Species		
Anoxypristis cuspidata Narrow Sawfish, Knifetooth Sawfish [68448]		Species or species habitat known 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

Scientific Name	Threatened Category	Presence Text
[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
[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 known to occur within area
[Chelonia mydas](#) Green Turtle [1765]	Vulnerable	Breeding known 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	Congregation or aggregation known to occur within area
[Dugong dugon](#) Dugong [28]		Species or species habitat known to occur within area
[Eretmochelys imbricata](#) Hawksbill Turtle [1766]	Vulnerable	Breeding known 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
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Breeding known 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 known to occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]		Species or species habitat known 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	Species or species habitat known to occur within area
Pristis pristis Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat known to occur within area
Pristis zijsron Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Species or species habitat 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
[Sousa sahulensis as Sousa chinensis](#) Australian Humpback Dolphin [87942]		Breeding known to occur within area
[Tursiops aduncus (Arafura/Timor Sea populations)](#) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat known to occur within area
Migratory Terrestrial Species		
[Cecropis daurica](#) Red-rumped Swallow [80610]		Species or species habitat known to occur within area
[Cuculus optatus](#) Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat may occur within area
[Hirundapus caudacutus](#) White-throated Needletail [682]	Vulnerable	Species or species habitat may occur within area
[Hirundo rustica](#) Barn Swallow [662]		Species or species habitat may occur within area
[Monarcha melanopsis](#) Black-faced Monarch [609]		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
[Myiagra cyanoleuca](#) Satin Flycatcher [612]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat likely to occur within area
Symposiachrus trivirgatus as Monarcha trivirgatus Spectacled Monarch [83946]		Species or species habitat known 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 known to occur within area
Arenaria interpres Ruddy Turnstone [872]	Vulnerable	Roosting known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Roosting known to occur within area
Calidris alba Sanderling [875]		Roosting known to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known 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 known to occur within area
Calidris tenuirostris Great Knot [862]	Vulnerable	Roosting known to occur within area

Scientific Name	Threatened Category	Presence Text
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Roosting 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
Limicola falcinellus Broad-billed Sandpiper [842]		Roosting known 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 known to occur within area
Limosa limosa Black-tailed Godwit [845]	Endangered	Roosting known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting known to occur within area

Scientific Name	Threatened Category	Presence Text
Numenius phaeopus Whimbrel [849]		Roosting known to occur within area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area
Pluvialis fulva Pacific Golden Plover [25545]		Roosting known to occur within area
Pluvialis squatarola Grey Plover [865]	Vulnerable	Roosting known to occur within area
Thalasseus bergii Greater Crested Tern [83000]		Breeding known to occur within area
Tringa brevipes Grey-tailed Tattler [851]		Roosting known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Roosting known to occur within area
Xenus cinereus Terek Sandpiper [59300]	Vulnerable	Roosting known 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
Attorney-General - Australian Government Solicitor	
Commonwealth Land - Australian Government Solicitor [70332]	NT
Defence	
Defence - MT GOODWIN RADAR SITE [70063]	NT
Defence - QUAIL ISLAND BOMBING RANGE [70003]	NT

Commonwealth Land Name	State
Defence - RIMBIJA ISLAND RAAF RADIO BEACON [70074]	NT
Unknown	
Commonwealth Land - [71140]	NT
Commonwealth Land - [70995]	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 known to occur within area
Anous stolidus Common Noddy [825]		Foraging, feeding or related behaviour known 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 known 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	Roosting known to occur within area

Scientific Name	Threatened Category	Presence Text
Calidris alba Sanderling [875]		Roosting known to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area overfly marine area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known 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 known to occur within area overfly marine area
Calidris tenuirostris Great Knot [862]	Vulnerable	Roosting known to occur within area overfly marine area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat known to occur within area
Cecropis daurica as Hirundo daurica Red-rumped Swallow [80610]		Species or species habitat known 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 known to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area

Scientific Name	Threatened Category	Presence Text
Charadrius ruficapillus Red-capped Plover [881]		Roosting known to occur within area overfly marine area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Roosting may occur within area overfly marine area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Breeding known to occur within area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Breeding known 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
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 known to occur within area
Himantopus himantopus Pied Stilt, Black-winged Stilt [870]		Roosting known to occur within area overfly marine area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat may 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
Limicola falcinellus Broad-billed Sandpiper [842]		Roosting known 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 known to occur within area
Limosa limosa Black-tailed Godwit [845]	Endangered	Roosting known to occur within area overfly marine 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
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
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat likely to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting known to occur within area overfly marine area
Numenius phaeopus Whimbrel [849]		Roosting known to occur within area
Onychoprion anaethetus as Sterna anaethetus Bridled Tern [82845]		Breeding known to occur within area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat may occur within area
Pluvialis fulva Pacific Golden Plover [25545]		Roosting known to occur within area
Pluvialis squatarola Grey Plover [865]	Vulnerable	Roosting known to occur within area overfly marine area
Recurvirostra novaehollandiae Red-necked Avocet [871]		Roosting known 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 known to occur within area

Scientific Name	Threatened Category	Presence Text
Sterna sumatrana Black-naped Tern [800]		Breeding known to occur within area
Sternula albifrons as Sterna albifrons Little Tern [82849]		Breeding known to occur within area
Stiltia isabella Australian Pratincole [818]		Roosting known to occur within area overfly marine area
Sula leucogaster Brown Booby [1022]		Breeding known to occur within area
Symposiachrus trivirgatus as Monarcha trivirgatus Spectacled Monarch [83946]		Species or species habitat known to occur within area overfly marine area
Thalasseus bengalensis as Sterna bengalensis Lesser Crested Tern [66546]		Breeding known to occur within area
Thalasseus bergii as Sterna bergii Greater Crested Tern [83000]		Breeding known to occur within area
Tringa brevipes as Heteroscelus brevipes Grey-tailed Tattler [851]		Roosting known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area overfly marine area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Roosting known to occur within area overfly marine area
Xenus cinereus Terek Sandpiper [59300]	Vulnerable	Roosting known 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
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 Reticulate Pipefish, Yellow-banded Pipefish, Network 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 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 banneri Roughridge Pipefish [66206]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
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
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 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

Scientific Name	Threatened Category	Presence Text
Haliichthys taeniophorus Ribboned Pipehorse, Ribboned Seadragon [66226]		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 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
Hippichthys spicifer Belly-barred Pipefish, Banded Freshwater Pipefish [66232]		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

Scientific Name	Threatened Category	Presence Text
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
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		

Scientific Name	Threatened Category	Presence Text
[Dugong dugon](#) Dugong [28]		Species or species habitat known 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	Foraging, feeding or related behaviour known to occur within area
[Chelonia mydas](#) Green Turtle [1765]	Vulnerable	Breeding known 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	Congregation or aggregation known to occur within area
[Emydocephalus annulatus](#) Eastern Turtle-headed Sea Snake [1125]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding known 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 [1101]		Species or species habitat may occur within area
Hydrophis caerulescens Dwarf Sea Snake [1103]		Species or species habitat may occur within area
Hydrophis coggeri Cogger's 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 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 zweiffei 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

Scientific Name	Threatened Category	Presence Text
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Breeding known to occur within area
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 known 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 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

Current Scientific Name	Status	Type of Presence
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 likely to occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]		Species or species habitat known 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]		Breeding known to occur within area
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
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 known 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
Limmen	Habitat Protection Zone (IUCN IV)
Oceanic Shoals	Habitat Protection Zone (IUCN IV)
Wessel	Habitat Protection Zone (IUCN IV)
West Cape York	Habitat Protection Zone (IUCN IV)
Arafura	Multiple Use Zone (IUCN VI)
Joseph Bonaparte Gulf	Multiple Use Zone (IUCN VI)
Oceanic Shoals	Multiple Use Zone (IUCN VI)

Park Name	Zone & IUCN Categories
Oceanic Shoals	Multiple Use Zone (IUCN VI)
Gulf of Carpentaria	National Park Zone (IUCN II)
Oceanic Shoals	National Park Zone (IUCN II)
West Cape York	National Park Zone (IUCN II)
West Cape York	National Park Zone (IUCN II)
Arafura	Special Purpose Zone (IUCN VI)
Arnhem	Special Purpose Zone (IUCN VI)
Joseph Bonaparte Gulf	Special Purpose Zone (IUCN VI)
West Cape York	Special Purpose Zone (IUCN VI)
Arafura	Special Purpose Zone (Trawl) (IUCN VI)
Gulf of Carpentaria	Special Purpose Zone (Trawl) (IUCN VI)
Gulf of Carpentaria	Special Purpose Zone (Trawl) (IUCN VI)
Oceanic Shoals	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
Aug - Sep		
Natator depressus Flatback Turtle [59257]	Nesting	Known to occur
Dec - Jan		
Chelonia mydas Green Turtle [1765]	Nesting	Known to occur
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

Nov - May		
Eretmochelys imbricata		
Hawksbill Turtle [1766]	Nesting	Known to occur

Extra Information

State and Territory Reserves		[Resource Information]
Protected Area Name	Reserve Type	State
Anindilyakwa	Indigenous Protected Area	NT
Barranyi (North Island)	National Park	NT
Crocodile Islands Maringa	Indigenous Protected Area	NT
Crocodile Islands Maringa	Indigenous Protected Area	NT
Dhimurru	Indigenous Protected Area	NT
Djelk	Indigenous Protected Area	NT
Djelk - Stage 2	Indigenous Protected Area	NT
Eight Mile Creek	Fish Habitat Area (A)	QLD
Finucane Island	National Park	QLD
Garig Gunak Barlu	Marine Park	NT
Keep River	Proposed National Parks Act park or park addition	NT
Limmen	National Park	NT
Limmen Bight	Marine Park	NT
Marthakal	Indigenous Protected Area	NT
Morning Inlet - Bynoe River	Fish Habitat Area (A)	QLD

Protected Area Name	Reserve Type	State
Nassau River	Fish Habitat Area (A)	QLD
Nijinda Durlga	Indigenous Protected Area	QLD
Pine River Bay	Fish Habitat Area (A)	QLD
Pungalina - Seven Emu	Private Nature Reserve	NT
Rutland Plains	Nature Refuge	QLD
South-East Arnhem Land	Indigenous Protected Area	NT
Thuwathu/Bujimulla	Indigenous Protected Area	QLD
Thuwathu/Bujimulla	Indigenous Protected Area	QLD
Yanyuwa (Barni - Wardimantha Awara)	Indigenous Protected Area	NT

Nationally Important Wetlands	[Resource Information]
Wetland Name	State
Cobourg Peninsula System	NT
Finniss Floodplain and Fog Bay Systems	NT
Jardine River Wetlands Aggregation	QLD
Limmen Bight (Port Roper) Tidal Wetlands System	NT
Northeast Karumba Plain Aggregation	QLD
Southeast Karumba Plain Aggregation	QLD
Southern Gulf Aggregation	QLD

EPBC Act Referrals			[Resource Information]
Title of referral	Reference	Referral Outcome	Assessment Status
Arnhem Space Centre Operations (Down Range Recovery)	2023/09657		Assessment
Aurukun Bauxite Project	2020/8624		Assessment
Darwin Pipeline Duplication (DPD) Project	2022/09372		Post-Approval
Darwin Pipeline Duplication DPD Project	2022/9166		Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Marine Route Survey for Subsea Fibre Optic Data Cable System - Australia West	2024/09826		Completed
Tiwi H2 Project	2022/09347		Assessment
Controlled action			
Andranangoo Creek & Lethbridge Bay mineral sand mining	2005/2155	Controlled Action	Completed
Bauxite Hill Mining and Barging Project	2015/7538	Controlled Action	Post-Approval
Bauxite Hills Mine and Port Project	2012/6246	Controlled Action	Completed
Blacktip Project - Wharf Construction	2007/3293	Controlled Action	Completed
Bonaparte Liquified Natural Gas Project	2011/6141	Controlled Action	Post-Approval
Darwin to Moomba Gas Pipeline	2001/213	Controlled Action	Completed
Development of Blacktip Gas Field	2003/1180	Controlled Action	Post-Approval
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
Pisolite Hills bauxite mine and associated infrast	2008/4046	Controlled Action	Completed
PNG-Qld Gas Pipeline - Gove Lateral	2006/2615	Controlled Action	Completed
Roper Bar Iron Ore Mine and Transport Infrastructure	2011/6079	Controlled Action	Completed
Shipping Channel Enhancement	2010/5431	Controlled Action	Completed
Snake Bay Barramundi Sea Cage Farm	2005/2150	Controlled Action	Completed
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

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
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
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
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
Construction and operation of Radar Infrastructure	2004/1406	Not Controlled Action	Completed
Cox Peninsular Remediation Project, NT	2015/7587	Not Controlled Action	Completed
Dredging of Weipa South Channel	2003/1311	Not Controlled Action	Completed
Eastern Leases 2010 Exploration Drilling Program	2010/5455	Not Controlled Action	Completed
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
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
NT/P68 2007 Two Well Drilling Program	2007/3569	Not Controlled Action	Completed
Not controlled action (particular manner)			
2D and 3D Seismic Survey	2011/6197	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 Seismic survey	2009/5076	Not Controlled Action (Particular Manner)	Post-Approval
2D Seismic Survey, Permit Area Q23P	2009/4925	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
2D Seismic Survey - Petroleum Exploration Area NT/P68, Eastern Bonaparte Basin	2006/2922	Not Controlled Action (Particular Manner)	Post-Approval
3D Marine Seismic Survey	2009/4681	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 2D & 3D marine seismic survey	2011/5962	Not Controlled Action (Particular Manner)	Post-Approval
Bonaparte 3D & 2D Seismic Survey, in NT/P82, Timor Sea	2012/6398	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Bonaparte Basin Barossa Appraisal Drilling Campaign, NT	2012/6481	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
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
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

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Nova 3D Seismic Survey	2013/6825	Not Controlled Action (Particular Manner)	Post-Approval
NT/P74 & NT/P75 - 2D marine seismic survey	2008/4316	Not Controlled Action (Particular Manner)	Post-Approval
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
Panda NT/P76 3D Seismic Acquisition Survey Program	2009/4992	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
Two dimensional (2d) seismic survey in Gulf of Carpentaria	2013/6991	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
3D Seismic Survey (NT/P68)	2006/2949	Referral Decision	Completed
Capital Dredging Weipa South Channel	2003/1302	Referral Decision	Completed
Groote Eylandt Offshore Marine Surveys	2010/5643	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
Gulf of Carpentaria basin	North
Gulf of Carpentaria coastal zone	North
Pinnacles of the Bonaparte Basin	North-west
Pinnacles of the Bonaparte Basin	North
Plateaux and saddle north-west of the Wellesley Islands	North
Shelf break and slope of the Arafura Shelf	North
Submerged coral reefs of the Gulf of Carpentaria	North
Tributary Canyons of the Arafura Depression	North

Biologically Important Areas [Resource Information]

Scientific Name	Behaviour	Presence
Dolphins		
Sousa chinensis Indo-Pacific Humpback Dolphin [50]	Breeding	Known to occur
Sousa chinensis Indo-Pacific Humpback Dolphin [50]	Foraging	Likely to occur
Tursiops aduncus Indo-Pacific/Spotted Bottlenose Dolphin [68418]	Breeding	Likely to occur
Marine Turtles		
Caretta caretta Loggerhead Turtle [1763]	Foraging	Known to occur
Chelonia mydas Green Turtle [1765]	Foraging	Likely to occur
Chelonia mydas Green Turtle [1765]	Foraging	Known to occur
Chelonia mydas Green Turtle [1765]	Internesting	Likely to occur
Dermochelys coriacea Leatherback Turtle [1768]	Internesting	Likely to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Internesting	Likely to occur
Lepidochelys olivacea Olive Ridley Turtle [1767]	Foraging	Likely to occur
Lepidochelys olivacea Olive Ridley Turtle [1767]	Foraging	Known to occur
Lepidochelys olivacea Olive Ridley Turtle [1767]	Internesting	Likely to occur
Natator depressus Flatback Turtle [59257]	Foraging	Known to occur
Natator depressus Flatback Turtle [59257]	Internesting	Likely to occur
Natator depressus Flatback Turtle [59257]	Internesting buffer	Known to occur
Seabirds		

Scientific Name	Behaviour	Presence
Anous stolidus Common Noddy [825]	Breeding	Known to occur
Fregata ariel Lesser Frigatebird [1012]	Breeding	Known to occur
Fregata ariel Lesser Frigatebird [1012]	Foraging	Likely to occur
Onychoprion anaethetus Bridled Tern [82845]	Breeding	Known to occur
Onychoprion anaethetus Bridled Tern [82845]	Breeding (high numbers)	Known to occur
Sterna dougallii Roseate Tern [817]	Breeding	Known to occur
Sterna dougallii Roseate Tern [817]	Breeding (high numbers)	Known to occur
Sula leucogaster Brown Booby [1022]	Breeding	Known to occur
Thalasseus bengalensis Lesser Crested Tern [66546]	Breeding	Known to occur
Thalasseus bergii Crested Tern [83000]	Breeding	Known to occur
Thalasseus bergii Crested Tern [83000]	Breeding (high numbers)	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 are 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

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

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

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
- 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: 10-Jun-2024

Figure 1: SWMR PMST sub area 1 (labelled '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:	9
Listed Threatened Species:	141
Listed Migratory Species:	84

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:	240
Commonwealth Heritage Places:	4
Listed Marine Species:	123
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:	63
Regional Forest Agreements:	1
Nationally Important Wetlands:	5
EPBC Act Referrals:	131
Key Ecological Features (Marine):	11
Biologically Important Areas:	33
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 10km of Ramsar site
Lake gore	Within Ramsar site
Lake warden system	Within 10km of 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 3 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
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
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
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

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	Roosting known to occur within area
Atrichornis clamosus Noisy Scrub-bird, Tjimiluk [654]	Endangered	Species or species habitat known to occur within area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Roosting known to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris tenuirostris Great Knot [862]	Vulnerable	Roosting known to occur within area
Calyptorhynchus banksii naso Forest Red-tailed Black-Cockatoo, Karrak [67034]	Vulnerable	Species or species habitat known to occur within area
Cereopsis novaehollandiae grisea Cape Barren Goose (south-western), Recherche Cape Barren Goose [25978]	Vulnerable	Breeding known to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area

Scientific Name	Threatened Category	Presence Text
Dasyornis longirostris Western Bristlebird [515]	Endangered	Species or species habitat known 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
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 known to occur within area

Scientific Name	Threatened Category	Presence Text
Limosa limosa Black-tailed Godwit [845]	Endangered	Roosting known 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 known to occur within area
Pachyptila turtur subantarctica Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat known 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 known 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	Roosting known to occur within area
Psophodes nigrogularis nigrogularis Western Heath Whipbird [64449]	Endangered	Species or species habitat 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
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat known to occur within area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Foraging, feeding or related behaviour known 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
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area
Xenus cinereus Terek Sandpiper [59300]	Vulnerable	Roosting known to occur within area
Zanda baudinii listed as Calyptorhynchus baudinii Baudin's Cockatoo, Baudin's Black-Cockatoo, Long-billed Black-cockatoo [87736]	Endangered	Breeding known to occur within area

Scientific Name	Threatened Category	Presence Text
Zanda latirostris listed as Calyptorhynchus latirostris		
Carnaby's Black Cockatoo, Short-billed Black-cockatoo [87737]	Endangered	Breeding known to occur within area
CRUSTACEAN		
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 may occur within area
FISH		
Galaxias truttaceus (Western Australian population)		
Western Trout Minnow [89857]	Endangered	Species or species habitat known to occur within area
Galaxiella nigrostriata		
Blackstriped Dwarf Galaxias, Black-stripe Minnow [88677]	Endangered	Species or species habitat known 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 known to occur within area
Thunnus maccoyii		
Southern Bluefin Tuna [69402]	Conservation Dependent	Species or species habitat known 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 known 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	Foraging, feeding or related behaviour 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 known to occur within area
Dasyurus geoffroii Chuditch, Western Quoll [330]	Vulnerable	Species or species habitat known to occur within area
Eubalaena australis Southern Right Whale [40]	Endangered	Breeding known to occur within area
Macroderma gigas Ghost Bat [174]	Vulnerable	Species or species habitat may 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	Species or species habitat known to occur within area
Petrogale lateralis hacketti Recherche Rock-wallaby [66849]	Vulnerable	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Petrogale lateralis lateralis Black-flanked Rock-wallaby, Moororong, 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	Species or species habitat known to occur within area
Pseudocheirus occidentalis Western Ringtail Possum, Ngwayir, Womp, Woder, Ngoor, Ngoolangit [25911]	Critically Endangered	Breeding known to occur within area
Pseudomys shortridgei Heath Mouse, Dayang, Heath Rat [77]	Endangered	Species or species habitat likely to occur within area
Setonix brachyurus Quokka [229]	Vulnerable	Species or species habitat known to occur within area
OTHER		
Westralunio carteri Carter's Freshwater Mussel, Freshwater Mussel [86266]	Vulnerable	Species or species habitat known 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 may occur within area

Scientific Name	Threatened Category	Presence Text
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
Banksia brownii Brown's Banksia, Feather-leaved Banksia [8277]	Critically Endangered	Species or species habitat known to occur within area
Banksia nivea subsp. uliginosa Swamp Honeypot [82766]	Endangered	Species or species habitat may 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 known to occur within area
Boronia clavata Bremer Boronia [5538]	Endangered	Species or species habitat may 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 known to occur within area
Caladenia excelsa Giant Spider-orchid [56717]	Endangered	Species or species habitat likely to occur within area
Caladenia granitora [65292]	Endangered	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Caladenia harringtoniae		
Harrington's Spider-orchid, Pink Spider-orchid [56786]	Vulnerable	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 known 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 known to occur within area
Caladenia viridescens		
Dunsborough Spider-orchid [56776]	Endangered	Species or species habitat known 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 sp. S coastal plain (R.D.Royce 4872)		
Royce's Waxflower [87814]	Vulnerable	Species or species habitat likely to occur within area
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 known to occur within area
Coopernookia georgei		
Mauve Coopernookia [21218]	Endangered	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Daviesia obovata Paddle-leaf Daviesia [17311]	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 known to occur within area
Diuris purdiei Purdie's Donkey-orchid [12950]	Endangered	Species or species habitat may 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 likely to occur within area
Eucalyptus argutifolia Yanchep Mallee, Wabling Hill Mallee [24263]	Vulnerable	Species or species habitat may 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 known to occur within area
Gastrolobium papilio Butterfly-leaved Gastrolobium [78415]	Endangered	Species or species habitat may occur within area
Grevillea elongata Ironstone Grevillea [64578]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
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 known to occur within area
Lambertia echinata subsp. echinata Prickly Honeysuckle [56729]	Endangered	Species or species habitat known to occur within area
Lambertia echinata subsp. occidentalis Western Prickly Honeysuckle [64528]	Endangered	Species or species habitat may occur within area
Morelotia australiensis listed as Tetraria australiensis Southern Tetraria [92784]	Vulnerable	Species or species habitat may occur within area
Petrophile latericola Laterite Petrophile [64532]	Endangered	Species or species habitat may occur within area
Phaius australis Lesser Swamp-orchid [5872]	Endangered	Species or species habitat may occur within area
Reedia spathacea Reedia [2995]	Critically Endangered	Species or species habitat may occur within area
Ricinocarpos trichophorus Barrens Wedding Bush [19931]	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

Scientific Name	Threatened Category	Presence Text
Stylidium galioides Yellow Mountain Triggerplant [4666]	Vulnerable	Species or species habitat may occur within area
Synaphea sp. Fairbridge Farm (D.Papenfus 696) Selena's Synaphea [82881]	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 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 may occur within area
Wurmbea calcicola Naturaliste Nancy [64691]	Endangered	Species or species habitat known to occur within area
REPTILE		
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area

Scientific Name	Threatened Category	Presence Text
Natator depressus		
Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
SHARK		
Carcharias taurus (west coast population)		
Grey Nurse Shark (west coast population) [68752]	Vulnerable	Congregation or aggregation known to occur within area
Carcharodon carcharias		
White Shark, Great White Shark [64470]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Centrophorus uyato		
Little Gulper Shark [68446]	Conservation Dependent	Species or species habitat likely to occur within area
Galeorhinus galeus		
School Shark, Eastern School Shark, Snapper Shark, Tope, Soupfin Shark [68453]	Conservation Dependent	Species or species habitat may occur within area
Pristis pristis		
Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	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 known to occur within area

Listed Migratory Species		[Resource Information]
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

Scientific Name	Threatened Category	Presence Text
Ardenna carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Breeding known 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 known to occur within area
Ardenna tenuirostris Short-tailed Shearwater [82652]		Breeding known 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
Hydroprogne caspia Caspian Tern [808]		Breeding known to occur within 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
Onychoprion anaethetus Bridled Tern [82845]		Breeding known to occur within area
Phaethon rubricauda Red-tailed Tropicbird [994]		Breeding known to occur within area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat likely to occur within area
Sterna dougallii Roseate Tern [817]		Breeding known to occur within area
Sternula albifrons Little Tern [82849]		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 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
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	Foraging, feeding or related behaviour 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
Carcharhinus longimanus Oceanic Whitetip Shark [84108]		Species or species habitat likely to occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area

Scientific Name	Threatened Category	Presence Text
Chelonia mydas Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area
Eubalaena australis as Balaena glacialis australis Southern Right Whale [40]	Endangered	Breeding known 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 known to occur within area
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat known to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
[Physeter macrocephalus](#) Sperm Whale [59]		Foraging, feeding or related behaviour known to occur within area
[Pristis pristis](#) Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	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 known to occur within area
Migratory Wetlands Species		
[Actitis hypoleucos](#) Common Sandpiper [59309]		Species or species habitat known to occur within area
[Arenaria interpres](#) Ruddy Turnstone [872]	Vulnerable	Roosting known to occur within area
[Calidris acuminata](#) Sharp-tailed Sandpiper [874]	Vulnerable	Roosting known to occur within area
[Calidris alba](#) Sanderling [875]		Roosting known to occur within area
[Calidris canutus](#) Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area
[Calidris ferruginea](#) Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
[Calidris melanotos](#) Pectoral Sandpiper [858]		Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Calidris pugnax as Philomachus pugnax Ruff [91256]		Roosting known to occur within area
Calidris ruficollis Red-necked Stint [860]		Roosting known to occur within area
Calidris subminuta Long-toed Stint [861]		Roosting known to occur within area
Calidris tenuirostris Great Knot [862]	Vulnerable	Roosting known to occur within area
Charadrius bicinctus Double-banded Plover [895]		Roosting known to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known 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 known to occur within area
Limicola falcinellus Broad-billed Sandpiper [842]		Roosting known to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Limosa limosa Black-tailed Godwit [845]	Endangered	Roosting known to occur within area

Scientific Name	Threatened Category	Presence Text
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting likely to occur within area
Numenius phaeopus Whimbrel [849]		Roosting known to occur within area
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Phalaropus lobatus Red-necked Phalarope [838]		Roosting known to occur within area
Pluvialis fulva Pacific Golden Plover [25545]		Roosting known to occur within area
Pluvialis squatarola Grey Plover [865]	Vulnerable	Roosting known to occur within area
Thalasseus bergii Greater Crested Tern [83000]		Breeding known to occur within area
Tringa brevipes Grey-tailed Tattler [851]		Roosting known to occur within area
Tringa glareola Wood Sandpiper [829]		Roosting known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Roosting known to occur within area
Tringa totanus Common Redshank, Redshank [835]		Roosting known to occur within area

Scientific Name	Threatened Category	Presence Text
Xenus cinereus		
Terek Sandpiper [59300]	Vulnerable	Roosting known 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
Defence	
Defence - ARTILLERY BARRACKS - FREMANTLE [50155]	WA
Defence - CAMPBELL BARRACKS - SWANBOURNE [50183]	WA
Defence - CAMPBELL BARRACKS - SWANBOURNE [50184]	WA
Defence - CAMPBELL BARRACKS - SWANBOURNE [50186]	WA
Defence - CAMPBELL BARRACKS - SWANBOURNE [50185]	WA
Defence - CAMPBELL BARRACKS - SWANBOURNE [50181]	WA
Defence - CAMPBELL BARRACKS - SWANBOURNE [50187]	WA
Defence - CAMPBELL BARRACKS - SWANBOURNE [50182]	WA
Defence - HMAS STIRLING-ROCKINGHAM ;HMAS STIRLING - GARDEN ISLAND [50117]	WA
Defence - HMAS STIRLING-ROCKINGHAM ;HMAS STIRLING - GARDEN ISLAND [50133]	WA
Defence - HMAS STIRLING-ROCKINGHAM ;HMAS STIRLING - GARDEN ISLAND [50134]	WA
Defence - HMAS STIRLING-ROCKINGHAM ;HMAS STIRLING - GARDEN ISLAND [50132]	WA
Defence - HMAS STIRLING-ROCKINGHAM ;HMAS STIRLING - GARDEN ISLAND [50131]	WA
Defence - ROCKINGHAM - NAVY CPSO [50135]	WA
Defence - SWANBOURNE RIFLE RANGE [50188]	WA

Commonwealth Land Name	State
Defence - SWANBOURNE RIFLE RANGE [50191]	WA
Unknown	
Commonwealth Land - [50504]	WA
Commonwealth Land - [50503]	WA
Commonwealth Land - [50507]	WA
Commonwealth Land - [50506]	WA
Commonwealth Land - [50495]	WA
Commonwealth Land - [50505]	WA
Commonwealth Land - [50425]	WA
Commonwealth Land - [50473]	WA
Commonwealth Land - [50424]	WA
Commonwealth Land - [50493]	WA
Commonwealth Land - [50567]	WA
Commonwealth Land - [50633]	WA
Commonwealth Land - [50566]	WA
Commonwealth Land - [50483]	WA
Commonwealth Land - [50467]	WA
Commonwealth Land - [50487]	WA
Commonwealth Land - [50551]	WA
Commonwealth Land - [50558]	WA
Commonwealth Land - [50431]	WA
Commonwealth Land - [50550]	WA
Commonwealth Land - [50518]	WA
Commonwealth Land - [50437]	WA
Commonwealth Land - [50422]	WA
Commonwealth Land - [51437]	WA
Commonwealth Land - [50579]	WA

Commonwealth Land Name	State
Commonwealth Land - [50631]	WA
Commonwealth Land - [51480]	WA
Commonwealth Land - [50470]	WA
Commonwealth Land - [51436]	WA
Commonwealth Land - [50478]	WA
Commonwealth Land - [50510]	WA
Commonwealth Land - [50511]	WA
Commonwealth Land - [50605]	WA
Commonwealth Land - [50516]	WA
Commonwealth Land - [50638]	WA
Commonwealth Land - [50412]	WA
Commonwealth Land - [50517]	WA
Commonwealth Land - [50496]	WA
Commonwealth Land - [50501]	WA
Commonwealth Land - [50498]	WA
Commonwealth Land - [50419]	WA
Commonwealth Land - [50418]	WA
Commonwealth Land - [50629]	WA
Commonwealth Land - [50624]	WA
Commonwealth Land - [50608]	WA
Commonwealth Land - [50573]	WA
Commonwealth Land - [50628]	WA
Commonwealth Land - [50485]	WA
Commonwealth Land - [51889]	WA
Commonwealth Land - [50446]	WA
Commonwealth Land - [50500]	WA
Commonwealth Land - [50486]	WA

Commonwealth Land Name	State
Commonwealth Land - [50475]	WA
Commonwealth Land - [50456]	WA
Commonwealth Land - [50457]	WA
Commonwealth Land - [52281]	WA
Commonwealth Land - [50455]	WA
Commonwealth Land - [50522]	WA
Commonwealth Land - [50529]	WA
Commonwealth Land - [50527]	WA
Commonwealth Land - [50525]	WA
Commonwealth Land - [50571]	WA
Commonwealth Land - [50570]	WA
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Commonwealth Land Name	State
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Commonwealth Land Name	State
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Commonwealth Land - [50468]	WA

Commonwealth Heritage Places [Resource Information]

Name	State	Status
Historic		
Artillery Barracks	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 known 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

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]		Breeding known 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 known to occur within area
Ardenna tenuirostris as Puffinus tenuirostris Short-tailed Shearwater [82652]		Breeding known to occur within area
Arenaria interpres Ruddy Turnstone [872]	Vulnerable	Roosting known 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	Roosting known to occur within area
Calidris alba Sanderling [875]		Roosting known to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area overfly marine area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area overfly marine area
Calidris pugnax as Philomachus pugnax Ruff [91256]		Roosting known to occur within area overfly marine area
Calidris ruficollis Red-necked Stint [860]		Roosting known to occur within area overfly marine area
Calidris subminuta Long-toed Stint [861]		Roosting known to occur within area overfly marine area
Calidris tenuirostris Great Knot [862]	Vulnerable	Roosting known to occur within area overfly marine area
Cereopsis novaehollandiae grisea Cape Barren Goose (south-western), Recherche Cape Barren Goose [25978]	Vulnerable	Breeding known 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 known to occur within area overfly marine area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area
Charadrius ruficapillus Red-capped Plover [881]		Roosting known to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Chroicocephalus novaehollandiae as Larus novaehollandiae		
Silver Gull [82326]		Breeding known 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 known 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 known to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known 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 known to occur within area overfly marine area
Hydroprogne caspia as Sterna caspia Caspian Tern [808]		Breeding known to occur within area
Larus dominicanus Kelp Gull [809]		Breeding known to occur within area
Larus pacificus Pacific Gull [811]		Breeding known to occur within area
Limicola falcinellus Broad-billed Sandpiper [842]		Roosting known to occur within area overfly marine area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Limosa limosa Black-tailed Godwit [845]	Endangered	Roosting known 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 known to occur within area overfly marine area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known 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 known to occur within area
Onychoprion anaethetus as Sterna anaethetus Bridled Tern [82845]		Breeding known to occur within area
Onychoprion fuscatus as Sterna fuscata Sooty Tern [90682]		Breeding known to occur within area
Pachyptila turtur Fairy Prion [1066]		Species or species habitat known to occur within area
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Pelagodroma marina White-faced Storm-Petrel [1016]		Breeding known to occur within area
Phaethon rubricauda Red-tailed Tropicbird [994]		Breeding known to occur within area
Phalacrocorax fuscescens Black-faced Cormorant [59660]		Breeding known to occur within area

Scientific Name	Threatened Category	Presence Text
Phalaropus lobatus Red-necked Phalarope [838]		Roosting known 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 known to occur within area
Pluvialis squatarola Grey Plover [865]	Vulnerable	Roosting known to occur within area overfly marine area
Pterodroma macroptera Great-winged Petrel [1035]		Breeding 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]		Breeding known to occur within area
Recurvirostra novaehollandiae Red-necked Avocet [871]		Roosting known to occur within area overfly marine area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat known 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 known to occur within area
Sternula albifrons as Sterna albifrons Little Tern [82849]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Sternula nereis as Sterna nereis Fairy Tern [82949]		Breeding known 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 known to occur within area
Thinornis cucullatus as Thinornis rubricollis Hooded Plover, Hooded Dotterel [87735]		Species or species habitat known to occur within area overfly marine area
Tringa brevipes as Heteroscelus brevipes Grey-tailed Tattler [851]		Roosting known to occur within area
Tringa glareola Wood Sandpiper [829]		Roosting known to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area overfly marine area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Roosting known to occur within area overfly marine area
Tringa totanus Common Redshank, Redshank [835]		Roosting known to occur within area overfly marine area
Xenus cinereus Terek Sandpiper [59300]	Vulnerable	Roosting known to occur within area overfly marine area
Fish		
Acentronura australe Southern Pygmy Pipehorse [66185]		Species or species habitat may occur within area
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
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
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
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		
Arctocephalus forsteri Long-nosed Fur-seal, New Zealand Fur-seal [20]		Breeding known to occur within area

Scientific Name	Threatened Category	Presence Text
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	Foraging, feeding or related behaviour known to occur within area
Chelonia mydas		
Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Dermochelys coriacea		
Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known 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	Foraging, feeding or related behaviour known 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	Foraging, feeding or related behaviour 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 known 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	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
Bold Park	Botanic Gardens	WA
Broadwater	Nature Reserve	WA
Cape Le Grand	National Park	WA

Protected Area Name	Reserve Type	State
Carnac Island	Nature Reserve	WA
Cottesloe Reef	Fish Habitat Protection Area	WA
D'Entrecasteaux	National Park	WA
Doubtful Islands	Nature Reserve	WA
Eclipse Island	Nature Reserve	WA
Fitzgerald River	National Park	WA
Flinders Bay	Nature Reserve	WA
Hamelin Island	Nature Reserve	WA
Investigator Island	Nature Reserve	WA
Jerdacuttup Lakes	Nature Reserve	WA
Leeuwin-Naturaliste	National Park	WA
Locke	Nature Reserve	WA
Marmion	Marine Park	WA
Mount Manypeaks	Nature Reserve	WA
Ngari Capes	Marine Park	WA
NTWA Bushland covenant (0085A)	Conservation Covenant	WA
NTWA Bushland covenant (0085B)	Conservation Covenant	WA
NTWA Bushland covenant (0173)	Conservation Covenant	WA
NTWA Bushland covenant (0178)	Conservation Covenant	WA
Penguin Island	Conservation Park	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
Shoalwater Bay Islands	Nature Reserve	WA

Protected Area Name	Reserve Type	State
Shoalwater Islands	Marine Park	WA
St Alouarn Island	Nature Reserve	WA
Stokes	National Park	WA
Sugar Loaf Rock	Nature Reserve	WA
Swan River	Management Area	WA
Torndirrup	National Park	WA
Two Peoples Bay	Nature Reserve	WA
Unnamed WA25836	Nature Reserve	WA
Unnamed WA26620	Nature Reserve	WA
Unnamed WA26885	Nature Reserve	WA
Unnamed WA27888	Nature Reserve	WA
Unnamed WA32478	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 WA43903	Nature Reserve	WA
Unnamed WA44004	Nature Reserve	WA
Unnamed WA44676	5(1)(h) Reserve	WA
Unnamed WA44685	5(1)(h) Reserve	WA
Unnamed WA44709	5(1)(h) Reserve	WA
Unnamed WA48837	Nature Reserve	WA
Unnamed WA48955	5(1)(h) Reserve	WA
Unnamed WA48968	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
Walpole-Nornalup	National Park	WA
Waychinicup	National Park	WA
West Cape Howe	National Park	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 WA RFA	Western Australia

Nationally Important Wetlands [Resource Information]

Wetland Name	State
Becher Point Wetlands	WA
Doggerup Creek System	WA
Rottnest Island Lakes	WA
Swan-Canning Estuary	WA
Vasse-Wonnerup Wetland System	WA

EPBC Act Referrals [Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status
Fremantle District Police Complex Project	2022/09345		Completed
H2Perth hydrogen and ammonia project	2023/09559		Completed
Installation of additional potable water tank	2023/09518		Assessment
Marine Route Survey for Subsea Fibre Optic Data Cable System - Australia West	2024/09826		Referral Decision
WA Offshore Windfarm	2021/8961		Completed
Controlled action			
Aerial Application of Lavicide to Vasse-Wonnerup Wetlands	2010/5593	Controlled Action	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
Airborne sonar trials	2001/540	Controlled Action	Completed
Albany Port Authority dredging project	2006/2540	Controlled Action	Post-Approval
All weather access track road between Windy Harbour and Nelson Location 7965	2011/6121	Controlled Action	Post-Approval
Busselton Foreshore Redevelopment from West Street to Ford Road	2013/6830	Controlled Action	Post-Approval
Cape View Resort at Lot 190 Little Colin Street	2006/3070	Controlled Action	Post-Approval
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
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
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
Industry Zone	2010/5337	Controlled Action	Post-Approval
Lennox Weir Removal, 12kms west Busselton	2021/8915	Controlled Action	Assessment Approach
Lower Vasse River Sediment Removal	2021/9051	Controlled Action	Post-Approval
Mangles Bay Marina Based Tourist Precinct	2010/5659	Controlled Action	Post-Approval
Neighbourhood Shopping Centre and Mixed Business Centre, Ocean Road, Dawesville	2006/3155	Controlled Action	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
Old Broadwater Farm Estate Subdivision - Stage 3	2009/5231	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
Point Grey Marina Project	2010/5515	Controlled Action	Post-Approval
Point Grey Residential Development - Terrestrial Component	2011/5825	Controlled Action	Post-Approval
Ravensthorpe Nickel Project	2001/172	Controlled Action	Post-Approval
Residential Development, Lot 3 & 4 Dorsett Street	2006/2774	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
retirement units & aged care facility development	2007/3533	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
Southern Bluefin Tuna Farm	2005/2165	Controlled Action	Completed
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

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
Urban development, multiple lots Northerly Street, Vasse, WA	2019/8494	Controlled Action	Assessment Approach
Vasse Diversion Drain Upgrade	2017/7932	Controlled Action	Post-Approval
Warders Hotel, Block 1 Warders Cottages, Fremantle, WA	2018/8144	Controlled Action	Post-Approval
Not controlled action			
'Looping 10' gas transmission pipeline from Kwinana to Hopelands	2005/2212	Not Controlled Action	Completed
25 Lot Residential Subdivision	2009/4830	Not Controlled Action	Completed
Aerial application of mosquito larvicides to Vasse Wonnerup Wetlands, WA	2016/7780	Not Controlled Action	Completed
APX-West Fibre-optic telecommunications cable system, WA to Singapore	2013/7102	Not Controlled Action	Completed
Bushfire Mitigation Works - City of Mandurah	2020/8674	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 widening project between Dunsborough and Yallingup(20.3 -24.6 SLK), WA	2015/7475	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
Construction of Secret Harbour High School	2004/1489	Not Controlled Action	Completed
CTBT - Cape Leeuwin Hydroacoustic Station Proposal	2000/27	Not Controlled Action	Completed
Disposal of residential properties, Fremantle, WA	2019/8593	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
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
Florida Estate Residential Subdivision Development Stage 13	2011/6045	Not Controlled Action	Completed
Florida North residential development, Lot 9008, Ocean Road, Dawesville, WA	2015/7462	Not Controlled Action	Completed
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
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
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 Gas-Fired Power Station	2005/2101	Not Controlled Action	Completed
Limestone quarry expansion	2005/2268	Not Controlled Action	Completed
Limestone Quarry Expansion, Lots 3618 and 1794, Finn Road	2005/2332	Not Controlled Action	Completed
Lot 101 Mandurah Road, Madora Bay, WA	2012/6466	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
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
Redevelopment of Lots 3 & 4, Kent Street	2007/3243	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
Re-zoning of Land for Future Residential Development Purposes	2009/4908	Not Controlled Action	Completed
Rottnest Lodge Redevelopment	2019/8565	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
Vasse Hotel and Supermarket Redevelopment	2001/288	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
Not controlled action (particular manner)			
2D seismic survey	2007/3273	Not Controlled Action (Particular Manner)	Post-Approval
2D seismic survey	2008/4493	Not Controlled Action (Particular Manner)	Post-Approval
3D Marine Seismic Survey Within WA-382-P	2007/3799	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Aerial Mosquito Spraying Vasse-Wonnerup System	2005/1952	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
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
City of Cockburn Sporting Facilties	2005/2139	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
Extension of existing mains water supply pipeline	2009/4686	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		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
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
Marine Environmental Survey	2012/6275	Not Controlled Action (Particular Manner)	Post-Approval
Monaghan's Roundabout Project - Intersection of Bussell Highway and Caves Road, Shire of Busselton	2007/3515	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
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)			
Subdivision and development of residential dwelling on part Lot 1, Bussell Highw	2006/3023	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
Ambergate North Residential Community (4896 lots)	2008/4617	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
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
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

Name	Region
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]	Aggregation	Known to occur
Ardenna carneipes Flesh-footed Shearwater [82404]	Foraging (in high numbers)	Known to occur
Ardenna pacifica Wedge-tailed Shearwater [84292]	Foraging (in high numbers)	Known to occur
Ardenna tenuirostris Short-tailed Shearwater [82652]	Foraging (in high numbers)	Known to occur
Eudyptula minor Little Penguin [1085]	Foraging (provisioning young)	Known to occur
Hydroprogne caspia Caspian Tern [808]	Foraging (provisioning young)	Known to occur
Larus pacificus Pacific Gull [811]	Foraging (in high numbers)	Former Range

Scientific Name	Behaviour	Presence
Larus pacificus Pacific Gull [811]	Foraging (in high numbers)	Known to occur
Onychoprion anaethetus Bridled Tern [82845]	Foraging (in high numbers)	Known to occur
Onychoprion fuscata Sooty Tern [82847]	Foraging	Known to occur
Pelagodroma marina White-faced Storm petrel [1016]	Foraging (in high numbers)	Known to occur
Phalacrocorax fuscescens Black-faced Cormorant [59660]	Foraging	Known to occur
Pterodroma macroptera macroptera Great-winged Petrel (macroptera race) [1035]	Foraging (provisioning young)	Known to occur
Pterodroma mollis Soft-plumaged Petrel [1036]	Foraging (in high numbers)	Known to occur
Puffinus assimilis tunneyi Little Shearwater [59363]	Foraging (in high numbers)	Known to occur
Sterna dougallii Roseate Tern [817]	Foraging	Known to occur
Sternula nereis Fairy Tern [82949]	Foraging (in high numbers)	Known to occur
Thalassarche chlororhynchos bassi Indian Yellow-nosed Albatross [85249]	Foraging (in high numbers)	Known to occur
Seals		
Neophoca cinerea Australian Sea Lion [22]	Foraging (male)	Likely to occur

Scientific Name	Behaviour	Presence
Neophoca cinerea Australian Sea Lion [22]	Foraging (male and female)	Known to occur
Neophoca cinerea Australian Sea Lion [22]	Foraging (male and female)	Likely to occur
Sharks		
Carcharodon carcharias White Shark [64470]	Foraging	Known to occur
Whales		
Balaenoptera musculus Blue and Pygmy Blue Whale [36]	Foraging (abundant food source)	Known to occur
Balaenoptera musculus Blue and Pygmy Blue Whale [36]	Foraging (high density)	Known to occur
Balaenoptera musculus Blue and Pygmy Blue Whale [36]	Foraging (on migration)	Known to occur
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Distribution	Known to occur
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Foraging Area (annual high use area)	Known to occur
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Known Foraging Area	Known to occur
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Migration	Known to occur
Megaptera novaeangliae Humpback Whale [38]	Migration (north)	Known to occur
Megaptera novaeangliae Humpback Whale [38]	Migration (north and south)	Known to occur

Scientific Name	Behaviour	Presence
Megaptera novaeangliae		
Humpback Whale [38]	Migration (south)	Known to occur
Physeter macrocephalus		
Sperm Whale [59]	Foraging (abundant food source)	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 are 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

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

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

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
- 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: 10-Jun-2024

Figure 1: SWMR sub area 2 (labelled '3' and '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:	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:	9
Listed Threatened Species:	141
Listed Migratory Species:	84

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:	240
Commonwealth Heritage Places:	4
Listed Marine Species:	123
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:	63
Regional Forest Agreements:	1
Nationally Important Wetlands:	5
EPBC Act Referrals:	131
Key Ecological Features (Marine):	11
Biologically Important Areas:	33
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 10km of Ramsar site
Lake gore	Within Ramsar site
Lake warden system	Within 10km of 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 3 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
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
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
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

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	Roosting known to occur within area
Atrichornis clamosus Noisy Scrub-bird, Tjimiluk [654]	Endangered	Species or species habitat known to occur within area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Roosting known to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris tenuirostris Great Knot [862]	Vulnerable	Roosting known to occur within area
Calyptorhynchus banksii naso Forest Red-tailed Black-Cockatoo, Karrak [67034]	Vulnerable	Species or species habitat known to occur within area
Cereopsis novaehollandiae grisea Cape Barren Goose (south-western), Recherche Cape Barren Goose [25978]	Vulnerable	Breeding known to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area

Scientific Name	Threatened Category	Presence Text
Dasyornis longirostris Western Bristlebird [515]	Endangered	Species or species habitat known 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
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 known to occur within area

Scientific Name	Threatened Category	Presence Text
Limosa limosa Black-tailed Godwit [845]	Endangered	Roosting known 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 known to occur within area
Pachyptila turtur subantarctica Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat known 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 known 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	Roosting known to occur within area
Psophodes nigrogularis nigrogularis Western Heath Whipbird [64449]	Endangered	Species or species habitat 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
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat known to occur within area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Foraging, feeding or related behaviour known 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
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area
Xenus cinereus Terek Sandpiper [59300]	Vulnerable	Roosting known to occur within area
Zanda baudinii listed as Calyptorhynchus baudinii Baudin's Cockatoo, Baudin's Black-Cockatoo, Long-billed Black-cockatoo [87736]	Endangered	Breeding known to occur within area

Scientific Name	Threatened Category	Presence Text
Zanda latirostris listed as Calyptorhynchus latirostris		
Carnaby's Black Cockatoo, Short-billed Black-cockatoo [87737]	Endangered	Breeding known to occur within area
CRUSTACEAN		
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 may occur within area
FISH		
Galaxias truttaceus (Western Australian population)		
Western Trout Minnow [89857]	Endangered	Species or species habitat known to occur within area
Galaxiella nigrostriata		
Blackstriped Dwarf Galaxias, Black-stripe Minnow [88677]	Endangered	Species or species habitat known 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 known to occur within area
Thunnus maccoyii		
Southern Bluefin Tuna [69402]	Conservation Dependent	Species or species habitat known 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 known 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	Foraging, feeding or related behaviour 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 known to occur within area
Dasyurus geoffroii Chuditch, Western Quoll [330]	Vulnerable	Species or species habitat known to occur within area
Eubalaena australis Southern Right Whale [40]	Endangered	Breeding known to occur within area
Macroderma gigas Ghost Bat [174]	Vulnerable	Species or species habitat may 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	Species or species habitat known to occur within area
Petrogale lateralis hacketti Recherche Rock-wallaby [66849]	Vulnerable	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Petrogale lateralis lateralis Black-flanked Rock-wallaby, Moororong, 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	Species or species habitat known to occur within area
Pseudocheirus occidentalis Western Ringtail Possum, Ngwayir, Womp, Woder, Ngoor, Ngoolangit [25911]	Critically Endangered	Breeding known to occur within area
Pseudomys shortridgei Heath Mouse, Dayang, Heath Rat [77]	Endangered	Species or species habitat likely to occur within area
Setonix brachyurus Quokka [229]	Vulnerable	Species or species habitat known to occur within area
OTHER		
Westralunio carteri Carter's Freshwater Mussel, Freshwater Mussel [86266]	Vulnerable	Species or species habitat known 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 may occur within area

Scientific Name	Threatened Category	Presence Text
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
Banksia brownii Brown's Banksia, Feather-leaved Banksia [8277]	Critically Endangered	Species or species habitat known to occur within area
Banksia nivea subsp. uliginosa Swamp Honeypot [82766]	Endangered	Species or species habitat may 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 known to occur within area
Boronia clavata Bremer Boronia [5538]	Endangered	Species or species habitat may 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 known to occur within area
Caladenia excelsa Giant Spider-orchid [56717]	Endangered	Species or species habitat likely to occur within area
Caladenia granitora [65292]	Endangered	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Caladenia harringtoniae		
Harrington's Spider-orchid, Pink Spider-orchid [56786]	Vulnerable	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 known 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 known to occur within area
Caladenia viridescens		
Dunsborough Spider-orchid [56776]	Endangered	Species or species habitat known 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 sp. S coastal plain (R.D.Royce 4872)		
Royce's Waxflower [87814]	Vulnerable	Species or species habitat likely to occur within area
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 known to occur within area
Coopernookia georgei		
Mauve Coopernookia [21218]	Endangered	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Daviesia obovata Paddle-leaf Daviesia [17311]	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 known to occur within area
Diuris purdiei Purdie's Donkey-orchid [12950]	Endangered	Species or species habitat may 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 likely to occur within area
Eucalyptus argutifolia Yanchep Mallee, Wabling Hill Mallee [24263]	Vulnerable	Species or species habitat may 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 known to occur within area
Gastrolobium papilio Butterfly-leaved Gastrolobium [78415]	Endangered	Species or species habitat may occur within area
Grevillea elongata Ironstone Grevillea [64578]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
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 known to occur within area
Lambertia echinata subsp. echinata Prickly Honeysuckle [56729]	Endangered	Species or species habitat known to occur within area
Lambertia echinata subsp. occidentalis Western Prickly Honeysuckle [64528]	Endangered	Species or species habitat may occur within area
Morelotia australiensis listed as Tetraria australiensis Southern Tetraria [92784]	Vulnerable	Species or species habitat may occur within area
Petrophile latericola Laterite Petrophile [64532]	Endangered	Species or species habitat may occur within area
Phaius australis Lesser Swamp-orchid [5872]	Endangered	Species or species habitat may occur within area
Reedia spathacea Reedia [2995]	Critically Endangered	Species or species habitat may occur within area
Ricinocarpos trichophorus Barrens Wedding Bush [19931]	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

Scientific Name	Threatened Category	Presence Text
Stylidium galioides Yellow Mountain Triggerplant [4666]	Vulnerable	Species or species habitat may occur within area
Synaphea sp. Fairbridge Farm (D.Papenfus 696) Selena's Synaphea [82881]	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 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 may occur within area
Wurmbea calcicola Naturaliste Nancy [64691]	Endangered	Species or species habitat known to occur within area
REPTILE		
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area

Scientific Name	Threatened Category	Presence Text
Natator depressus		
Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
SHARK		
Carcharias taurus (west coast population)		
Grey Nurse Shark (west coast population) [68752]	Vulnerable	Congregation or aggregation known to occur within area
Carcharodon carcharias		
White Shark, Great White Shark [64470]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Centrophorus uyato		
Little Gulper Shark [68446]	Conservation Dependent	Species or species habitat likely to occur within area
Galeorhinus galeus		
School Shark, Eastern School Shark, Snapper Shark, Tope, Soupfin Shark [68453]	Conservation Dependent	Species or species habitat may occur within area
Pristis pristis		
Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	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 known to occur within area

Listed Migratory Species		[Resource Information]
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

Scientific Name	Threatened Category	Presence Text
Ardenna carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Breeding known 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 known to occur within area
Ardenna tenuirostris Short-tailed Shearwater [82652]		Breeding known 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
Hydroprogne caspia Caspian Tern [808]		Breeding known to occur within 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
Onychoprion anaethetus Bridled Tern [82845]		Breeding known to occur within area
Phaethon rubricauda Red-tailed Tropicbird [994]		Breeding known to occur within area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat likely to occur within area
Sterna dougallii Roseate Tern [817]		Breeding known to occur within area
Sternula albifrons Little Tern [82849]		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 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
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	Foraging, feeding or related behaviour 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
Carcharhinus longimanus Oceanic Whitetip Shark [84108]		Species or species habitat likely to occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area

Scientific Name	Threatened Category	Presence Text
Chelonia mydas Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area
Eubalaena australis as Balaena glacialis australis Southern Right Whale [40]	Endangered	Breeding known 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 known to occur within area
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat known to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
[Physeter macrocephalus](#) Sperm Whale [59]		Foraging, feeding or related behaviour known to occur within area
[Pristis pristis](#) Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	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 known to occur within area
Migratory Wetlands Species		
[Actitis hypoleucos](#) Common Sandpiper [59309]		Species or species habitat known to occur within area
[Arenaria interpres](#) Ruddy Turnstone [872]	Vulnerable	Roosting known to occur within area
[Calidris acuminata](#) Sharp-tailed Sandpiper [874]	Vulnerable	Roosting known to occur within area
[Calidris alba](#) Sanderling [875]		Roosting known to occur within area
[Calidris canutus](#) Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area
[Calidris ferruginea](#) Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
[Calidris melanotos](#) Pectoral Sandpiper [858]		Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Calidris pugnax as Philomachus pugnax Ruff [91256]		Roosting known to occur within area
Calidris ruficollis Red-necked Stint [860]		Roosting known to occur within area
Calidris subminuta Long-toed Stint [861]		Roosting known to occur within area
Calidris tenuirostris Great Knot [862]	Vulnerable	Roosting known to occur within area
Charadrius bicinctus Double-banded Plover [895]		Roosting known to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known 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 known to occur within area
Limicola falcinellus Broad-billed Sandpiper [842]		Roosting known to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Limosa limosa Black-tailed Godwit [845]	Endangered	Roosting known to occur within area

Scientific Name	Threatened Category	Presence Text
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting likely to occur within area
Numenius phaeopus Whimbrel [849]		Roosting known to occur within area
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Phalaropus lobatus Red-necked Phalarope [838]		Roosting known to occur within area
Pluvialis fulva Pacific Golden Plover [25545]		Roosting known to occur within area
Pluvialis squatarola Grey Plover [865]	Vulnerable	Roosting known to occur within area
Thalasseus bergii Greater Crested Tern [83000]		Breeding known to occur within area
Tringa brevipes Grey-tailed Tattler [851]		Roosting known to occur within area
Tringa glareola Wood Sandpiper [829]		Roosting known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Roosting known to occur within area
Tringa totanus Common Redshank, Redshank [835]		Roosting known to occur within area

Scientific Name	Threatened Category	Presence Text
Xenus cinereus		
Terek Sandpiper [59300]	Vulnerable	Roosting known 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
Defence	
Defence - ARTILLERY BARRACKS - FREMANTLE [50155]	WA
Defence - CAMPBELL BARRACKS - SWANBOURNE [50183]	WA
Defence - CAMPBELL BARRACKS - SWANBOURNE [50185]	WA
Defence - CAMPBELL BARRACKS - SWANBOURNE [50184]	WA
Defence - CAMPBELL BARRACKS - SWANBOURNE [50186]	WA
Defence - CAMPBELL BARRACKS - SWANBOURNE [50181]	WA
Defence - CAMPBELL BARRACKS - SWANBOURNE [50187]	WA
Defence - CAMPBELL BARRACKS - SWANBOURNE [50182]	WA
Defence - HMAS STIRLING-ROCKINGHAM ;HMAS STIRLING - GARDEN ISLAND [50117]	WA
Defence - HMAS STIRLING-ROCKINGHAM ;HMAS STIRLING - GARDEN ISLAND [50134]	WA
Defence - HMAS STIRLING-ROCKINGHAM ;HMAS STIRLING - GARDEN ISLAND [50133]	WA
Defence - HMAS STIRLING-ROCKINGHAM ;HMAS STIRLING - GARDEN ISLAND [50131]	WA
Defence - HMAS STIRLING-ROCKINGHAM ;HMAS STIRLING - GARDEN ISLAND [50132]	WA
Defence - ROCKINGHAM - NAVY CPSO [50135]	WA
Defence - SWANBOURNE RIFLE RANGE [50188]	WA

Commonwealth Land Name	State
Defence - SWANBOURNE RIFLE RANGE [50191]	WA
Unknown	
Commonwealth Land - [50495]	WA
Commonwealth Land - [50505]	WA
Commonwealth Land - [50424]	WA
Commonwealth Land - [50493]	WA
Commonwealth Land - [50507]	WA
Commonwealth Land - [50506]	WA
Commonwealth Land - [50487]	WA
Commonwealth Land - [50483]	WA
Commonwealth Land - [50425]	WA
Commonwealth Land - [50473]	WA
Commonwealth Land - [50564]	WA
Commonwealth Land - [50566]	WA
Commonwealth Land - [50567]	WA
Commonwealth Land - [50467]	WA
Commonwealth Land - [50551]	WA
Commonwealth Land - [50558]	WA
Commonwealth Land - [50431]	WA
Commonwealth Land - [50550]	WA
Commonwealth Land - [50633]	WA
Commonwealth Land - [50437]	WA
Commonwealth Land - [50422]	WA
Commonwealth Land - [50518]	WA
Commonwealth Land - [51105]	WA
Commonwealth Land - [50605]	WA
Commonwealth Land - [51437]	WA

Commonwealth Land Name	State
Commonwealth Land - [50579]	WA
Commonwealth Land - [50631]	WA
Commonwealth Land - [50638]	WA
Commonwealth Land - [50517]	WA
Commonwealth Land - [50470]	WA
Commonwealth Land - [50478]	WA
Commonwealth Land - [50510]	WA
Commonwealth Land - [50511]	WA
Commonwealth Land - [50412]	WA
Commonwealth Land - [50501]	WA
Commonwealth Land - [50498]	WA
Commonwealth Land - [50416]	WA
Commonwealth Land - [50504]	WA
Commonwealth Land - [50419]	WA
Commonwealth Land - [50418]	WA
Commonwealth Land - [50503]	WA
Commonwealth Land - [50496]	WA
Commonwealth Land - [50628]	WA
Commonwealth Land - [50629]	WA
Commonwealth Land - [50573]	WA
Commonwealth Land - [50446]	WA
Commonwealth Land - [50485]	WA
Commonwealth Land - [50608]	WA
Commonwealth Land - [50600]	WA
Commonwealth Land - [51889]	WA
Commonwealth Land - [50500]	WA
Commonwealth Land - [50486]	WA

Commonwealth Land Name	State
Commonwealth Land - [50475]	WA
Commonwealth Land - [50456]	WA
Commonwealth Land - [50457]	WA
Commonwealth Land - [52281]	WA
Commonwealth Land - [50455]	WA
Commonwealth Land - [50529]	WA
Commonwealth Land - [50471]	WA
Commonwealth Land - [50525]	WA
Commonwealth Land - [50522]	WA
Commonwealth Land - [50570]	WA
Commonwealth Land - [50527]	WA
Commonwealth Land - [51890]	WA
Commonwealth Land - [50571]	WA
Commonwealth Land - [50492]	WA
Commonwealth Land - [50452]	WA
Commonwealth Land - [50624]	WA
Commonwealth Land - [50621]	WA
Commonwealth Land - [50620]	WA
Commonwealth Land - [50623]	WA
Commonwealth Land - [50622]	WA
Commonwealth Land - [50450]	WA
Commonwealth Land - [50451]	WA
Commonwealth Land - [50454]	WA
Commonwealth Land - [50458]	WA
Commonwealth Land - [50639]	WA
Commonwealth Land - [50632]	WA
Commonwealth Land - [50463]	WA

Commonwealth Land Name	State
Commonwealth Land - [50589]	WA
Commonwealth Land - [51480]	WA
Commonwealth Land - [50634]	WA
Commonwealth Land - [50635]	WA
Commonwealth Land - [50466]	WA
Commonwealth Land - [50464]	WA
Commonwealth Land - [51487]	WA
Commonwealth Land - [50557]	WA
Commonwealth Land - [50569]	WA
Commonwealth Land - [50401]	WA
Commonwealth Land - [50539]	WA
Commonwealth Land - [50538]	WA
Commonwealth Land - [50531]	WA
Commonwealth Land - [50530]	WA
Commonwealth Land - [50533]	WA
Commonwealth Land - [50415]	WA
Commonwealth Land - [52119]	WA
Commonwealth Land - [50438]	WA
Commonwealth Land - [50613]	WA
Commonwealth Land - [50389]	WA
Commonwealth Land - [50442]	WA
Commonwealth Land - [50443]	WA
Commonwealth Land - [50441]	WA
Commonwealth Land - [50447]	WA
Commonwealth Land - [52200]	WA
Commonwealth Land - [50484]	WA
Commonwealth Land - [50523]	WA

Commonwealth Land Name	State
Commonwealth Land - [50387]	WA
Commonwealth Land - [51987]	WA
Commonwealth Land - [50388]	WA
Commonwealth Land - [50434]	WA
Commonwealth Land - [50449]	WA
Commonwealth Land - [50536]	WA
Commonwealth Land - [50433]	WA
Commonwealth Land - [50432]	WA
Commonwealth Land - [50580]	WA
Commonwealth Land - [50581]	WA
Commonwealth Land - [50617]	WA
Commonwealth Land - [50526]	WA
Commonwealth Land - [50465]	WA
Commonwealth Land - [51411]	WA
Commonwealth Land - [51117]	WA
Commonwealth Land - [50524]	WA
Commonwealth Land - [52242]	WA
Commonwealth Land - [51895]	WA
Commonwealth Land - [50565]	WA
Commonwealth Land - [50404]	WA
Commonwealth Land - [50619]	WA
Commonwealth Land - [50618]	WA
Commonwealth Land - [50611]	WA
Commonwealth Land - [50610]	WA
Commonwealth Land - [50614]	WA
Commonwealth Land - [50612]	WA
Commonwealth Land - [50616]	WA

Commonwealth Land Name	State
Commonwealth Land - [50615]	WA
Commonwealth Land - [50453]	WA
Commonwealth Land - [50568]	WA
Commonwealth Land - [51891]	WA
Commonwealth Land - [51894]	WA
Commonwealth Land - [51892]	WA
Commonwealth Land - [51893]	WA
Commonwealth Land - [50535]	WA
Commonwealth Land - [50532]	WA
Commonwealth Land - [50537]	WA
Commonwealth Land - [50534]	WA
Commonwealth Land - [50509]	WA
Commonwealth Land - [52279]	WA
Commonwealth Land - [50627]	WA
Commonwealth Land - [50497]	WA
Commonwealth Land - [50637]	WA
Commonwealth Land - [50459]	WA
Commonwealth Land - [50476]	WA
Commonwealth Land - [50474]	WA
Commonwealth Land - [50578]	WA
Commonwealth Land - [50477]	WA
Commonwealth Land - [50577]	WA
Commonwealth Land - [50572]	WA
Commonwealth Land - [50479]	WA
Commonwealth Land - [50591]	WA
Commonwealth Land - [50590]	WA
Commonwealth Land - [50604]	WA

Commonwealth Land Name	State
Commonwealth Land - [50599]	WA
Commonwealth Land - [50603]	WA
Commonwealth Land - [50601]	WA
Commonwealth Land - [50472]	WA
Commonwealth Land - [50491]	WA
Commonwealth Land - [50597]	WA
Commonwealth Land - [50595]	WA
Commonwealth Land - [50512]	WA
Commonwealth Land - [50462]	WA
Commonwealth Land - [50516]	WA
Commonwealth Land - [50520]	WA
Commonwealth Land - [50481]	WA
Commonwealth Land - [50480]	WA
Commonwealth Land - [50488]	WA
Commonwealth Land - [50482]	WA
Commonwealth Land - [50423]	WA
Commonwealth Land - [50390]	WA
Commonwealth Land - [50427]	WA
Commonwealth Land - [50521]	WA
Commonwealth Land - [50444]	WA
Commonwealth Land - [50428]	WA
Commonwealth Land - [50641]	WA
Commonwealth Land - [50640]	WA
Commonwealth Land - [52199]	WA
Commonwealth Land - [50421]	WA
Commonwealth Land - [50609]	WA
Commonwealth Land - [50420]	WA

Commonwealth Land Name	State
Commonwealth Land - [50499]	WA
Commonwealth Land - [50514]	WA
Commonwealth Land - [50490]	WA
Commonwealth Land - [50548]	WA
Commonwealth Land - [50549]	WA
Commonwealth Land - [50544]	WA
Commonwealth Land - [50545]	WA
Commonwealth Land - [50546]	WA
Commonwealth Land - [51974]	WA
Commonwealth Land - [50528]	WA
Commonwealth Land - [51116]	WA
Commonwealth Land - [51115]	WA
Commonwealth Land - [50468]	WA
Commonwealth Land - [51436]	WA
Commonwealth Land - [50602]	WA
Commonwealth Land - [51113]	WA
Commonwealth Land - [50552]	WA
Commonwealth Land - [51119]	WA
Commonwealth Land - [50543]	WA
Commonwealth Land - [50542]	WA
Commonwealth Land - [50417]	WA
Commonwealth Land - [50596]	WA
Commonwealth Land - [50555]	WA
Commonwealth Land - [50556]	WA
Commonwealth Land - [50554]	WA
Commonwealth Land - [50547]	WA
Commonwealth Land - [50540]	WA

Commonwealth Land Name	State
Commonwealth Land - [50541]	WA
Commonwealth Land - [50469]	WA
Commonwealth Land - [51488]	WA
Commonwealth Land - [50636]	WA
Commonwealth Land - [50445]	WA
Commonwealth Land - [50460]	WA
Commonwealth Land - [50513]	WA
Commonwealth Land - [50515]	WA
Commonwealth Land - [50519]	WA
Commonwealth Land - [50461]	WA

Commonwealth Heritage Places [Resource Information]

Name	State	Status
Historic		
Artillery Barracks	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 known 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

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]		Breeding known 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 known to occur within area
Ardenna tenuirostris as Puffinus tenuirostris Short-tailed Shearwater [82652]		Breeding known to occur within area
Arenaria interpres Ruddy Turnstone [872]	Vulnerable	Roosting known 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	Roosting known to occur within area
Calidris alba Sanderling [875]		Roosting known to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area overfly marine area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area overfly marine area
Calidris pugnax as Philomachus pugnax Ruff [91256]		Roosting known to occur within area overfly marine area
Calidris ruficollis Red-necked Stint [860]		Roosting known to occur within area overfly marine area
Calidris subminuta Long-toed Stint [861]		Roosting known to occur within area overfly marine area
Calidris tenuirostris Great Knot [862]	Vulnerable	Roosting known to occur within area overfly marine area
Cereopsis novaehollandiae grisea Cape Barren Goose (south-western), Recherche Cape Barren Goose [25978]	Vulnerable	Breeding known 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 known to occur within area overfly marine area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area
Charadrius ruficapillus Red-capped Plover [881]		Roosting known to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Chroicocephalus novaehollandiae as Larus novaehollandiae		
Silver Gull [82326]		Breeding known 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 known 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 known to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known 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 known to occur within area overfly marine area
Hydroprogne caspia as Sterna caspia Caspian Tern [808]		Breeding known to occur within area
Larus dominicanus Kelp Gull [809]		Breeding known to occur within area
Larus pacificus Pacific Gull [811]		Breeding known to occur within area
Limicola falcinellus Broad-billed Sandpiper [842]		Roosting known to occur within area overfly marine area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Limosa limosa Black-tailed Godwit [845]	Endangered	Roosting known 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 known to occur within area overfly marine area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known 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 known to occur within area
Onychoprion anaethetus as Sterna anaethetus Bridled Tern [82845]		Breeding known to occur within area
Onychoprion fuscatus as Sterna fuscata Sooty Tern [90682]		Breeding known to occur within area
Pachyptila turtur Fairy Prion [1066]		Species or species habitat known to occur within area
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Pelagodroma marina White-faced Storm-Petrel [1016]		Breeding known to occur within area
Phaethon rubricauda Red-tailed Tropicbird [994]		Breeding known to occur within area
Phalacrocorax fuscescens Black-faced Cormorant [59660]		Breeding known to occur within area

Scientific Name	Threatened Category	Presence Text
Phalaropus lobatus Red-necked Phalarope [838]		Roosting known 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 known to occur within area
Pluvialis squatarola Grey Plover [865]	Vulnerable	Roosting known to occur within area overfly marine area
Pterodroma macroptera Great-winged Petrel [1035]		Breeding 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]		Breeding known to occur within area
Recurvirostra novaehollandiae Red-necked Avocet [871]		Roosting known to occur within area overfly marine area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat known 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 known to occur within area
Sternula albifrons as Sterna albifrons Little Tern [82849]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Sternula nereis as Sterna nereis Fairy Tern [82949]		Breeding known 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 known to occur within area
Thinornis cucullatus as Thinornis rubricollis Hooded Plover, Hooded Dotterel [87735]		Species or species habitat known to occur within area overfly marine area
Tringa brevipes as Heteroscelus brevipes Grey-tailed Tattler [851]		Roosting known to occur within area
Tringa glareola Wood Sandpiper [829]		Roosting known to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area overfly marine area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Roosting known to occur within area overfly marine area
Tringa totanus Common Redshank, Redshank [835]		Roosting known to occur within area overfly marine area
Xenus cinereus Terek Sandpiper [59300]	Vulnerable	Roosting known to occur within area overfly marine area
Fish		
Acentronura australe Southern Pygmy Pipehorse [66185]		Species or species habitat may occur within area
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
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
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
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		
Arctocephalus forsteri Long-nosed Fur-seal, New Zealand Fur-seal [20]		Breeding known to occur within area

Scientific Name	Threatened Category	Presence Text
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	Foraging, feeding or related behaviour known to occur within area
Chelonia mydas		
Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Dermochelys coriacea		
Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known 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	Foraging, feeding or related behaviour known 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	Foraging, feeding or related behaviour 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 known 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	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
Bold Park	Botanic Gardens	WA
Broadwater	Nature Reserve	WA
Cape Le Grand	National Park	WA

Protected Area Name	Reserve Type	State
Carnac Island	Nature Reserve	WA
Cottesloe Reef	Fish Habitat Protection Area	WA
D'Entrecasteaux	National Park	WA
Doubtful Islands	Nature Reserve	WA
Eclipse Island	Nature Reserve	WA
Fitzgerald River	National Park	WA
Flinders Bay	Nature Reserve	WA
Hamelin Island	Nature Reserve	WA
Investigator Island	Nature Reserve	WA
Jerdacuttup Lakes	Nature Reserve	WA
Leeuwin-Naturaliste	National Park	WA
Locke	Nature Reserve	WA
Marmion	Marine Park	WA
Mount Manypeaks	Nature Reserve	WA
Ngari Capes	Marine Park	WA
NTWA Bushland covenant (0085A)	Conservation Covenant	WA
NTWA Bushland covenant (0085B)	Conservation Covenant	WA
NTWA Bushland covenant (0173)	Conservation Covenant	WA
NTWA Bushland covenant (0178)	Conservation Covenant	WA
Penguin Island	Conservation Park	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
Shoalwater Bay Islands	Nature Reserve	WA

Protected Area Name	Reserve Type	State
Shoalwater Islands	Marine Park	WA
St Alouarn Island	Nature Reserve	WA
Stokes	National Park	WA
Sugar Loaf Rock	Nature Reserve	WA
Swan River	Management Area	WA
Torndirrup	National Park	WA
Two Peoples Bay	Nature Reserve	WA
Unnamed WA25836	Nature Reserve	WA
Unnamed WA26620	Nature Reserve	WA
Unnamed WA26885	Nature Reserve	WA
Unnamed WA27888	Nature Reserve	WA
Unnamed WA32478	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 WA43903	Nature Reserve	WA
Unnamed WA44004	Nature Reserve	WA
Unnamed WA44676	5(1)(h) Reserve	WA
Unnamed WA44685	5(1)(h) Reserve	WA
Unnamed WA44709	5(1)(h) Reserve	WA
Unnamed WA48837	Nature Reserve	WA
Unnamed WA48955	5(1)(h) Reserve	WA
Unnamed WA48968	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
Walpole-Nornalup	National Park	WA
Waychinicup	National Park	WA
West Cape Howe	National Park	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 WA RFA	Western Australia

Nationally Important Wetlands [Resource Information]

Wetland Name	State
Becher Point Wetlands	WA
Doggerup Creek System	WA
Rottnest Island Lakes	WA
Swan-Canning Estuary	WA
Vasse-Wonnerup Wetland System	WA

EPBC Act Referrals [Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status
Fremantle District Police Complex Project	2022/09345		Completed
H2Perth hydrogen and ammonia project	2023/09559		Completed
Installation of additional potable water tank	2023/09518		Assessment
Marine Route Survey for Subsea Fibre Optic Data Cable System - Australia West	2024/09826		Referral Decision
WA Offshore Windfarm	2021/8961		Completed
Controlled action			
Aerial Application of Lavicide to Vasse-Wonnerup Wetlands	2010/5593	Controlled Action	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
Airborne sonar trials	2001/540	Controlled Action	Completed
Albany Port Authority dredging project	2006/2540	Controlled Action	Post-Approval
All weather access track road between Windy Harbour and Nelson Location 7965	2011/6121	Controlled Action	Post-Approval
Busselton Foreshore Redevelopment from West Street to Ford Road	2013/6830	Controlled Action	Post-Approval
Cape View Resort at Lot 190 Little Colin Street	2006/3070	Controlled Action	Post-Approval
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
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
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
Industry Zone	2010/5337	Controlled Action	Post-Approval
Lennox Weir Removal, 12kms west Busselton	2021/8915	Controlled Action	Assessment Approach
Lower Vasse River Sediment Removal	2021/9051	Controlled Action	Post-Approval
Mangles Bay Marina Based Tourist Precinct	2010/5659	Controlled Action	Post-Approval
Neighbourhood Shopping Centre and Mixed Business Centre, Ocean Road, Dawesville	2006/3155	Controlled Action	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
Old Broadwater Farm Estate Subdivision - Stage 3	2009/5231	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
Point Grey Marina Project	2010/5515	Controlled Action	Post-Approval
Point Grey Residential Development - Terrestrial Component	2011/5825	Controlled Action	Post-Approval
Ravensthorpe Nickel Project	2001/172	Controlled Action	Post-Approval
Residential Development, Lot 3 & 4 Dorsett Street	2006/2774	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
retirement units & aged care facility development	2007/3533	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
Southern Bluefin Tuna Farm	2005/2165	Controlled Action	Completed
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

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
Urban development, multiple lots Northerly Street, Vasse, WA	2019/8494	Controlled Action	Assessment Approach
Vasse Diversion Drain Upgrade	2017/7932	Controlled Action	Post-Approval
Warders Hotel, Block 1 Warders Cottages, Fremantle, WA	2018/8144	Controlled Action	Post-Approval
Not controlled action			
'Looping 10' gas transmission pipeline from Kwinana to Hopelands	2005/2212	Not Controlled Action	Completed
25 Lot Residential Subdivision	2009/4830	Not Controlled Action	Completed
Aerial application of mosquito larvicides to Vasse Wonnerup Wetlands, WA	2016/7780	Not Controlled Action	Completed
APX-West Fibre-optic telecommunications cable system, WA to Singapore	2013/7102	Not Controlled Action	Completed
Bushfire Mitigation Works - City of Mandurah	2020/8674	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 widening project between Dunsborough and Yallingup(20.3 -24.6 SLK), WA	2015/7475	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
Construction of Secret Harbour High School	2004/1489	Not Controlled Action	Completed
CTBT - Cape Leeuwin Hydroacoustic Station Proposal	2000/27	Not Controlled Action	Completed
Disposal of residential properties, Fremantle, WA	2019/8593	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
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
Florida Estate Residential Subdivision Development Stage 13	2011/6045	Not Controlled Action	Completed
Florida North residential development, Lot 9008, Ocean Road, Dawesville, WA	2015/7462	Not Controlled Action	Completed
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
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
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 Gas-Fired Power Station	2005/2101	Not Controlled Action	Completed
Limestone quarry expansion	2005/2268	Not Controlled Action	Completed
Limestone Quarry Expansion, Lots 3618 and 1794, Finn Road	2005/2332	Not Controlled Action	Completed
Lot 101 Mandurah Road, Madora Bay, WA	2012/6466	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
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
Redevelopment of Lots 3 & 4, Kent Street	2007/3243	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
Re-zoning of Land for Future Residential Development Purposes	2009/4908	Not Controlled Action	Completed
Rottnest Lodge Redevelopment	2019/8565	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
Vasse Hotel and Supermarket Redevelopment	2001/288	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
Not controlled action (particular manner)			
2D seismic survey	2007/3273	Not Controlled Action (Particular Manner)	Post-Approval
2D seismic survey	2008/4493	Not Controlled Action (Particular Manner)	Post-Approval
3D Marine Seismic Survey Within WA-382-P	2007/3799	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Aerial Mosquito Spraying Vasse-Wonnerup System	2005/1952	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
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
City of Cockburn Sporting Facilties	2005/2139	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
Extension of existing mains water supply pipeline	2009/4686	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		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
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
Marine Environmental Survey	2012/6275	Not Controlled Action (Particular Manner)	Post-Approval
Monaghan's Roundabout Project - Intersection of Bussell Highway and Caves Road, Shire of Busselton	2007/3515	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
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)			
Subdivision and development of residential dwelling on part Lot 1, Bussell Highw	2006/3023	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
Ambergate North Residential Community (4896 lots)	2008/4617	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
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
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

Name	Region
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]	Aggregation	Known to occur
Ardenna carneipes Flesh-footed Shearwater [82404]	Foraging (in high numbers)	Known to occur
Ardenna pacifica Wedge-tailed Shearwater [84292]	Foraging (in high numbers)	Known to occur
Ardenna tenuirostris Short-tailed Shearwater [82652]	Foraging (in high numbers)	Known to occur
Eudyptula minor Little Penguin [1085]	Foraging (provisioning young)	Known to occur
Hydroprogne caspia Caspian Tern [808]	Foraging (provisioning young)	Known to occur
Larus pacificus Pacific Gull [811]	Foraging (in high numbers)	Former Range

Scientific Name	Behaviour	Presence
Larus pacificus Pacific Gull [811]	Foraging (in high numbers)	Known to occur
Onychoprion anaethetus Bridled Tern [82845]	Foraging (in high numbers)	Known to occur
Onychoprion fuscata Sooty Tern [82847]	Foraging	Known to occur
Pelagodroma marina White-faced Storm petrel [1016]	Foraging (in high numbers)	Known to occur
Phalacrocorax fuscescens Black-faced Cormorant [59660]	Foraging	Known to occur
Pterodroma macroptera macroptera Great-winged Petrel (macroptera race) [1035]	Foraging (provisioning young)	Known to occur
Pterodroma mollis Soft-plumaged Petrel [1036]	Foraging (in high numbers)	Known to occur
Puffinus assimilis tunneyi Little Shearwater [59363]	Foraging (in high numbers)	Known to occur
Sterna dougallii Roseate Tern [817]	Foraging	Known to occur
Sternula nereis Fairy Tern [82949]	Foraging (in high numbers)	Known to occur
Thalassarche chlororhynchos bassi Indian Yellow-nosed Albatross [85249]	Foraging (in high numbers)	Known to occur
Seals		
Neophoca cinerea Australian Sea Lion [22]	Foraging (male)	Likely to occur

Scientific Name	Behaviour	Presence
Neophoca cinerea Australian Sea Lion [22]	Foraging (male and female)	Known to occur
Neophoca cinerea Australian Sea Lion [22]	Foraging (male and female)	Likely to occur
Sharks		
Carcharodon carcharias White Shark [64470]	Foraging	Known to occur
Whales		
Balaenoptera musculus Blue and Pygmy Blue Whale [36]	Foraging (abundant food source)	Known to occur
Balaenoptera musculus Blue and Pygmy Blue Whale [36]	Foraging (high density)	Known to occur
Balaenoptera musculus Blue and Pygmy Blue Whale [36]	Foraging (on migration)	Known to occur
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Distribution	Known to occur
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Foraging Area (annual high use area)	Known to occur
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Known Foraging Area	Known to occur
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Migration	Known to occur
Megaptera novaeangliae Humpback Whale [38]	Migration (north)	Known to occur
Megaptera novaeangliae Humpback Whale [38]	Migration (north and south)	Known to occur

Scientific Name	Behaviour	Presence
Megaptera novaeangliae		
Humpback Whale [38]	Migration (south)	Known to occur
Physeter macrocephalus		
Sperm Whale [59]	Foraging (abundant food source)	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 are 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

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

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

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
- 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

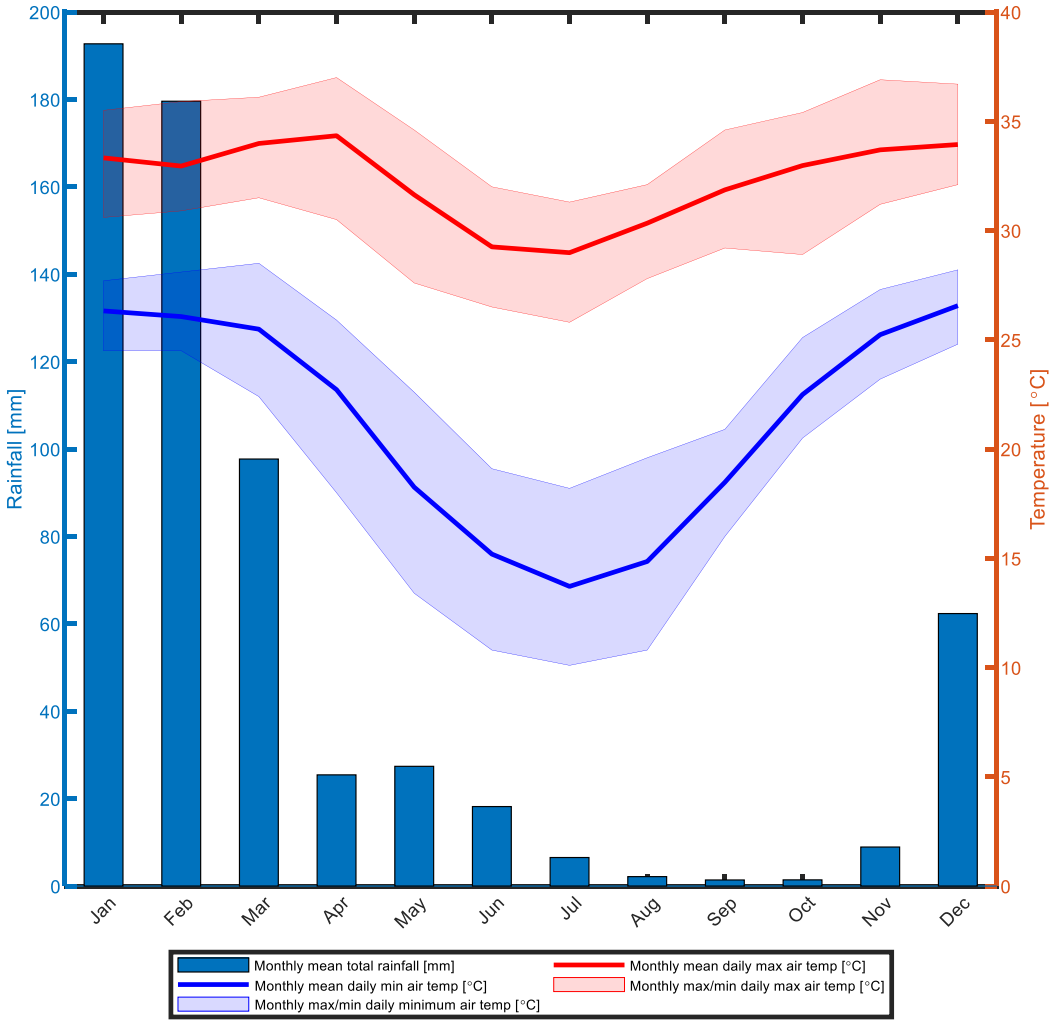


Figure 1. Monthly average total rainfall [mm] and air temperature [°C], calculated based on observations at the Broome Airport weather station from 1939-2020 (Bureau of Meteorology 2020). Bars show the monthly average total rainfall values, and thick blue and red lines denote monthly average daily minimum and maximum air temperatures, respectively. Shaded blue and red areas denote monthly recorded extremes of daily minimum and maximum air temperature, respectively.

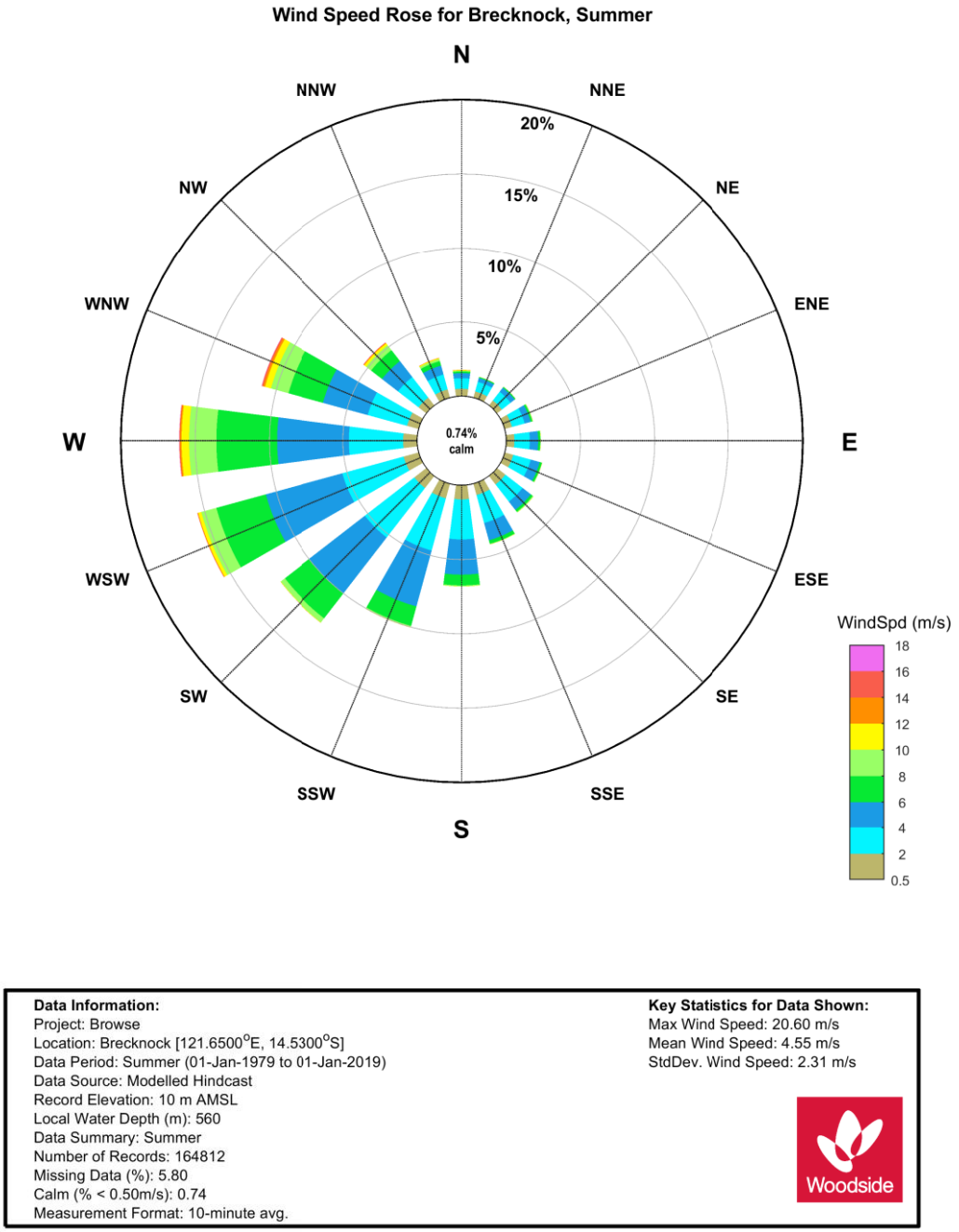
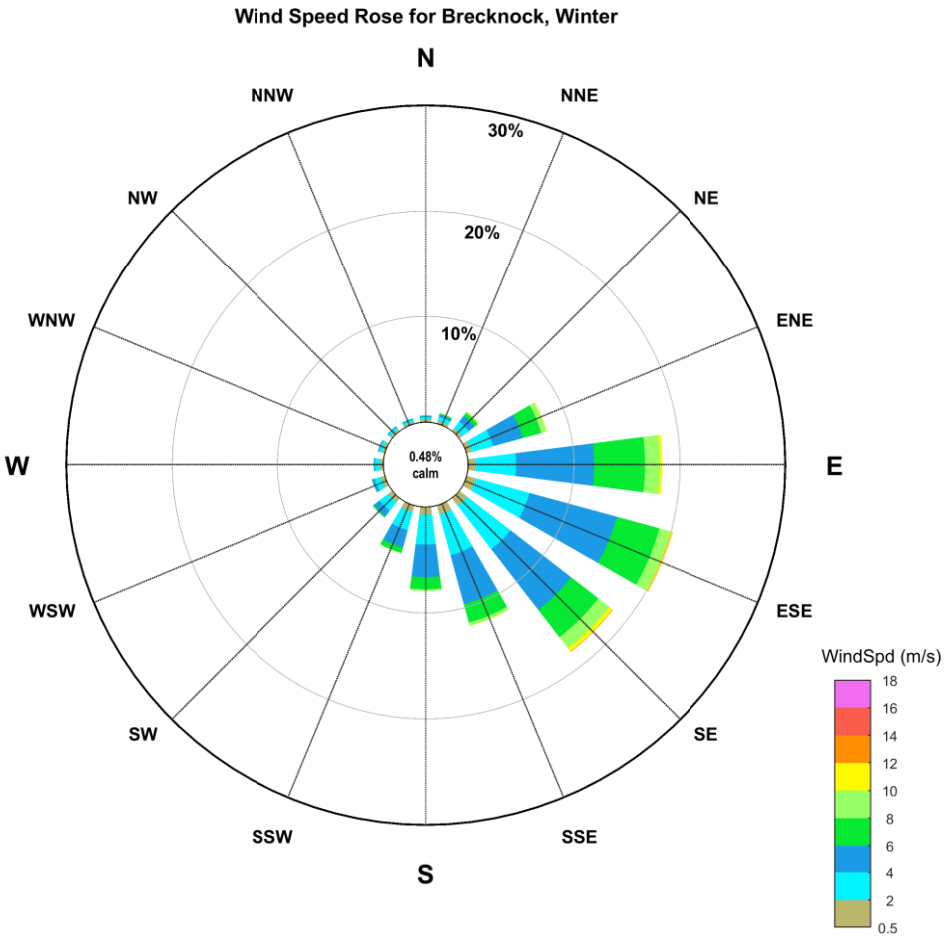


Figure 2. Summer distributions of 10-minute average wind speeds by 22.5° directional sectors at the Brecknock site (Metocean Solutions Ltd, 2019). Note tropical cyclone events were not included in this distribution. Winds at Brecknock in summer are predominantly from the WNW to SW due to the North West Monsoon (WEL, 2019).



Data Information:
Project: Browse
Location: Brecknock [121.6500°E, 14.5300°S]
Data Period: Winter (01-Apr-1979 to 30-Sep-2018)
Data Source: Modelled Hindcast
Record Elevation: 10 m AMSL
Local Water Depth (m): 560
Data Summary: Winter
Number of Records: 173751
Missing Data (%): 1.10
Calm (% < 0.50m/s): 0.48
Measurement Format: 10-minute avg.

Key Statistics for Data Shown:
Max Wind Speed: 14.34 m/s
Mean Wind Speed: 4.71 m/s
StdDev. Wind Speed: 2.01 m/s

Woodside

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 E to SE due to the South East Trade Winds coming from the Australian mainland (WEL, 2019).

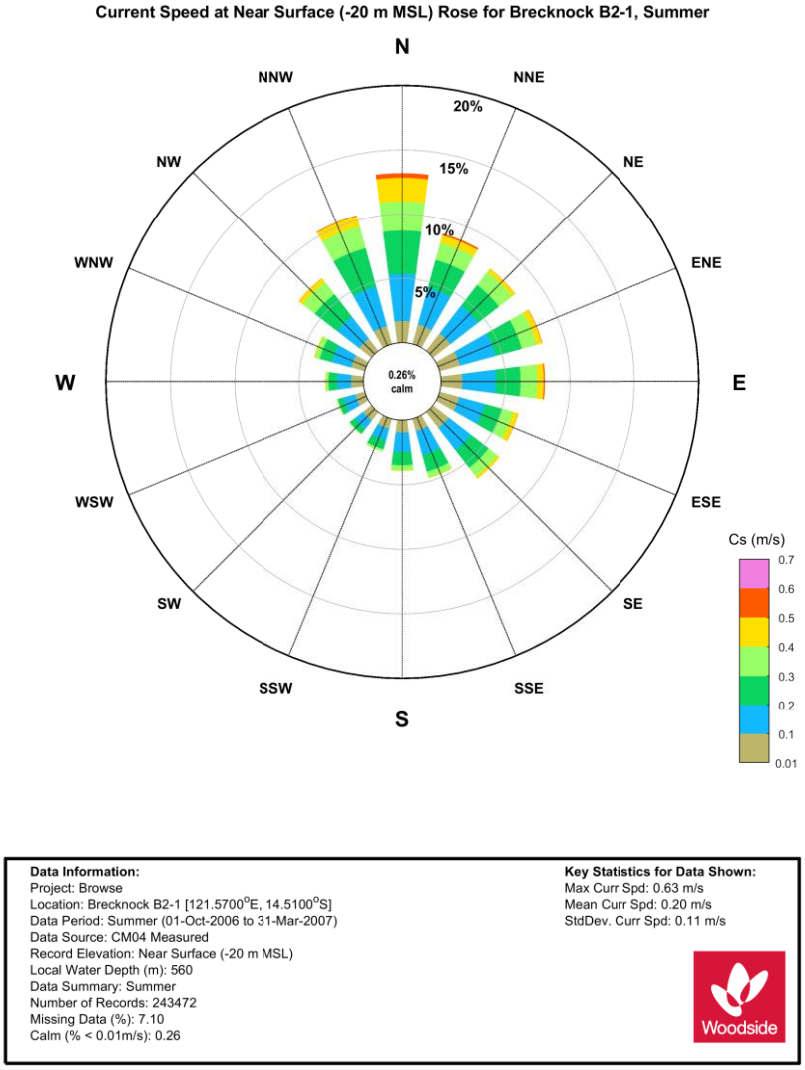


Figure 4. Summer (Nov-Apr) near surface combined frequency of 1-minute mean current speed and direction (towards) measured at Brecknock B2-1 location (cyclones removed) (RPS Metocean Ltd. 2008).

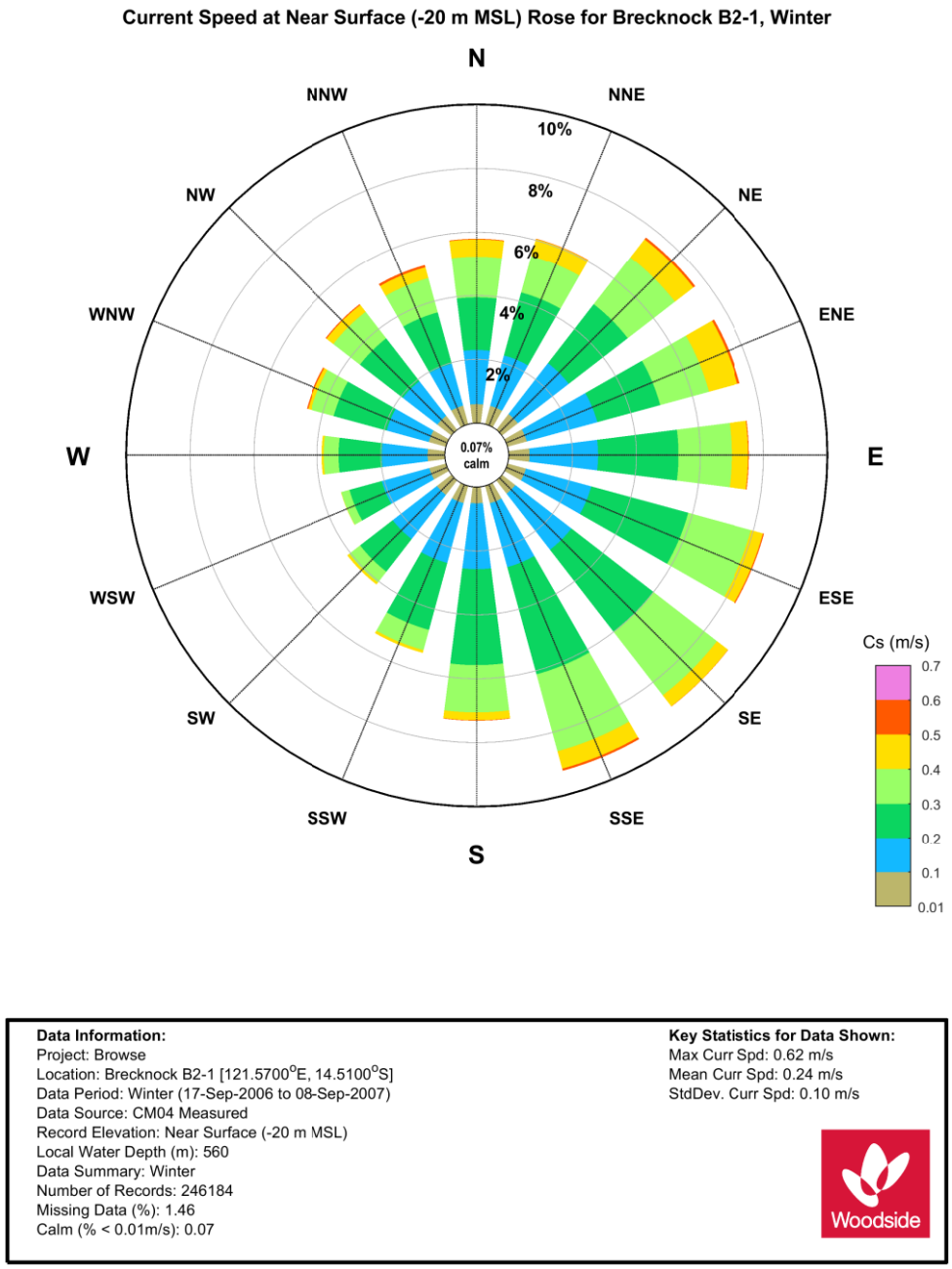


Figure 5. Winter (May-Sep) near surface combined frequency of 1-minute mean current speed and direction (towards) measured at Brecknock B2-1 location (cyclones removed) (RPS Metocean Ltd. 2008).

North-west Shelf/Scarborough

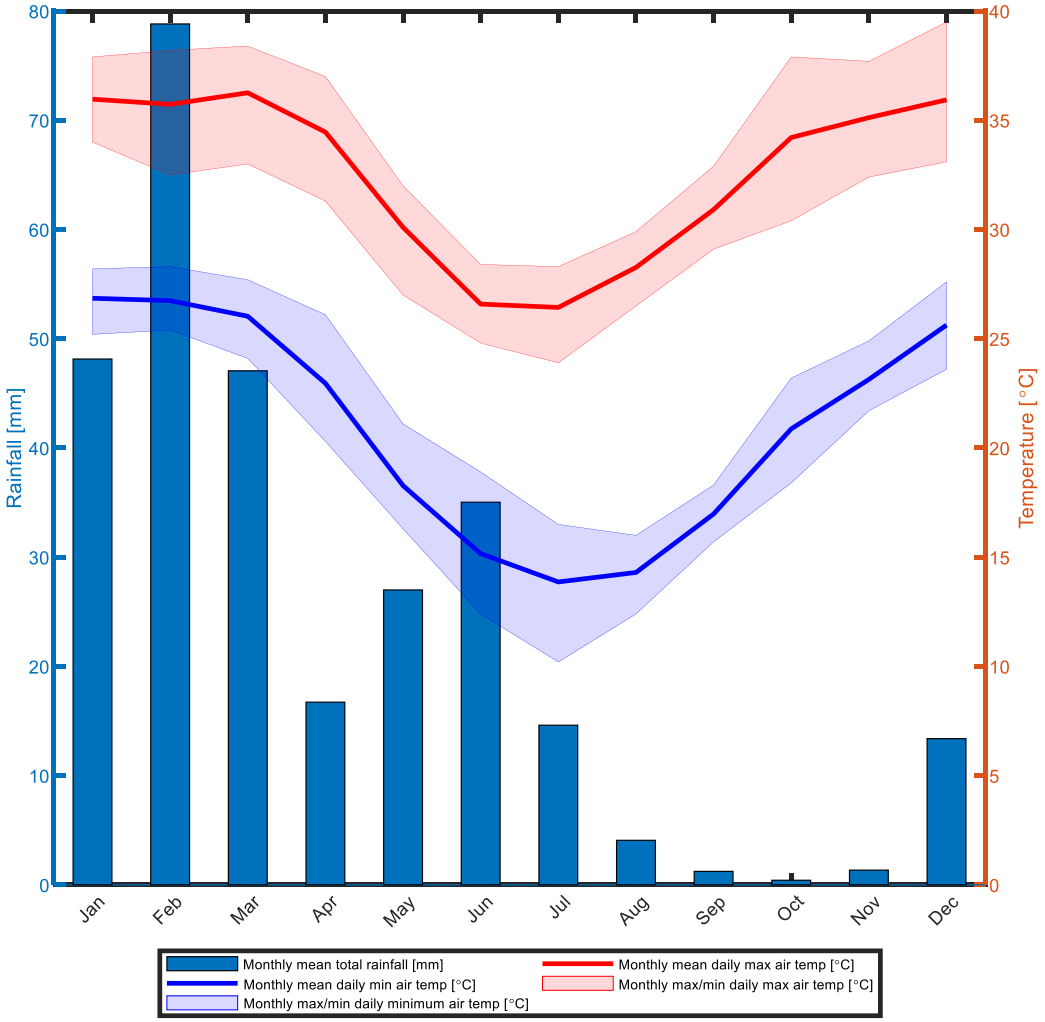
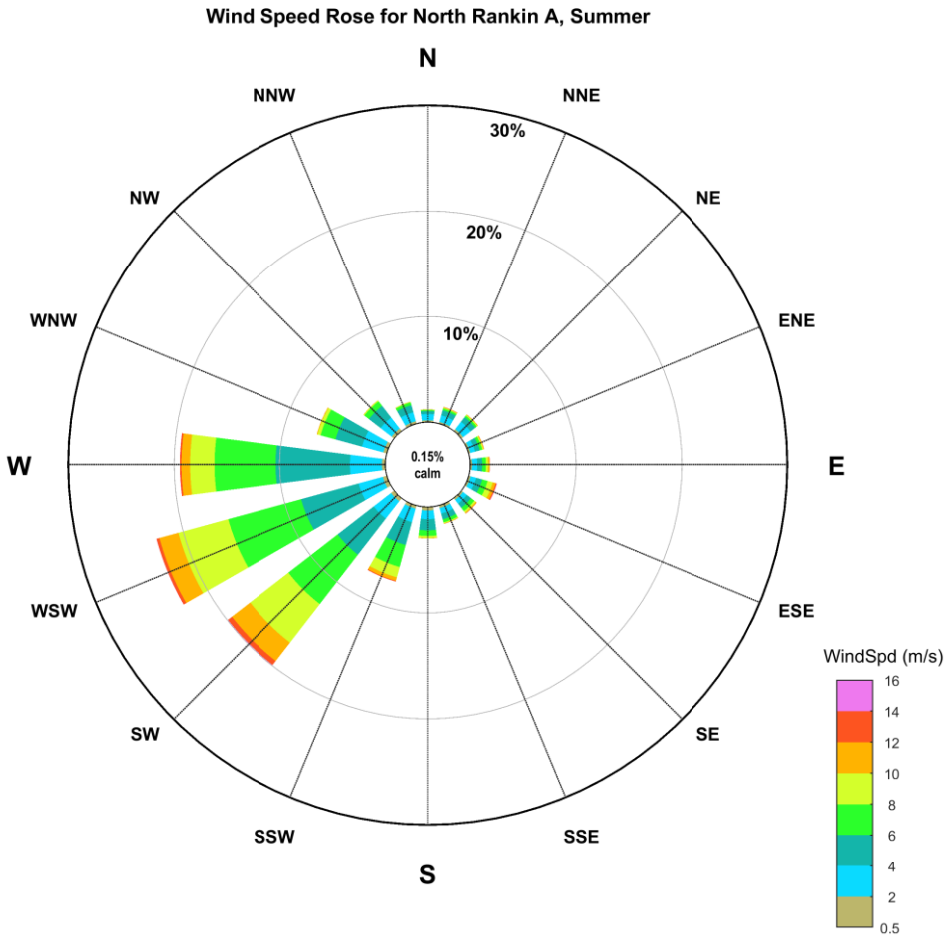


Figure 1. Monthly average total rainfall [mm] and air temperature [°C], calculated based on observations at the Karratha Aero weather station from 1972-2020 and 1993-2020 respectively (Bureau of Meteorology 2020). Bars show the monthly average total rainfall values, and thick blue and red lines denote 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.

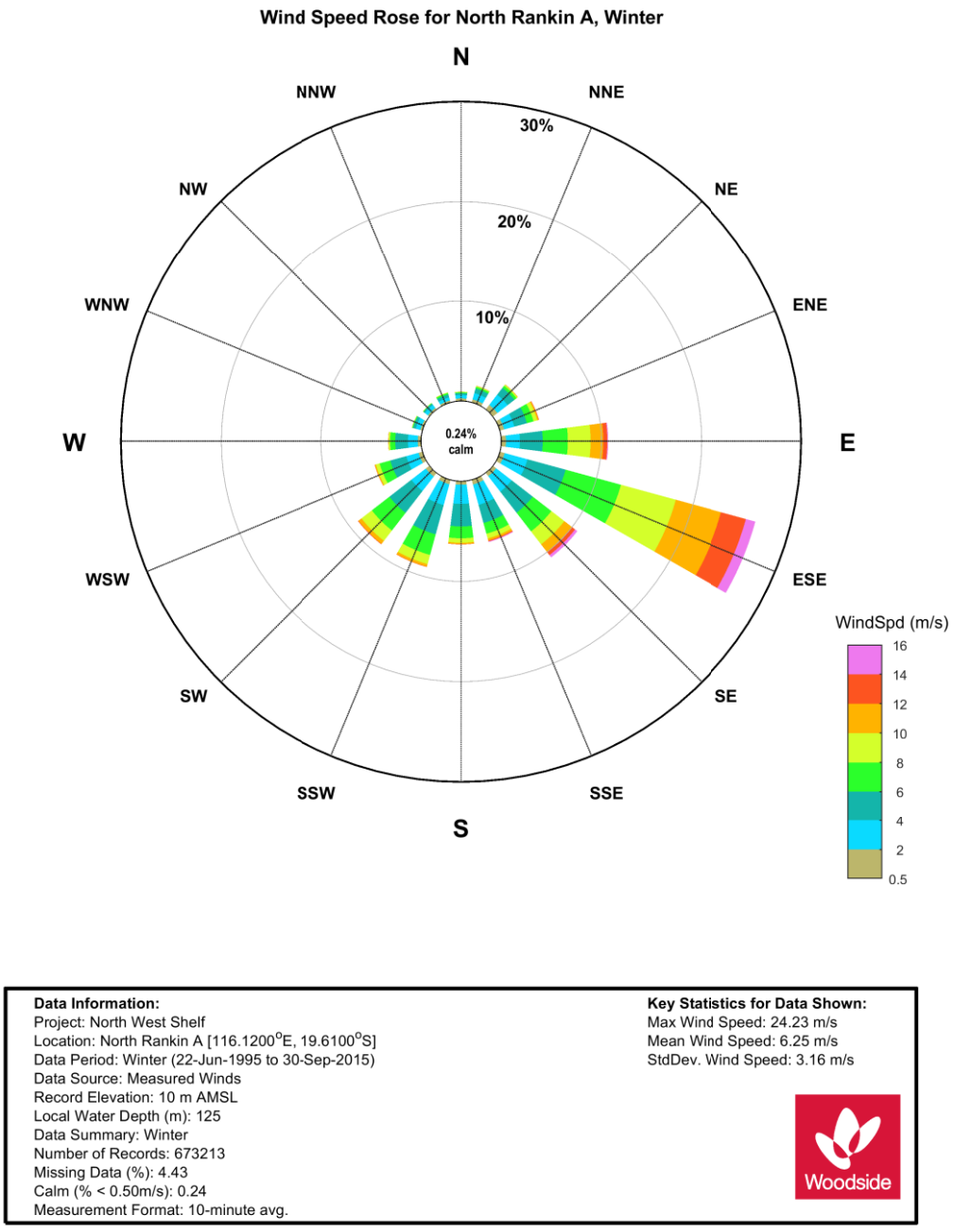


Data Information:
Project: North West Shelf
Location: North Rankin A [116.1200°E, 19.6100°S]
Data Period: Summer (01-Oct-1995 to 30-Nov-2015)
Data Source: Measured Winds
Record Elevation: 10 m AMSL
Local Water Depth (m): 125
Data Summary: Summer
Number of Records: 674659
Missing Data (%): 7.24
Calm (% < 0.50m/s): 0.15
Measurement Format: 10-minute avg.

Key Statistics for Data Shown:
Max Wind Speed: 18.50 m/s
Mean Wind Speed: 6.04 m/s
StdDev. Wind Speed: 2.55 m/s

Woodside

Figure 2. Summer distributions of 10-minute average wind speeds by 22.5° directional sectors at the North Rankin A site (WEL, 2015). Note tropical cyclone events were not included in this distribution. Winds at North Rankin A in summer are characterised by W to SW driven by the North West Monsoon (RPS, 2016).



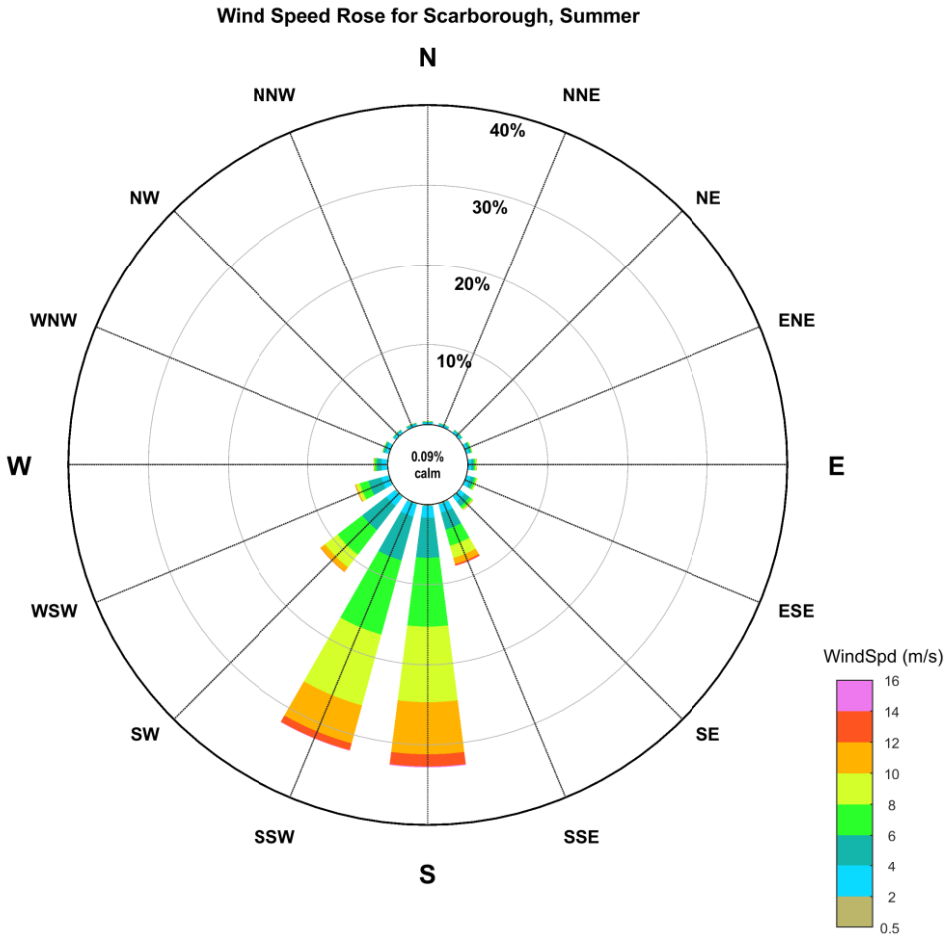
Data Information:
Project: North West Shelf
Location: North Rankin A [116.1200°E, 19.6100°S]
Data Period: Winter (22-Jun-1995 to 30-Sep-2015)
Data Source: Measured Winds
Record Elevation: 10 m AMSL
Local Water Depth (m): 125
Data Summary: Winter
Number of Records: 673213
Missing Data (%): 4.43
Calm (% < 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 (WEL, 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).

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 4. Summer distributions of wind speeds (10-minute at 10m ASL) by 22.5° directional sectors at the Scarborough site (WEL, 2018). Note tropical cyclone events were not included in this distribution. Winds at Scarborough in summer are predominantly from the S to SSW due to a Pilbara Heat Low forming over the northwest coast of Western Australia [R8] SW winds are also experienced at this site due to the monsoon trough.

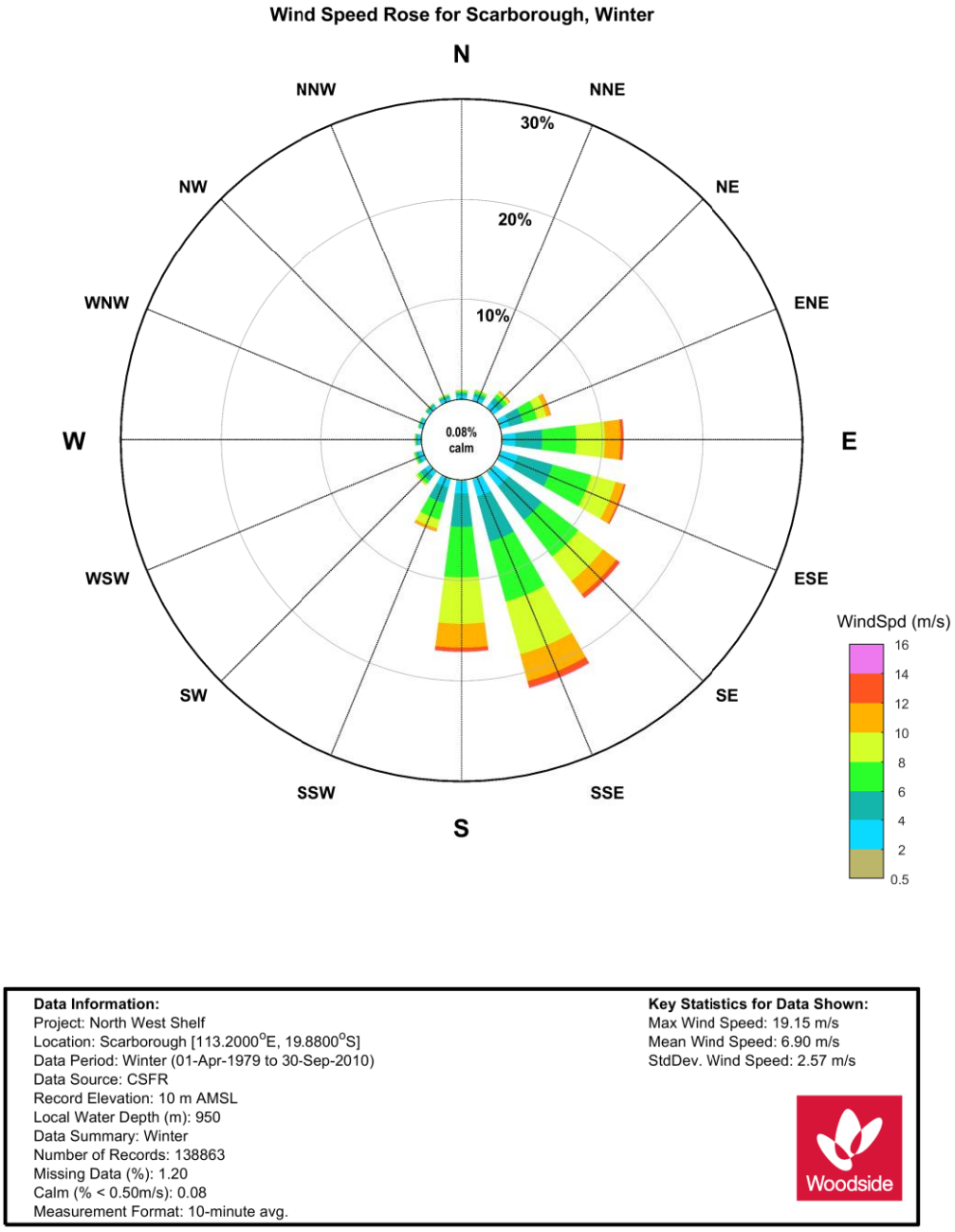


Figure 5. Winter distributions of wind speeds (10-minute at 10 m ASL) by 22.5° directional sectors at the Scarborough site (WEL, 2018). Note tropical cyclone events were not included in this distribution. Winds at Scarborough in winter are predominantly from the S to E driven by the South East Trade Winds over Australia (RPS, 2016).

North-west Shelf

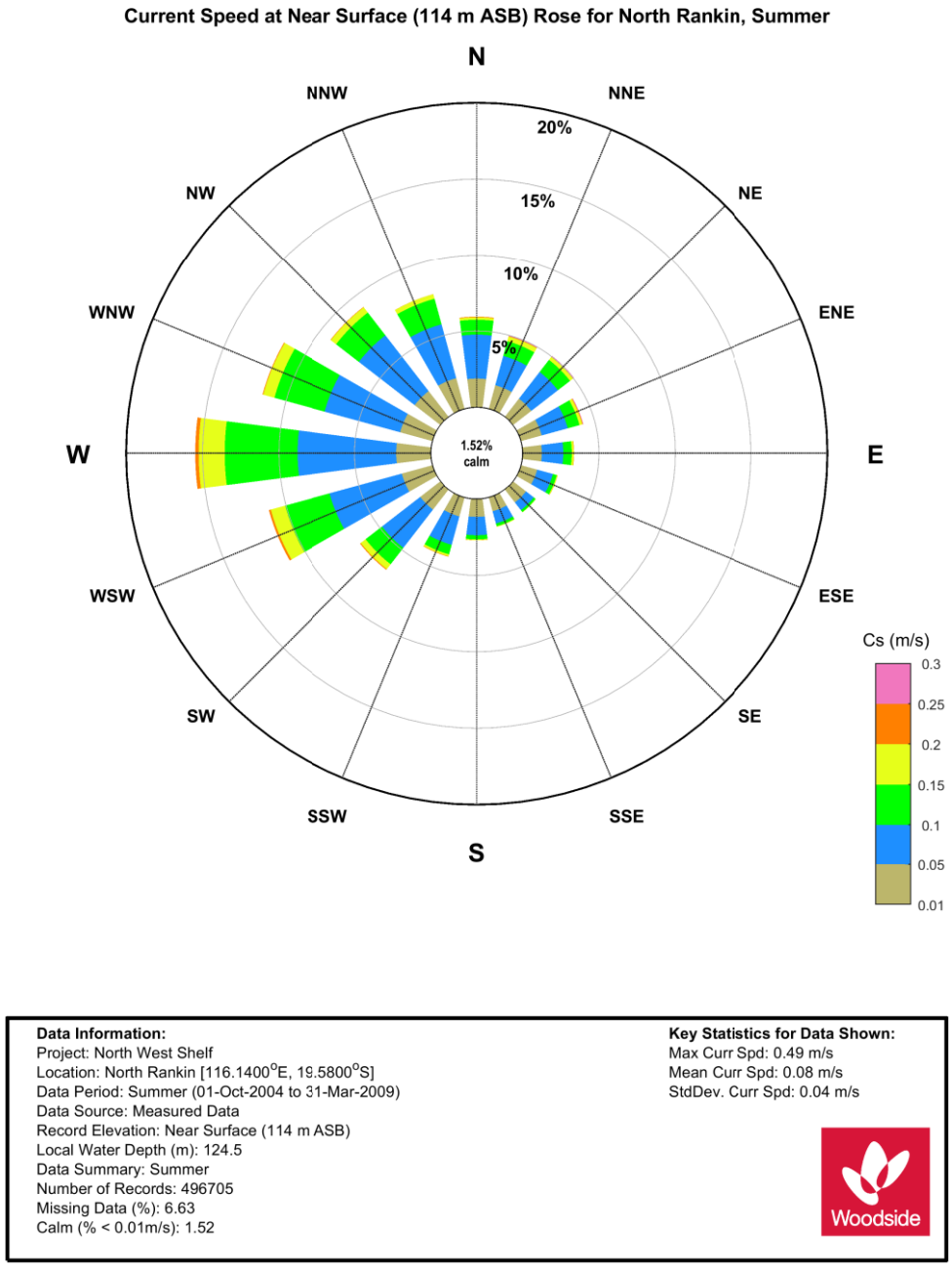


Figure 6. Summer (Nov-Apr) near surface combined frequency of 1-minute mean current speed and direction (towards) measured at the North Rankin location (cyclones removed) (WEL, 2011).

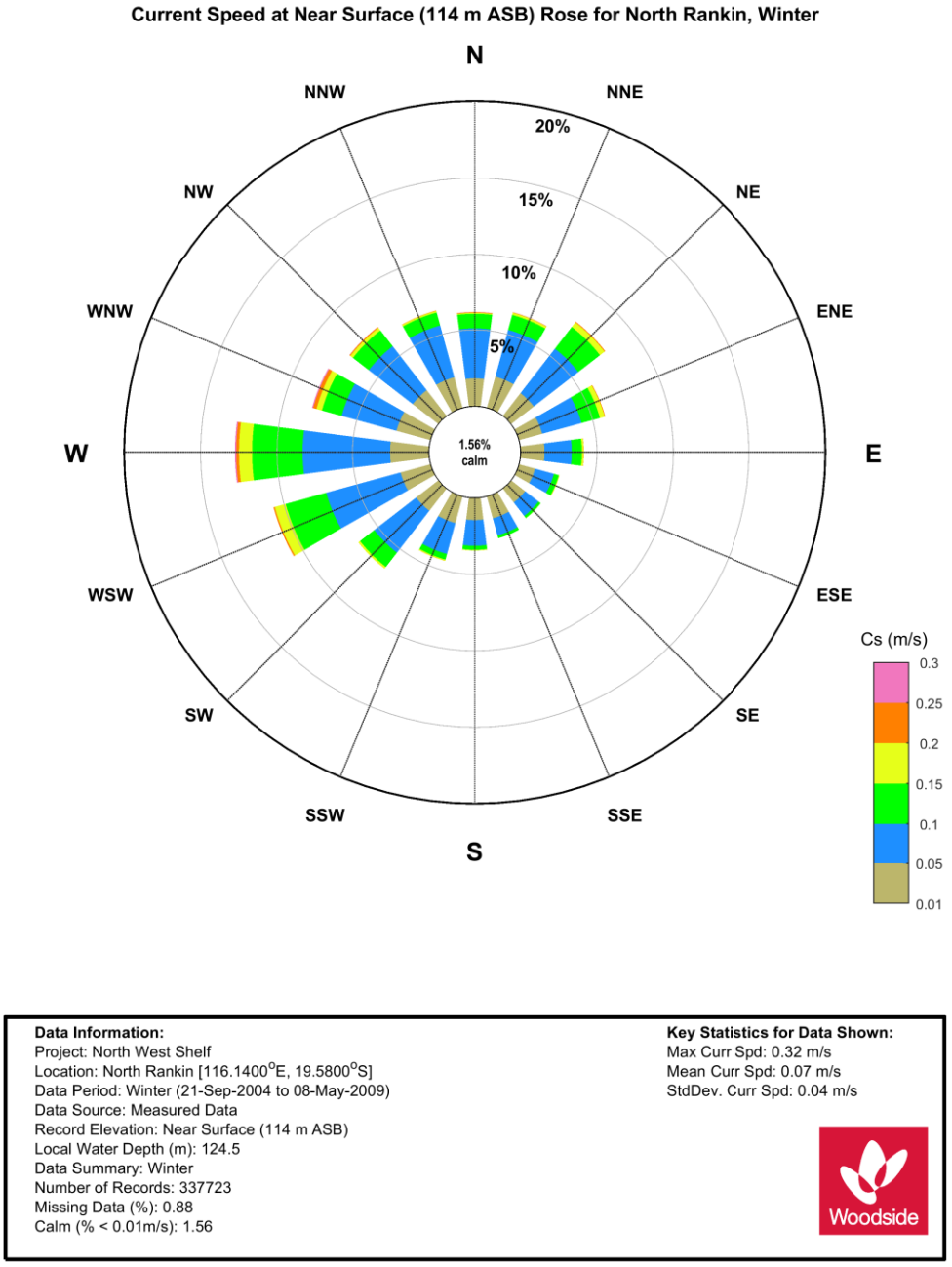


Figure 7. Winter (May-Sep) near surface combined frequency of 1-minute mean current speed and direction (towards) measured at the North Rankin location (cyclones removed) (WEL, 2011).

Scarborough

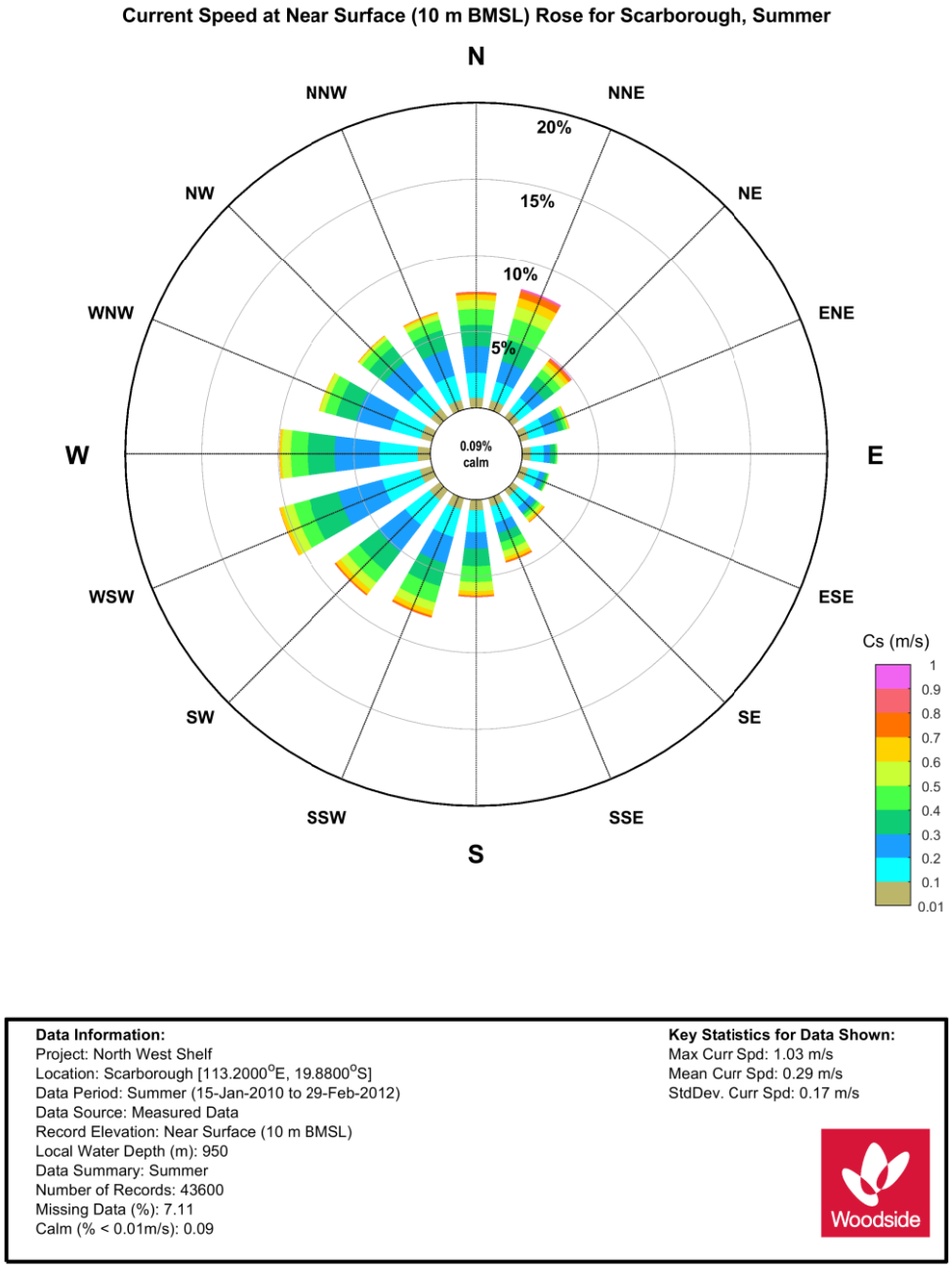


Figure 8. Summer (Nov - April) near surface combined frequency of 1-minute mean current speed and direction (towards) measured at the Scarborough location (cyclones removed) (WEL, 2018).

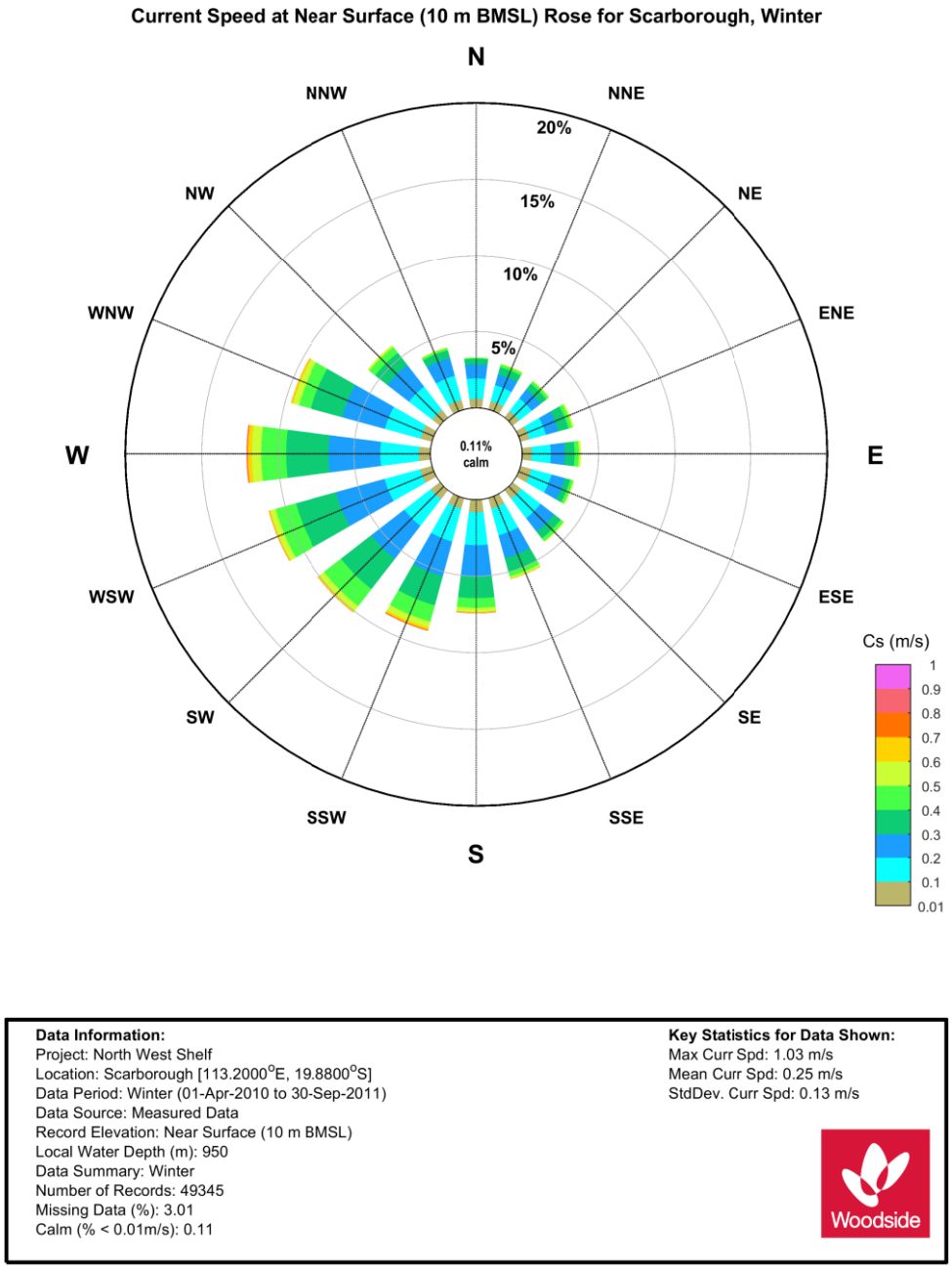


Figure 9. Winter (May-Sep) near surface combined frequency of 1-min mean current speed and direction (towards) measured at the Scarborough location (cyclones removed) (WEL, 2018).

North-west Cape

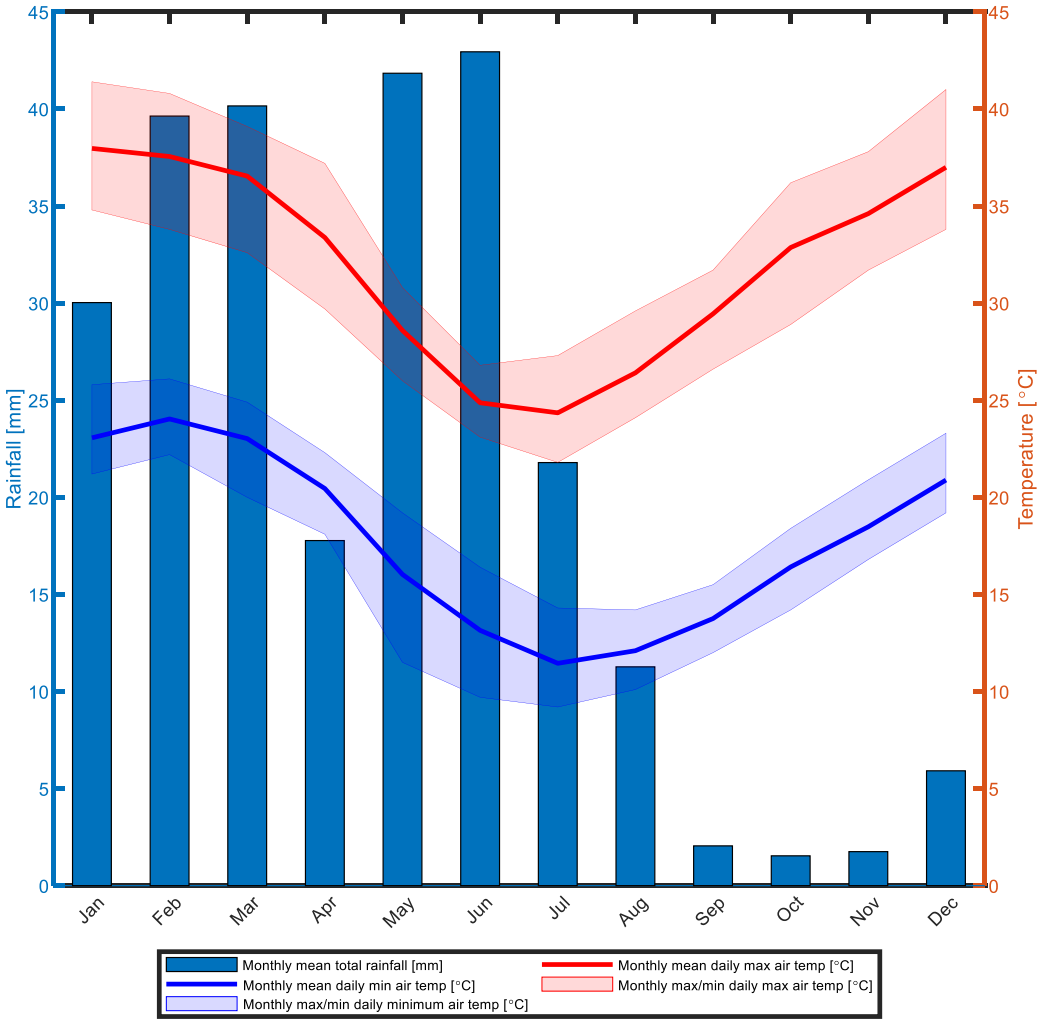


Figure 1. Monthly average total rainfall [mm] and air temperature [°C], calculated based on observations at the Learmonth Airport weather station from 1945-2020 and 1975-2020 respectively (Bureau of Meteorology 2020). Bars show the monthly average total rainfall values, and thick blue and red lines denote 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.

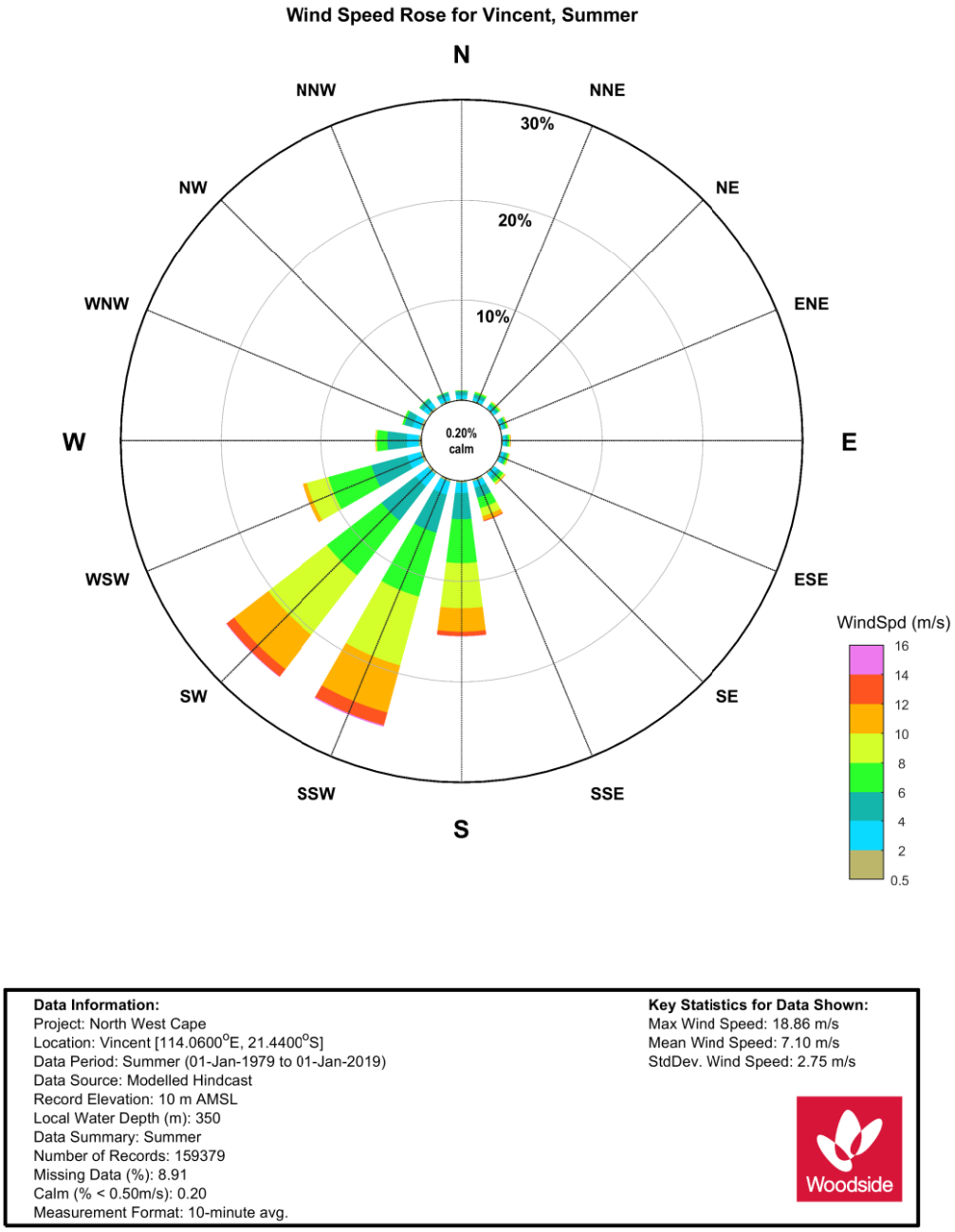
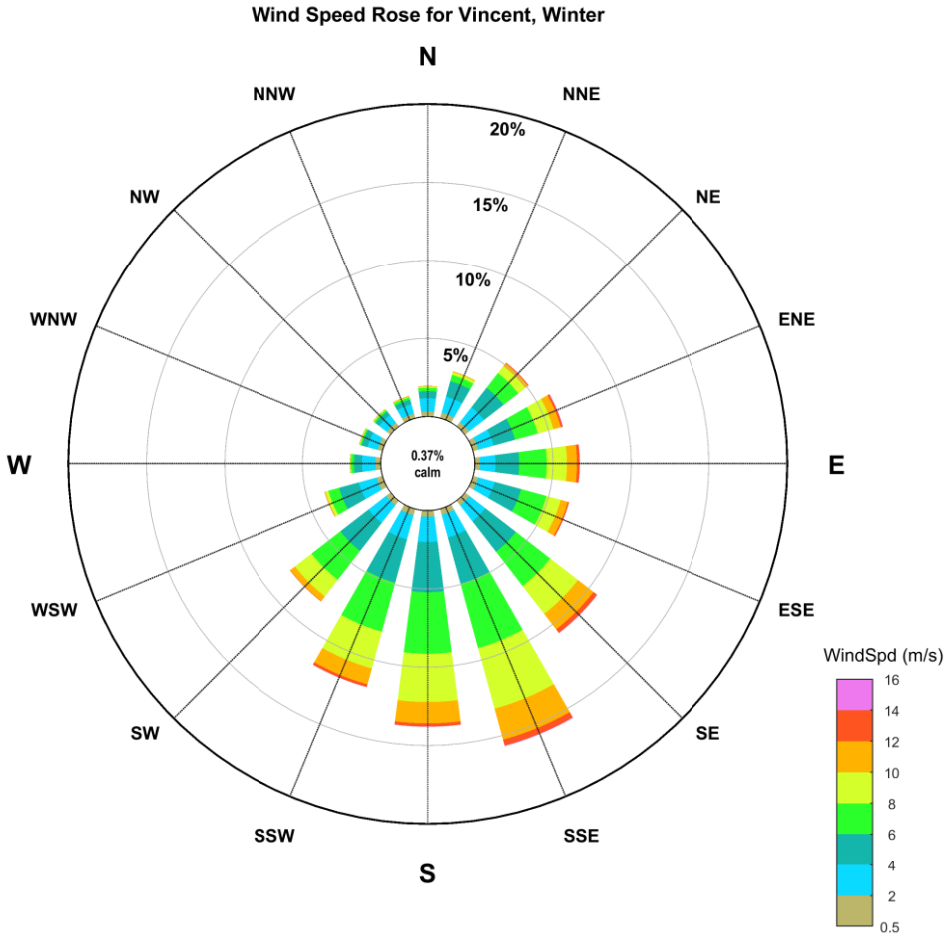


Figure 2. Summer distributions of wind speeds (10-minute at 10 m ASL) by 22.5° directional sectors at the Vincent site (Vincent Metocean). Note tropical cyclone events were not included in this distribution. Winds at Vincent in summer are predominantly from the SW to SSW in summer due to the presence of the Pilbara Heat Low (MetOcean Engineers, 2005).



Data Information:
Project: North West Cape
Location: Vincent [114.0600°E, 21.4400°S]
Data Period: Winter (01-Apr-1979 to 30-Sep-2018)
Data Source: Modelled Hindcast
Record Elevation: 10 m AMSL
Local Water Depth (m): 350
Data Summary: Winter
Number of Records: 173626
Missing Data (%): 1.17
Calm (% < 0.50m/s): 0.37
Measurement Format: 10-minute avg.

Key Statistics for Data Shown:
Max Wind Speed: 19.39 m/s
Mean Wind Speed: 6.23 m/s
StdDev. Wind Speed: 2.78 m/s

Woodside

Figure 3. Winter distributions of wind speeds (10-minute at 10 m ASL) 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 S to SE, 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).

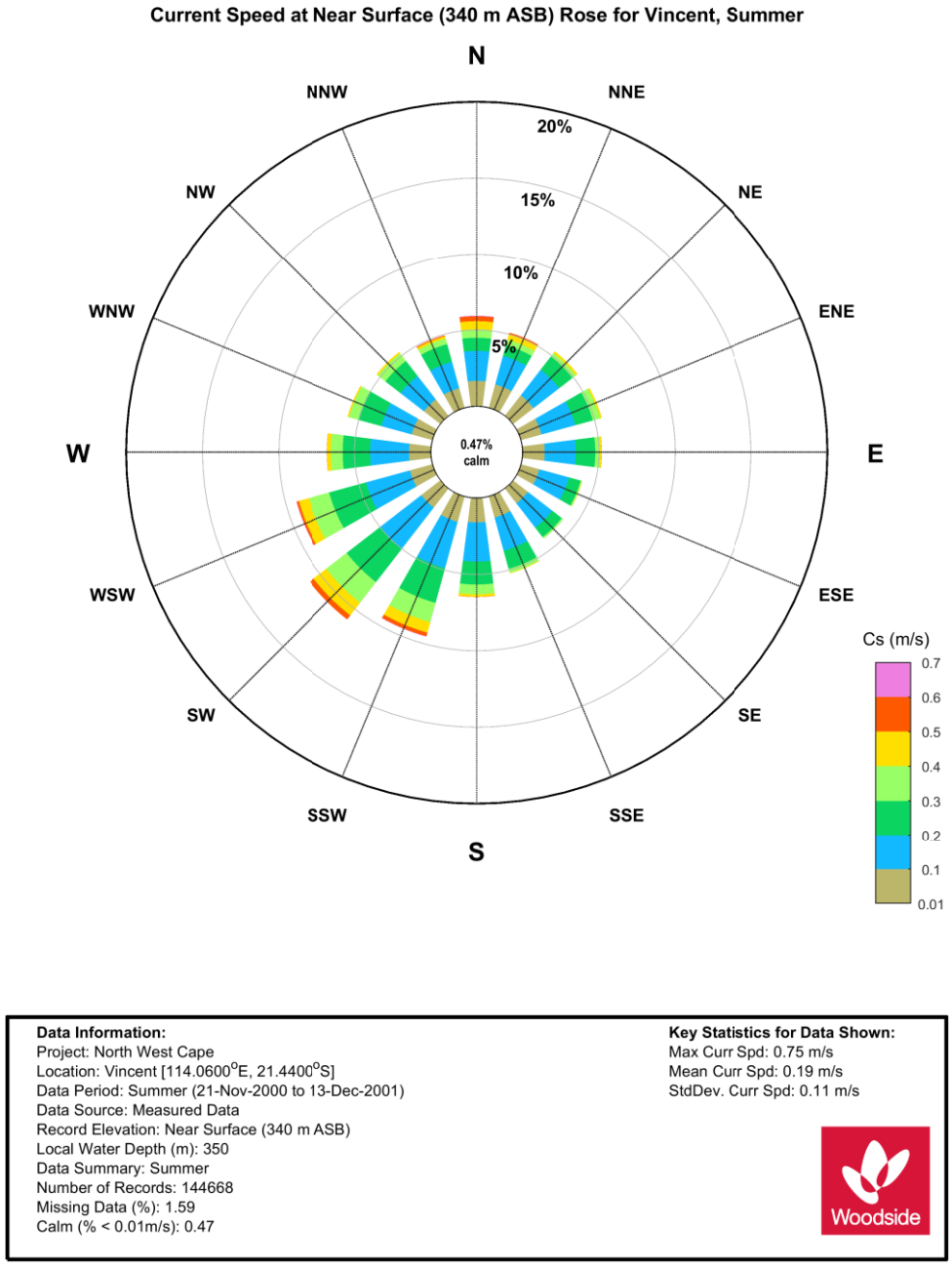


Figure 4. Summer (May – Sep) near surface combined frequency of 1-minute mean current speed and direction (towards) measured at the Vincent location (cyclones removed) (WEL, 2016).

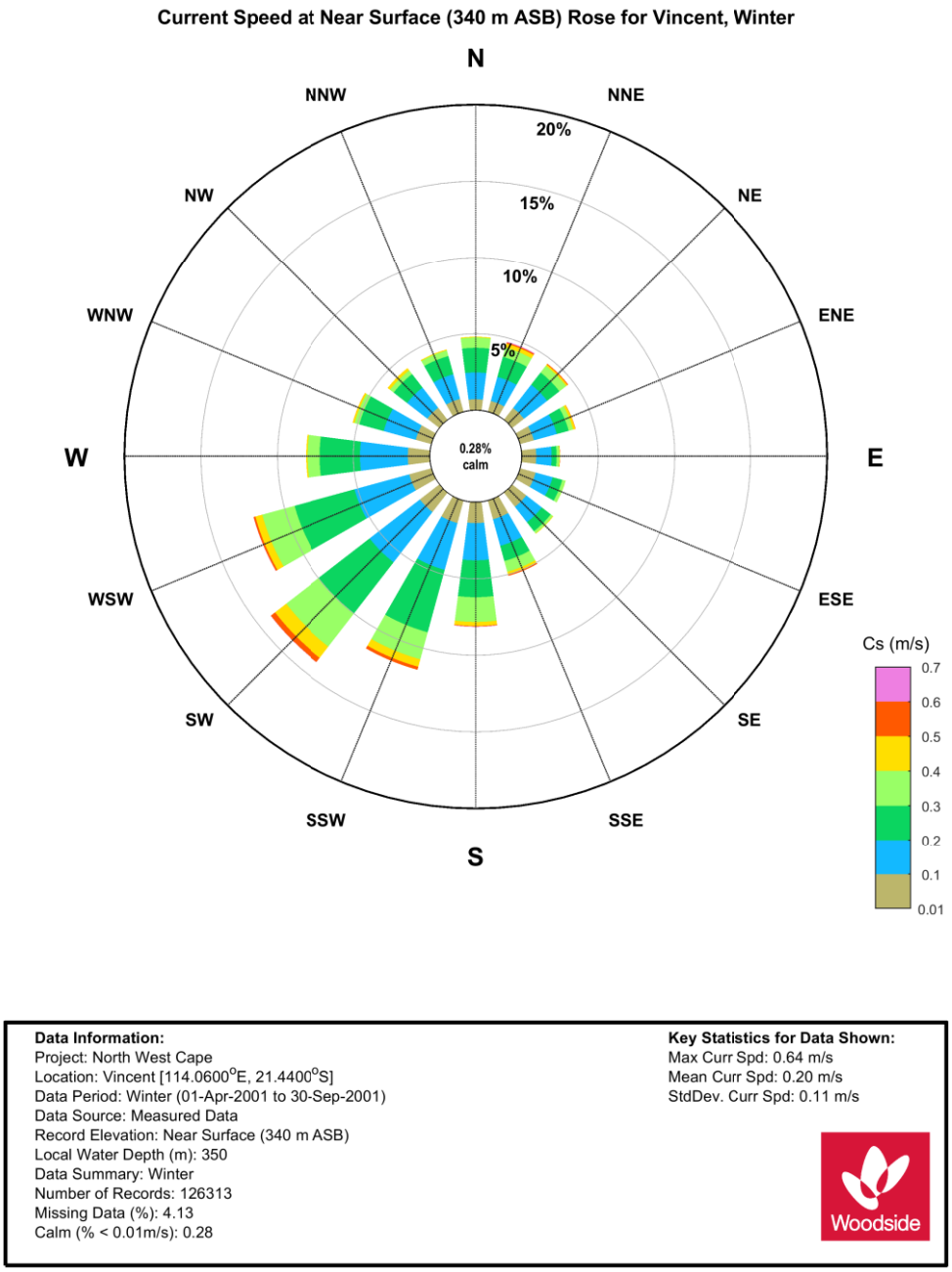


Figure 5. Winter (Nov – Apr) near surface combined frequency of 1-minute mean current speed and direction (towards) measured at the Vincent location (cyclones removed) (WEL, 2016).

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Programme: September 2006 to February 2008 Final Data Report.” CRN: JB0020RT0019.

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WEL 2011. Greater Western Flank Detailed Metocean Design Criteria, Rev 2. CRN: A3000RG5492827.

WEL 2016. Vincent – Basic Design Data Specification sheet – Metocean CRN: VA0000RT1400067309.

WEL 2015. Winds Measured at North Rankin A 1995-2015.

WEL 2018. Scarborough Development - Non-Cyclonic and Operational Metocean Design Criteria – Spreadsheet, Revision A, CRN: SA0009CT1400722569.

WEL 2019. “Browse Development – Metocean Design Basis” CRN: JJ0013ST1400274448.

APPENDIX D EPBC ACT PROTECTED MATTERS SEARCH TOOL RESULTS

EPBC Act Protected Matters Report - EMBA

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: 03-Feb-2025

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	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	4
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	52
Listed Migratory Species:	67

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:	3
Listed Marine Species:	113
Whales and Other Cetaceans:	32
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:	31
Regional Forest Agreements:	None
Nationally Important Wetlands:	2
EPBC Act Referrals:	201
Key Ecological Features (Marine):	7
Biologically Important Areas:	39
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

World Heritage Properties [Resource Information]

Name	State	Legal Status
The Ningaloo Coast	WA	Declared property

National Heritage Places [Resource Information]

Name	State	Legal Status
Natural		
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)
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 known to occur within area
Calidris canutus		
Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area
Calidris ferruginea		
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known 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 known to occur within area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat known to occur within area
Limosa lapponica menzbieri Northern Siberian Bar-tailed Godwit, Russkoye Bar-tailed Godwit [86432]	Endangered	Species or species habitat known 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
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Papasula abbotti Abbott's Booby [59297]	Endangered	Species or species habitat may occur within area
Pezoporus occidentalis Night Parrot [59350]	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	Breeding known 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 nereis nereis Australian Fairy Tern [82950]	Vulnerable	Breeding known 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
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 veritas Cape Range Cave Gudgeon, Blind Gudgeon [66676]	Vulnerable	Species or species habitat known to occur within area
Ophisternon candidum Blind Cave Eel [66678]	Vulnerable	Species or species habitat known 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	Species or species habitat known to occur within area
Dasyurus hallucatus Northern Quoll, Digul [Gogo-Yimidir], Wijingadda [Dambimangari], Wiminji [Martu] [331]	Endangered	Species or species habitat may 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	Species or species habitat known to occur within area
Lagorchestes conspicillatus conspicillatus Spectacled Hare-wallaby (Barrow Island) [66661]	Vulnerable	Species or species habitat 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
Osphranter robustus isabellinus Barrow Island Wallaroo, Barrow Island Euro [89262]	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Petrogale lateralis lateralis		
Black-flanked Rock-wallaby, Mororong, Black-footed Rock Wallaby [66647]	Endangered	Species or species habitat known to occur within area
Rhinonicteris aurantia (Pilbara form)		
Pilbara Leaf-nosed Bat [82790]	Vulnerable	Species or species habitat known to occur within area
REPTILE		
Aipysurus apraefrontalis		
Short-nosed Sea Snake, Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat known to occur within area
Aipysurus foliosquama		
Leaf-scaled Sea Snake, Leaf-scaled Seasnake [1118]	Critically Endangered	Species or species habitat known to occur within area
Caretta caretta		
Loggerhead Turtle [1763]	Endangered	Breeding known to occur within area
Chelonia mydas		
Green Turtle [1765]	Vulnerable	Breeding known to occur within area
Ctenotus zastictus		
Hamelin Ctenotus [25570]	Vulnerable	Species or species habitat known to occur within area
Dermochelys coriacea		
Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area
Eretmochelys imbricata		
Hawksbill Turtle [1766]	Vulnerable	Breeding known to occur within area
Natator depressus		
Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area
SHARK		
Carcharias taurus (west coast population)		
Grey Nurse Shark (west coast population) [68752]	Vulnerable	Congregation or aggregation known to occur within area

Scientific Name	Threatened Category	Presence Text
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area
Pristis clavata Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Species or species habitat known to occur within area
Pristis pristis Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat likely to occur within area
Pristis zijsron Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Species or species habitat known to occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Sphyrna lewini Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat known to occur within area

Listed Migratory Species		[Resource Information]
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 known to occur within area

Scientific Name	Threatened Category	Presence Text
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat likely to occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Breeding known 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 known 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 known to occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Breeding known to occur within area
Phaethon rubricauda Red-tailed Tropicbird [994]		Breeding known to occur within area
Sterna dougallii Roseate Tern [817]		Breeding known to occur within area
Sternula albifrons Little Tern [82849]		Breeding known to occur within area
Sula dactylatra Masked Booby [1021]		Breeding known to occur within area
Sula leucogaster Brown Booby [1022]		Breeding known 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
Migratory Marine Species		
Anoxypristis cuspidata		
Narrow Sawfish, Knifetooth Sawfish [68448]		Species or species habitat known 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
Carcharhinus longimanus		
Oceanic Whitetip Shark [84108]		Species or species habitat likely to occur within area
Carcharias taurus		
Grey Nurse Shark [64469]		Congregation or aggregation known to occur within area
Carcharodon carcharias		
White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area
Caretta caretta		
Loggerhead Turtle [1763]	Endangered	Breeding known to occur within area

Scientific Name	Threatened Category	Presence Text
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding known 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	Foraging, feeding or related behaviour known to occur within area
Dugong dugon Dugong [28]		Breeding known to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding known 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
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 known to occur within area
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]		Species or species habitat known 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	Species or species habitat known to occur within area
Pristis pristis Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat likely to occur within area
Pristis zijsron Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Species or species habitat known to occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Sousa sahulensis as Sousa chinensis Australian Humpback Dolphin [87942]		Species or species habitat known to occur within area
Tursiops aduncus (Arafura/Timor Sea populations) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat known to occur within area
Migratory Terrestrial Species		
Hirundo rustica Barn Swallow [662]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
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 known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known 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 known 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 known to occur within area

Scientific Name	Threatened Category	Presence Text
Limosa lapponica		
Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Numenius madagascariensis		
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Pandion haliaetus		
Osprey [952]		Breeding known to occur within area
Thalasseus bergii		
Greater Crested Tern [83000]		Breeding known 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
Defence	
Defence - EXMOUTH VLF TRANSMITTER STATION [50123]	WA
Defence - EXMOUTH VLF TRANSMITTER STATION [50122]	WA
Defence - LEARMONTH - AIR WEAPONS RANGE [50193]	WA
Defence - LEARMONTH RADAR SITE - VLAMING HEAD EXMOUTH [50001]	WA
Unknown	
Commonwealth Land - [52236]	WA

Commonwealth Heritage Places [Resource Information]

Name	State	Status
Natural		
Learmonth Air Weapons Range Facility	WA	Listed place
Mermaid Reef - Rowley Shoals	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 known 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 known 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 known to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area overfly marine area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area overfly marine area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may 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
Chalcites osculans as Chrysococcyx osculans Black-eared Cuckoo [83425]		Species or species habitat known to occur within area overfly marine area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known 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 known to occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Breeding known 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 known to occur within area
Hirundo rustica Barn Swallow [662]		Species or species habitat may occur within area overfly marine area
Hydroprogne caspia as Sterna caspia Caspian Tern [808]		Breeding known to occur within area

Scientific Name	Threatened Category	Presence Text
Larus pacificus Pacific Gull [811]		Breeding known to occur within area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat known to occur within area overfly marine area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within 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
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 known to occur within area
Onychoprion anaethetus as Sterna anaethetus Bridled Tern [82845]		Breeding known to occur within area
Onychoprion fuscatus as Sterna fuscata Sooty Tern [90682]		Breeding known to occur within area
Pandion haliaetus Osprey [952]		Breeding known to occur within area

Scientific Name	Threatened Category	Presence Text
Papasula abbotti Abbott's Booby [59297]	Endangered	Species or species habitat may occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Breeding known 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]		Breeding 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
Sterna dougallii Roseate Tern [817]		Breeding known to occur within area
Sternula albifrons as Sterna albifrons Little Tern [82849]		Breeding known to occur within area
Sternula nereis as Sterna nereis Fairy Tern [82949]		Breeding known to occur within area
Sula dactylatra Masked Booby [1021]		Breeding known to occur within area
Sula leucogaster Brown Booby [1022]		Breeding known 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
Thalasseus bengalensis as Sterna bengalensis		
Lesser Crested Tern [66546]		Breeding known to occur within area
Thalasseus bergii as Sterna bergii		
Greater Crested Tern [83000]		Breeding known to occur within area
Tringa nebularia		
Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area overfly marine area
Fish		
Acentronura larsonae		
Helen's Pygmy Pipehorse [66186]		Species or species habitat may occur within area
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
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

Scientific Name	Threatened Category	Presence Text
Corythoichthys amplexus Fijian Banded Pipefish, Brown-banded Pipefish [66199]		Species or species habitat may occur within area
Corythoichthys flavofasciatus Reticulate Pipefish, Yellow-banded Pipefish, Network 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
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

Scientific Name	Threatened Category	Presence Text
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 taeniophorus Ribboned Pipehorse, Ribboned Seadragon [66226]		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
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
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]		Breeding known to occur within area
Reptile		
Aipysurus apraefrontalis Short-nosed Sea Snake, Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat known 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 known 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 known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding known 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	Foraging, feeding or related behaviour known to occur within area

Scientific Name	Threatened Category	Presence Text
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 known 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 known 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 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

Current Scientific Name	Status	Type of Presence
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
Mesoplodon ginkgodens Gingko-toothed Beaked Whale, Gingko-toothed Whale, Gingko Beaked Whale [59564]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
Orcaella heinsohni Australian Snubfin Dolphin [81322]		Species or species habitat known 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]		Species or species habitat known 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 known 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
Gascoyne	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)
Gascoyne	Multiple Use Zone (IUCN VI)
Montebello	Multiple Use Zone (IUCN VI)
Mermaid Reef	National Park Zone (IUCN II)
Ningaloo	National Park Zone (IUCN II)
Ningaloo	Recreational Use Zone (IUCN IV)
Ningaloo	Recreational Use Zone (IUCN IV)
Argo-Rowley Terrace	Special Purpose Zone (Trawl) (IUCN VI)

Habitat Critical to the Survival of Marine Turtles [Resource Information]

Scientific Name	Behaviour	Presence
Aug - Sep		
Natator depressus		
Flatback Turtle [59257]	Nesting	Known to occur
Dec - Jan		

Scientific Name	Behaviour	Presence
Chelonia mydas Green Turtle [1765]	Nesting	Known to occur
Nov-Feb		
Caretta caretta Loggerhead Turtle [1763]	Nesting	Known to occur
Nov - May		
Eretmochelys imbricata Hawksbill Turtle [1766]	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
Cape Range	National Park	WA
Cape Range (South)	National Park	WA
Great Sandy Island	Nature Reserve	WA
Jurabi Coastal Park	5(1)(h) Reserve	WA
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

Protected Area Name	Reserve Type	State
Muiron Islands	Marine Management Area	WA
Ningaloo	Marine Park	WA
North Sandy Island	Nature Reserve	WA
Nyingguulu (Ningaloo) Coastal Reserve	5(1)(h) Reserve	WA
Round Island	Nature Reserve	WA
Rowley Shoals	Marine Park	WA
Serrurier Island	Nature Reserve	WA
Thevenard Island	Nature Reserve	WA
Unnamed WA40322	5(1)(h) Reserve	WA
Unnamed WA40828	5(1)(h) Reserve	WA
Unnamed WA41080	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

Nationally Important Wetlands	[Resource Information]
Wetland Name	State
Cape Range Subterranean Waterways	WA
Mermaid Reef	EXT

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
Gorgon Gas Development	2003/1294		Post-Approval
Ningaloo Lighthouse Development, 17km north west Exmouth, Western Australia	2020/8693		Post-Approval
Project Highclere Cable Lay and Operation	2022/09203		Completed

Action clearly unacceptable

Title of referral	Reference	Referral Outcome	Assessment Status
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
Construct and operate LNG & domestic gas plant including onshore and offshore facilities - Wheatston	2008/4469	Controlled Action	Post-Approval
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
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

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
Pluto Gas Project	2005/2258	Controlled Action	Completed
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
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 Mutineer and Exeter petroleum fields for oil production, Permit	2003/1033	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
Infill Production Well (Griffin-9)	2001/417	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
Jansz-2 and 3 Appraisal Wells	2002/754	Not Controlled Action	Completed
Klammer 2D Seismic Survey	2002/868	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
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
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

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
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 Manner)	Post-Approval
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

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
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 Seismic Survey in the Carnarvon Bsin on the North West Shelf	2002/778	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	2008/4565	Not Controlled Action (Particular Manner)	Post-Approval
Acheron Non-Exclusive 2D Seismic Survey	2009/4968	Not Controlled Action (Particular Manner)	Post-Approval
Apache Northwest Shelf Van Gogh Field Appraisal Drilling Program	2007/3495	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
Artemis-1 Drilling Program (WA-360-P)	2010/5432	Not Controlled Action (Particular Manner)	Post-Approval
Babylon 3D Marine Seismic Survey, Commonwealth Waters, nr Exmouth WA	2013/7081	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 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

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
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
DAVROS MC 3D marine seismic survey northwaet of Dampier, WA	2013/7092	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
Deep Water Northwest Shelf 2D Seismic Survey	2007/3260	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
Effect of marine seismic sounds to demersal fish and pearl oysters, north-west WA	2018/8169	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
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 Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular 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
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	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
Julimar Brunello Gas Development Project	2011/5936	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
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 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 Manner)	Post-Approval
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

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
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
Pomodoro 3D Marine Seismic Survey in WA-426-P and WA-427-P	2010/5472	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	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
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
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

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
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
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	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Wheatstone Iago Appraisal Well Drilling	2007/3941	Not Controlled Action (Particular Manner)	Post-Approval
Wheatstone Iago Appraisal Well Drilling	2008/4134	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
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

Name	Region
Continental Slope Demersal Fish Communities	North-west
Exmouth Plateau	North-west
Glomar Shoals	North-west
Mermaid Reef and Commonwealth waters surrounding Rowley Shoals	North-west

Biologically Important Areas		[Resource Information]
Scientific Name	Behaviour	Presence
Dugong		
Dugong dugon Dugong [28]	Breeding	Known to occur
Dugong dugon Dugong [28]	Calving	Known to occur
Dugong dugon Dugong [28]	Foraging (high density seagrass beds)	Known to occur
Dugong dugon Dugong [28]	Nursing	Known to occur
Marine Turtles		
Caretta caretta Loggerhead Turtle [1763]	Foraging	Known to occur
Caretta caretta Loggerhead Turtle [1763]	Internesting buffer	Known to occur
Caretta caretta Loggerhead Turtle [1763]	Nesting	Known to occur
Chelonia mydas Green Turtle [1765]	Aggregation	Known to occur
Chelonia mydas Green Turtle [1765]	Basking	Known to occur
Chelonia mydas Green Turtle [1765]	Foraging	Known to occur

Scientific Name	Behaviour	Presence
Chelonia mydas Green Turtle [1765]	Internesting	Known to occur
Chelonia mydas Green Turtle [1765]	Internesting buffer	Known to occur
Chelonia mydas Green Turtle [1765]	Mating	Known to occur
Chelonia mydas Green Turtle [1765]	Nesting	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Foraging	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Internesting	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Internesting buffer	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Mating	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Nesting	Known to occur
Natator depressus Flatback Turtle [59257]	Aggregation	Known to occur
Natator depressus Flatback Turtle [59257]	Foraging	Known to occur
Natator depressus Flatback Turtle [59257]	Internesting	Known to occur
Natator depressus Flatback Turtle [59257]	Internesting buffer	Known to occur
Natator depressus Flatback Turtle [59257]	Mating	Known to occur

Scientific Name	Behaviour	Presence
Natator depressus Flatback Turtle [59257]	Nesting	Known to occur
Seabirds		
Ardenna pacifica Wedge-tailed Shearwater [84292]	Breeding	Known to occur
Fregata ariel Lesser Frigatebird [1012]	Breeding	Known to occur
Phaethon lepturus White-tailed Tropicbird [1014]	Breeding	Known to occur
Sterna dougallii Roseate Tern [817]	Breeding	Known to occur
Sternula albifrons sinensis Little Tern [82850]	Resting	Known to occur
Sternula nereis Fairy Tern [82949]	Breeding	Known to occur
Sula leucogaster Brown Booby [1022]	Breeding	Known to occur
Thalasseus bengalensis Lesser Crested Tern [66546]	Breeding	Known to occur
Sharks		
Rhincodon typus Whale Shark [66680]	Foraging	Known to occur
Rhincodon typus Whale Shark [66680]	Foraging (high density prey)	Known to occur
Whales		
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Foraging	Known to occur
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Migration	Known to occur

Scientific Name	Behaviour	Presence
Megaptera novaeangliae Humpback Whale [38]	Migration (north and south)	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 - Operational Areas

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: 03-Feb-2025

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:	1
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	23
Listed Migratory Species:	36

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:	60
Whales and Other Cetaceans:	23
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
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:	35
Key Ecological Features (Marine):	2
Biologically Important Areas:	5
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)

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
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
Phaethon rubricauda westralis Red-tailed Tropicbird (Indian Ocean), Indian Ocean Red-tailed Tropicbird [91824]	Endangered	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
[Sternula nereis nereis](#) Australian Fairy Tern [82950]	Vulnerable	Species or species habitat may 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
REPTILE		
[Aipysurus apraefrontalis](#) Short-nosed Sea Snake, Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat known 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	Species or species habitat likely to occur within area
[Chelonia mydas](#) Green Turtle [1765]	Vulnerable	Species or species habitat likely to 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	Species or species habitat likely to occur within area
[Natator depressus](#) Flatback Turtle [59257]	Vulnerable	Congregation or aggregation known to occur within area
SHARK		

Scientific Name	Threatened Category	Presence Text
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 pristis		
Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat may occur within area
Pristis zijsron		
Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Species or species habitat known to occur within area
Rhincodon typus		
Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour known 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
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

Scientific Name	Threatened Category	Presence Text
[Phaethon lepturus](#) White-tailed Tropicbird [1014]		Species or species habitat likely to occur within area
Migratory Marine Species		
[Anoxypristis cuspidata](#) Narrow Sawfish, Knifetooth Sawfish [68448]		Species or species habitat known 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 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
[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	Species or species habitat likely to occur within area
[Chelonia mydas](#) Green Turtle [1765]	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
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	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
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	Congregation or aggregation known 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		
Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat may occur within area
Pristis zijsron		
Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Species or species habitat known to occur within area
Rhincodon typus		
Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Tursiops aduncus (Arafura/Timor Sea populations)		
Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat may 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

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 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

Scientific Name	Threatened Category	Presence Text
[Numenius madagascariensis](#) Eastern Curlew, Far Eastern Curlew [847]	Critically 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
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 flavofasciatus](#) Reticulate Pipefish, Yellow-banded Pipefish, Network 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

Scientific Name	Threatened Category	Presence Text
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 spinirostris Spiny-snout Pipefish [66225]		Species or species habitat may occur within area
Haliichthys taeniophorus Ribboned Pipehorse, Ribboned Seadragon [66226]		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

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
Reptile		
Aipysurus apraefrontalis Short-nosed Sea Snake, Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat known 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

Scientific Name	Threatened Category	Presence Text
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	Species or species habitat likely to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat 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	Species or species habitat 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

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
Natator depressus		
Flatback Turtle [59257]	Vulnerable	Congregation or aggregation known to 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 likely to occur within area
Balaenoptera musculus		
Blue Whale [36]	Endangered	Migration route known to occur within area

Current Scientific Name	Status	Type of Presence
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]		Breeding known 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

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 may occur within area
Tursiops aduncus (Arafura/Timor Sea populations) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat may 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

Habitat Critical to the Survival of Marine Turtles		[Resource Information]
Scientific Name	Behaviour	Presence
Aug - Sep		
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
Project Highclere Cable Lay and Operation	2022/09203		Completed
Controlled action			
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
Equus Gas Fields Development Project, Carnarvon Basin	2012/6301	Controlled Action	Completed
Not controlled action			
'Goodwyn A' Low Pressure Train Project	2003/914	Not Controlled Action	Completed
Development of Mutineer and Exeter petroleum fields for oil production, Permit	2003/1033	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
Western Flank Gas Development	2005/2464	Not Controlled Action	Completed
Not controlled action (particular manner)			

Title of referral	Reference	Referral Outcome	Assessment Status
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
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 sesmic survey	2006/2781	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
DAVROS MC 3D marine seismic survey northwaet of Dampier, WA	2013/7092	Not Controlled Action (Particular Manner)	Post-Approval
Decommissioning of the Legendre facilities	2010/5681	Not Controlled Action (Particular Manner)	Post-Approval
Deep Water Northwest Shelf 2D Seismic Survey	2007/3260	Not Controlled Action (Particular Manner)	Post-Approval
Demeter 3D Seismic Survey, off Dampier, WA	2002/900	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
Greater Western Flank Phase 1 gas Development	2011/5980	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	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Judo Marine 3D Seismic Survey within and adjacent to WA-412-P	2009/4801	Not Controlled Action (Particular Manner)	Post-Approval
Offshore Drilling Campaign	2011/5830	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
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
Glomar Shoals	North-west

Biologically Important Areas [Resource Information]

Scientific Name	Behaviour	Presence
Marine Turtles		

Scientific Name	Behaviour	Presence
[Natator depressus](#) Flatback Turtle [59257]	Internesting buffer	Known to occur
Seabirds		
[Ardenna pacifica](#) Wedge-tailed Shearwater [84292]	Breeding	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 (north and south)	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

APPENDIX F STAKEHOLDER CONSULTATION

Appendix F: North West Shelf Phase 1 Plug and Abandonment and TPA03 Well Intervention Environment Plan

February 2025

Revision 0

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Table of Contents

1. CONSULTATION APPROACH

Consultation under regulation 25 of the OPGGS(E) Regulations provides that 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 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 North West Shelf Phase 1 Well Plug and Abandonment and TPA03 Well Intervention Environment Plan (EP), Woodside has taken a broad and proactive tiered consultation approach over a period of four months.

This approach was aimed at raising public awareness of the consultation opportunity and to enable self-identification. It included a social media campaign and advertising in national, state, regional and Indigenous newspapers.

The tiered 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 related to this EP.

1.1 Tiered consultation approach

Regulation 25	Woodside's consultation approach assessed and identified relevant persons, enabled two-way dialogue and engagement, and included email and phone call follow up. The approach taken comfortably satisfies the requirements of regulation 25: to give relevant persons sufficient information and allow a reasonable period of time for consultation (see Section 5 in the EP).
Proactive	To raise awareness of the consultation process, and to enable grass-roots consultation, Woodside undertook advertised regional consultation roadshows and facilitated consultation at regional community events.
Self-Identification	Broad communication activities were undertaken to build awareness of consultation and enable self-identification, supported by targeted education materials.
Broad Understanding	Broad proactive communication activities were undertaken with the public to raise awareness of Woodside's activities.

1.2 Building on the existing consultation approach

For this EP, Woodside has built on its consultation methodology and undertaken additional consultation activities throughout the consultation period to ensure a reasonable period of time and sufficient information has been provided to relevant persons so that they can make an informed assessment of the possible consequences of the activity on their functions, interests or activities.

The approach for this included:

- a consultation period of up to four months.
- undertaking proactive consultation activities to provide sufficient information to relevant persons.

- raising awareness of the consultation process and opportunity to provide feedback.
- driving participation in the consultation process.

An overview of this approach is shown below:

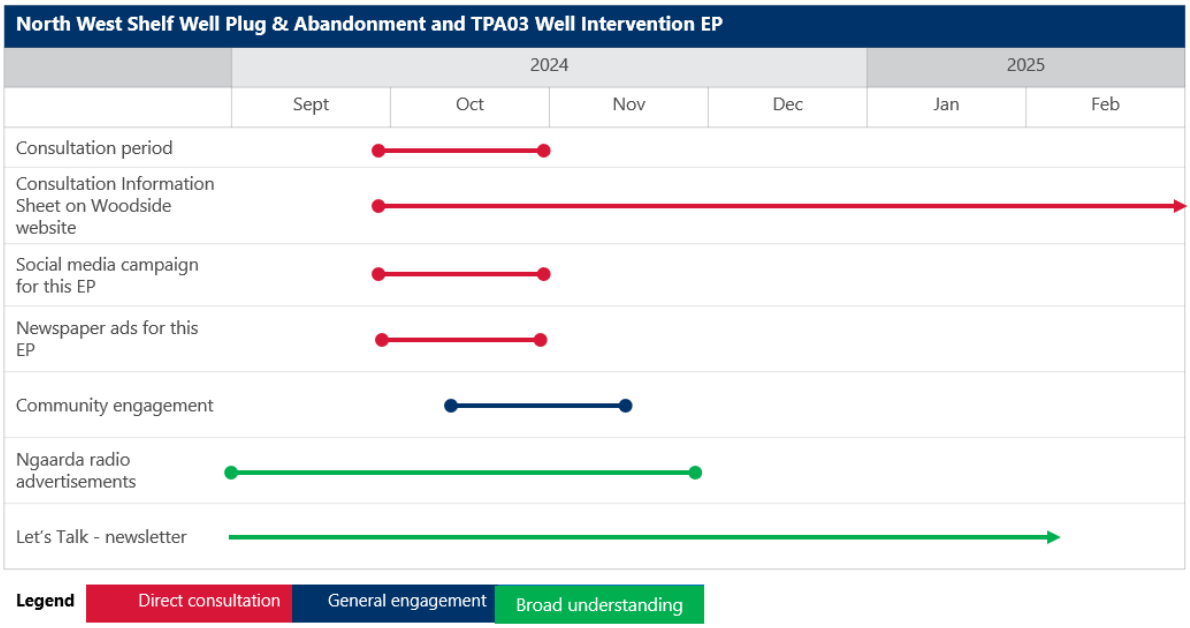


Figure 1-1: North West Shelf Phase 1 Plug and Abandonment and TPA03 Well Intervention Environment Plan consultation activity

1.3 Traditional custodian consultation approach

Woodside has meaningful long-term relationships with relevant Traditional Owners 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 North West Shelf Phase 1 Well Plug and Abandonment and TPA03 Well Intervention 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.

Since early 2024, where requested, Woodside has been working with nominated representative bodies to develop Consultation Framework Agreements which seek input from groups to outline their preferred method of consultation.

1.4 NGO consultation approach

Woodside has an established history of consulting with environmental non-government organisations (NGOs) as part of its EP consultation. In its methodology (Section 5.3.4, Table 5-2), 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)
- directly consulted NGOs
- participated in regional community events (which were advertised) in the Pilbara and Gascoyne which could be attended by any NGOs including local groups**.**

1.5 NGO response

Woodside consulted with nine NGOs for the North West Shelf Phase 1 Well Plug and Abandonment and TPA03 Well Intervention EP. One NGO, The Wilderness Society (TWS), responded within the four-week consultation period. Table 2 summarises the consultation that occurred between Woodside and TWS with a summary provided of TWS' feedback, objections or claims and Woodside's assessment and response to these.

No other responses were received from NGOs during consultation for the North West Shelf Phase 1 Well Plug and Abandonment and TPA03 Well Intervention EP.

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 5.3.4 in 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 in the EP), assessment of relevant persons is informed by the environment that may be affected (EMBA), shown in Figure 2-1.

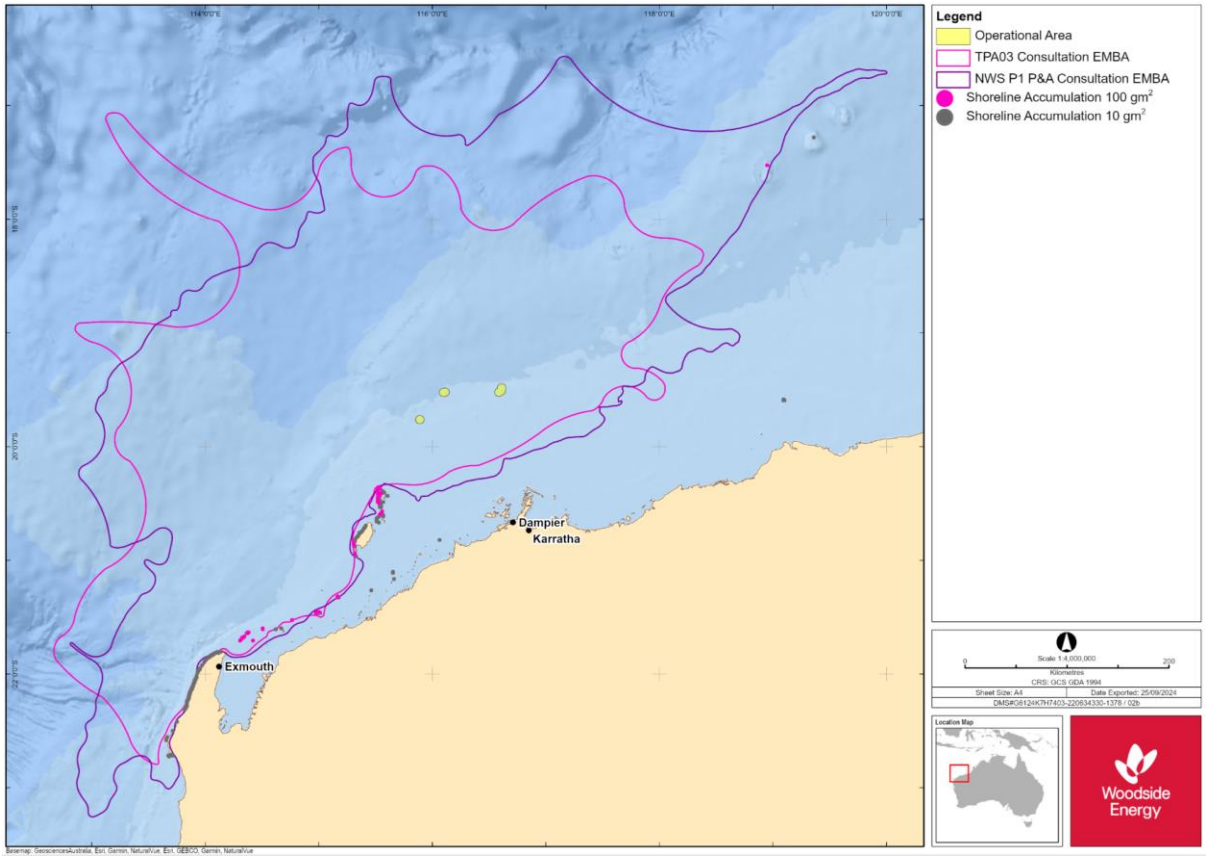


Figure 2-1: Operational Areas and EMBA for this EP

2.2 Table 1: Assessment of relevance

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 maybe 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. The North West Slope Trawl Fishery and Western Deepwater Trawl 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
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

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
Australian Maritime Safety Authority (AMSA) – Marine 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 – Marine 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. The North West Slope Trawl Fishery and Western Deepwater Trawl Fishery are active in the EMBA. DAFF – Fisheries responsibilities may be relevant to the activity as the North West Slope Trawl Fishery and Western Deepwater Trawl 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. There is known Maritime Cultural Heritage overlapping the EMBA.	Yes
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, Pilbara Trawl Managed Fishery, Pilbara Trap Managed Fishery and Pilbara Line Fishery are active in the Operational Area. The West Australian Sea Cucumber Managed Fishery, Exmouth Gulf Managed Fishery, Gascoyne Demersal Scalefish Managed Fishery, Mackerel Managed Fishery,	Yes

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
		Marine Aquarium Fish Managed Fishery, Nickol Bay Prawn Managed Fishery, Northern Demersal Scalefish Managed Fishery, Onslow Prawn Managed Fishery, Pilbara Crab Managed Fishery, Pilbara Trawl Managed Fishery, Pilbara Trap Managed Fishery, Pilbara Line Fishery, Specimen Shell Managed Fishery, West Coast Deep Sea Crustacean Managed Fishery have been active in the EMBA within the last 5 years. DPIRD's responsibilities may be relevant to the activity as the government department responsible for State fisheries.	
Department of Transport (DoT)	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 DoT response in State waters.	Yes
Pilbara Ports Authority (PPA)	PPA encompasses the Ports of Ashburton, Dampier, Port Hedland and Varanus Island.	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 Authority's responsibilities as the EMBA overlaps the Pilbara Ports Authority's area of responsibility.	Yes
Commonwealth and WA State Government Departments or Agencies – Environment			
Department of Agriculture, Fisheries and Forestry (DAFF) – Biosecurity (marine pests, vessels, aircraft and personnel)	DAFF administers, implements and enforces the Biosecurity Act 2015. The Department 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	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

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
	regulations and that any biosecurity risk is managed. The Dept requests to be consulted where an activity involves the movement of aircraft or vessels between Australia and 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
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. DNP's responsibilities may be relevant to the activity as DNP requires an awareness of activities that occur within	Yes

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
		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 Energy, Mines, Industry Regulation and Safety (DEMIRS)	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 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 Southern Bluefin Tuna Fishery has been assessed as not relevant to the proposed activity. As the peak representative body for the Southern Bluefin Tuna Fishery, the ASBTIA has also been assessed as not relevant.	No
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.	Yes

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
		The North West Slope Trawl Fishery and Western Deepwater Trawl Fishery are active in the EMBA. CFA's functions may be relevant to the activity as the North West Slope Trawl Fishery and Western Deepwater Trawl Fishery are active in 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 last 5 years.	Yes
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
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 last 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	No

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
		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).	
Tuna Australia	Represents the interests of the Western Tuna and Billfish 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 has been assessed as not relevant to the proposed activity. As the peak representative body for the Western Tuna and Billfish Fishery, Tuna Australia has also been assessed as not relevant.	No
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 EMBA and has been active in the EMBA within the last 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 last 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	No

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
		distribution fishing methods for species fished by licence holders.	
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 and EMBA, it has not been active in the Operational Area or EMBA within the last 5 years.	No
State commercial fisheries and peak representative bodies			
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, Pilbara Trawl Managed Fishery, Pilbara Trap Managed Fishery and Pilbara Line Fishery have been active in the Operational Area within the last 5 years. The West Australian Sea Cucumber Managed Fishery, Exmouth Gulf Managed Fishery, Gascoyne Demersal Scalefish Managed Fishery, Mackerel Managed Fishery, Marine Aquarium Fish Managed Fishery, Nickol Bay Prawn Managed Fishery, Northern Demersal Scalefish Managed Fishery, Onslow Prawn Managed Fishery, Pilbara Crab Managed Fishery, Pilbara Trawl Managed Fishery, Pilbara Trap Managed Fishery, Pilbara Line Fishery, Specimen Shell Managed Fishery, West Coast Deep Sea Crustacean Managed Fishery have been active in the EMBA within the last 5 years. Under an agreement WAFIC issued consultation materials to relevant commercial fisheries licence holders. As per WAFIC's Commercial Fishing Consultation Framework for the Offshore Oil and Gas Sector and	Yes

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
		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.	
Aquaculture Council of Western Australia	Peak body for the state'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 are active within the EMBA. 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.	Yes
Abalone 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, the fishery has not been active in the Operational Area or EMBA in the last 5 years.	No
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 last 5 years. 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.	No

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
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 last 5 years. 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.	No
Kimberley 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. Although the fishery overlaps the EMBA, the fishery has not been active in the EMBA within the last 5 years. 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.	No
Mackerel Managed Fishery (Area 2 and Area 3)	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 (Area 2 and 3) and has been active in the EMBA (Area 2) within the last 5 years.	Yes

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
		Woodside acknowledges WAFIC's consultation guidance and has applied this by consulting fisheries that are assessed as having a potential for interaction in the Operational Area via WAFIC. 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.	
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. Although the fishery overlaps the Operational Area, it has not been active in the Operational Area within the last 5 years. The fishery overlaps the EMBA and has been active in the EMBA within the last 5 years. Woodside acknowledges WAFIC's consultation guidance and has applied this by consulting fisheries that are assessed as having a potential for interaction in the Operational Area via WAFIC. 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.	No
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.	No

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
		The fishery does not overlap the Operational Area. The fishery overlaps the EMBA and has been active in the EMBA within the last 5 years. 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.	
Northern 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 last 5 years. 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.	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. Although the fishery overlaps the Operational Area, it has not been active in the Operational Area within the last 5 years. The fishery overlaps the EMBA and has been active in the EMBA within the last 5 years. 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	No

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
		activity would be undertaken only in the event of an unplanned emergency scenario.	
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. Although the fishery overlaps the Operational Area, it has not been active in the Operational Area within the last 5 years. The fishery overlaps the EMBA and has been active in the EMBA within the last 5 years. 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.	No
Demersal Scalefish Fishery: Pilbara Trawl 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 last 5 years. Woodside acknowledges WAFIC's consultation guidance and has applied this by consulting fisheries that are assessed as having a potential for interaction in the Operational Area via WAFIC. 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

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
Demersal Scalefish Fishery: Pilbara Trap 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 last 5 years. Woodside acknowledges WAFIC's consultation guidance and has applied this by consulting fisheries that are assessed as having a potential for interaction in the Operational Area via WAFIC. 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
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 last 5 years. Woodside acknowledges WAFIC's consultation guidance and has applied this by consulting fisheries that are assessed as having a potential for interaction in the Operational Area via WAFIC. 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

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
South West Coast Salmon 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, the fishery has not been active in the Operational Area or EMBA in the last 5 years. Woodside does not consider that the activity will present a risk to licence holders, given fishers are active south of Perth and from the beach (previous WAFIC advice). Further, no fishing occurs north of the Perth Metropolitan Area and therefore, no effort occurs within the Operational Area or EMBA.	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. Although the fishery overlaps the Operational Area, it has not been active in the Operational Area within the last 5 years. The fishery overlaps the EMBA and has been active in the EMBA within the last 5 years. 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.	No
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. Although the fishery overlaps the Operational Area, it has not been active in the Operational Area within the last 5	No

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
		years. The fishery overlaps the EMBA and has been active in the EMBA within the last 5 years. 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.	
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. Although the fishery overlaps the EMBA, the fishery has not been active in the EMBA within the last 5 years. 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.	No
Western Australian 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. Although the fishery overlaps the Operational Area, it has not been active in the Operational Area within the last 5 years. The fishery overlaps the EMBA and has been active in the EMBA within the last 5 years. 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	No

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
		activity would be undertaken only in the event of an unplanned emergency scenario.	
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 has been assessed as not relevant to the proposed activity. As the peak representative body for the West Coast Rock Lobster Managed Fishery, the Western Rock Lobster Council has also been assessed as not relevant.	No
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. 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, Cruise Ningaloo, Dampier Island Tourism, Dive Ningaloo, Evolution Fishing Charters, Exmouth adventure co., Exmouth Dive Centre, Indian Chief Charters, Innkeeper Sport Fishing, Innkeeper Sport Fishing Charter, Kings Ningaloo Reef Tours, Live Ningaloo, Mahi Mahi Fishing Charters, Montebello Island Safaris, Ningaloo Aviation, Ningaloo Blue, Ningaloo Coral Bay Boats, Ningaloo Discovery, Ningaloo Ecology Cruises, 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, Sail Ningaloo, Sea Force Charters, Set The Hook, Three Islands, Top Gun Charters, Ultimate Watersports,	Yes

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
		Venture Ningaloo, View Ningaloo, Warrior Princess Charters, Yardi Creek Boat Tours, Aoa International Pty Ltd, Austanley Pty Ltd, Blue Juice Tours Pty Ltd, Bondall Pty Ltd, C Emery Fishing Pty Ltd, Chapel Nominees Pty Ltd, D & N Nominees Pty Ltd, Eco-Abrolhos Pty Ltd, Fawesome Expeditions Pty Ltd, Fire Tiger Pty Ltd, G. C. Bass nominees pty ltd, Jostan Holdings Pty Ltd, Km Charters Pty Ltd, Kw Marine Pty Ltd, L & S Family Holdings Pty Ltd, Lulamanzi Investments Pty Ltd, Lyons Family Super Pty Ltd, Makalee Pty Ltd, Maritime Engineering Services Pty Ltd, Melkit Pty Ltd, Millennial Charters Pty Ltd, Monkey Mia Yacht Charters Pty Ltd, Monster Sportfishing Adventures Pty Ltd, North Star Cruises Australia Pty Ltd, On Strike Charters (Wa) Pty Ltd, Reel Force Charters Pty Ltd, Regalchoice Holdings Pty Ltd, Seafresh Holdings Pty Ltd, Sharkbay Charters Pty Ltd, Surefire Marine Services Pty Ltd, The Great Escape Charter Company Pty Ltd, W.A Maritime Investments Pty Ltd. Activities have the potential to impact Gascoyne-based dive, tourism and charter operator's 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.	Yes

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
		Marine Rescue Dampier, Port Walcott Volunteer Marine Rescue , West Pilbara Volunteer Sea Search and Rescue Group, Archipelago Adventures, Hampton Harbour Boat & Sailing Club, Port Walcott Yacht Club , Reef Seeker Charters, King Bay Game Fishing Club, Nickol Bay Sport Fishing Club, Bardina Pty Ltd, Down the Line Charters Pty Ltd, Mackerel Islands Pty Ltd, Ocean Charters Pty Ltd, Serenity Isles Trading Company Pty Ltd, Wyndham Fishing Tours Pty Ltd, Charter Travel Company Pty Ltd, Kw Marine Pty Ltd, Norbrick Pty Ltd, Sail Ningaloo Pty Ltd, Tiffom Pty Ltd, Aoa International Pty Ltd, Australian Port And Marine Services Pty Ltd, Bloor Street Investments Pty Ltd, Blue Juice Tours Pty Ltd, Bondall Pty Ltd, Brefjen Nominees Pty Ltd, Broome Chiropractic Pty Ltd, Broome Tours Pty Ltd, C Emery Fishing Pty Ltd, Chapel Nominees Pty Ltd, Charter Express Pty Ltd, CM Ventures Pty Ltd, Coastway Investments Pty Ltd, Coral Princess Cruises (Nq) Pty Ltd, Discovery Holiday Parks Pty Limited, Diversity Charter Company Wa Pty Ltd, Eco-Abrolhos Pty Ltd, Fawesome Expeditions Pty Ltd, G. C. Bass nominees 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, Kimberley Marine Pty Ltd, Kimberley Quest Adventures 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, Lugger Enterprises Pty Ltd, Lulamanzi Investments Pty Ltd, Mackerel Islands Pty Ltd, Mal Miles Adventures 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, RSTG Pty Limited, Sea 2 Pty Ltd, Sealife Charters Pty Ltd, Split Tide Pty Ltd, Steven Douglas Chambers, Super Yachts Perth Pty Ltd, The Great Escape	

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
		Charter Company Pty Ltd, W.A Maritime Investments Pty Ltd, Willie Creek Pearl Farm Pty Ltd. Activities have the potential to impact Pilbara/Kimberley-based dive, tourism and charter operator's 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. 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.	Yes
Titleholders and Operators			
Beagle No.1 / Longreach Capital Investment	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 areas overlaps 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 areas overlaps the EMBA.	Yes

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
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 areas overlaps 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 areas overlaps 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 areas overlaps 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 areas overlaps 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 areas overlaps the EMBA.	Yes
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 areas overlaps 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 areas overlaps the EMBA.	Yes

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
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 areas overlaps the EMBA.	Yes
Jadestone 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 areas overlaps the EMBA.	Yes
JERA 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 areas overlaps the EMBA.	Yes
JX Nippon O&G 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 areas overlaps 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 areas overlaps the EMBA.	Yes
KUFPEC 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 areas overlaps 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. Titleholder or Operator's permit areas overlaps the EMBA.	Yes

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
Midocean 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 areas overlaps the EMBA.	Yes
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. Titleholder or Operator's permit areas overlaps the EMBA and Operational Area.	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 areas overlaps the EMBA.	Yes
Osaka 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 areas overlaps 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 areas overlaps 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 areas overlaps the EMBA.	Yes
Santos NA Energy Holdings / Santos Ltd / Santos WA Northwest / Santos Offshore / Santos WA Southwest / Santos (BOL) / Santos WA PVG	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 areas overlaps the EMBA and Operational Area.	Yes

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
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 areas overlaps the EMBA.	Yes
Skye Napoleon	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 areas overlaps the EMBA.	Yes
Vermilion Oil & 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 areas overlaps 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 areas overlaps 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
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.	Yes

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
		BTAC is party to the Macedon Indigenous Land Use Agreement (ILUA), which is coastally adjacent to the EMBA.	
Gogolanyngor 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 Jabirr Jabirr/Ngumbarl native title claim does not overlap the EMBA. The claim is coastally adjacent to the EMBA, for which the Gogolanyngor Aboriginal Corporation is the Registered Native Title Body Corporate. The Bindunbur native title claim does not overlap the EMBA. The claim is coastally adjacent to the EMBA, for which the Gogolanyngor Aboriginal Corporation, Nimanburr Aboriginal Corporation and Nyul Nyul PBC Aboriginal Corporation are the Registered Native Title Body Corporates.	Yes
Karajarri Traditional Lands Association (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 Karajarri People (Area A) / Karajarri People (Area B) native title claim does not overlap the EMBA. The claim is coastally adjacent to the EMBA, for which the Karajarri Traditional Lands Association (Aboriginal Corporation) is the Registered Native Title Body Corporate. The Karajarri Traditional Lands Association (Aboriginal Corporation) is also party to the Great Sandy Desert Project ILUA – Infrastructure and Karajarri Traditional Lands Association KSCS Eighty Mile Beach ILUA, which are coastally adjacent to the EMBA.	Yes
Kariyarra 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 Kariyarra native title claim does not overlap the EMBA. The claim is coastally adjacent to the EMBA, for which the	Yes

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
		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.	
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), which is coastally adjacent to the EMBA. 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 is progressing the World Heritage nomination of the Murujuga Cultural Landscape.	Yes
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. NTGAC and YAC are the Registered Native Title Body Corporates holding native title on behalf of the Baiyungu, Thalanyji and Yinggarda people. The Thalanyji People native title claim is also coastally adjacent to the EMBA, which the NTGAC and YAC are the	Yes

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
		Registered Native Title Body Corporates holding native title on behalf of the Baiyungu, Thalanyji and Yinggarda people. NTGAC is also party, with the WA State Government, to the Ningaloo Conservation Estate ILUA, which overlaps and is coastally adjacent to the EMBA. 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. 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 NTGAC, via YMAC.	
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 does not overlap the EMBA. The claim is coastally adjacent to the EMBA, for which NAC and the Yindjibarndi Aboriginal Corporation are the Registered Native Title Body Corporates. NAC is also party to the Anketell Port, Infrastructure Corridor and Industrial Estates Agreement and RTIO Ngarluma ILUA (Body Corporate Agreement), which are coastally adjacent to the EMBA.	Yes
Nimanburr 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

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
		The Bindunbur native title claim does not overlap the EMBA. The claim is coastally adjacent to the EMBA, for which the Gogolanyngor Aboriginal Corporation, Nimanburr Aboriginal Corporation and Nyul Nyul PBC Aboriginal Corporation are the Registered Native Title Body Corporates.	
Nyangumarta Karajarri 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-Karajarri Overlap Proceeding (Yawinya) native title claim does not overlap the EMBA. The claim is coastally adjacent to the EMBA, for which the Nyangumarta Karajarri Aboriginal Corporation is the Registered Native Title Body Corporate. The Nyangumarta Karajarri Aboriginal Corporation is also party to the NKAC KSCS Eighty Mile Beach ILUA, Nyangumarta Karajarri and Anna Plains Station ILUA and Nyangumarta Karajarri and Mandora Station ILUA, which are coastally adjacent to the EMBA.	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, Nyangumarta Warrarn Aboriginal Corporation & Mandora Pastoral Lease ILUA, and Nyangumarta Warrarn Aboriginal Corporation & Wallal Downs Pastoral Lease ILUA, which are coastally adjacent to the EMBA.	Yes
Nyul Nyul PBC Aboriginal Corporation	Representative Aboriginal Corporation	Woodside has applied its methodology for 'Traditional Custodians and Nominated Representative Corporations'	Yes

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
		under regulation 25(1)(d) of the Environment Regulations. The Bindunbur native title claim does not overlap the EMBA. The claim is coastally adjacent to the EMBA, for which the Gogolanyngor Aboriginal Corporation, Nimanburr Aboriginal Corporation and Nyul Nyul PBC Aboriginal Corporation are the Registered Native Title Body Corporates.	
Robe River Kuruma Aboriginal Corporation (RRKAC)	Representative Aboriginal Corporation	Woodside has applied its methodology for 'Traditional Custodians and Nominated Representative Corporations' under regulation 25(1)(d) of the Environment Regulations. RRKAC is party to the KM & YM Indigenous Land Use Agreement 2018, which overlaps and is coastally adjacent to the EMBA; and is also party to the 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. The Ngarla and Ngarla #2 (Determination Area A) native title determination, for which the Wanparta Aboriginal Corporation is the Registered Native Title Body Corporate overlaps the EMBA. The Ngarla Overlap Proceeding and Ngarla People (Mount Goldsworthy Lease Proceeding) native title claims do 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 and Ngarla PBC KSCS ILUA, which are coastally adjacent to the EMBA.	Yes
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.	Yes

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
		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 Kuruma Marthudunera and Yaburara and Coastal Mardudhunera Indigenous Land Use and KM & YM Indigenous Land Use Agreement 2018 Agreement which overlaps the EMBA; and is party to the Cape Preston Project Deed (YM Mardie ILUA), Cape Preston West Export Facility and Kuruma Marthudunera and Yaburara and Coastal Mardudhunera Indigenous Land Use Agreement is coastally adjacent to the EMBA.	
Yawuru Native Title Holders 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 Rubibi Community native title claim does not overlap the EMBA. The claim is coastally adjacent to the EMBA, for which the Yawuru Native Title Holders Aboriginal Corporation is the Registered Native Title Body Corporate. The Yawuru Native Title Holders Aboriginal Corporation is also party to the Eco Beach ILUA, Yawuru Nagulagun / Roebuck Bay Marine Park ILUA and Yawuru Prescribed Body Corporate ILUA - Broome, which are coastally adjacent to the EMBA.	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 does not overlap the EMBA. The claim is coastally adjacent to the EMBA, for which NAC and the Yindjibarndi Aboriginal Corporation are the Registered Native Title Body Corporates.	Yes
Yinggarda Aboriginal Corporation (YAC)	Representative Aboriginal Corporation	Woodside has applied its methodology for 'Traditional Custodians and Nominated Representative Corporations'	Yes

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
		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 Registered Native Title Body Corporates holding native title on behalf of the Baiyungu, Thalanyji and Yinggarda people. The Thalanyji People native title claim does not overlap the EMBA. The claim is coastally adjacent to the EMBA, which the NTGAC and YAC are the Registered Native Title Body Corporates holding native title on behalf of the Baiyungu, Thalanyji and Yinggarda people. The Yinggarda Aboriginal Corporations nominated representative is Gumala Aboriginal Corporation.	
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. KLC is party to the Yawuru Area Agreement ILUA, which is coastally adjacent to the EMBA.	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,	Yes

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
		they are not a Prescribed or Registered Native Title Body Corporate but exist to assist native title claimants and holders. The NTGAC nominated representative is YMAC. Woodside has therefore consulted the NTGAC, 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. YMAC is party to the KM & YM Indigenous Land Use Agreement 2018, which is coastally adjacent to the EMBA. YMAC is the native title representative Aboriginal body for the Cape Range National Park and has a number of functions prescribed under the Native Title Act. YMAC also has an association with the Muiron Islands Marine Management Area and Ningaloo Marine Park.	
Self-identified First Nations 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). 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	Yes

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
		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 First Nations Groups			
Save Our Songlines (SoS) and/or [Individual 2]	Representatives of Non-Government Organisation Save Our Songlines and/or [Individual 2]	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 2] relevance for the proposed activity. Save Our Songlines and/or [Individual 2] 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. As Save Our Songlines have raised concerns relating to the processing of greenhouse gases on Murujuga, Woodside considers that Save Our Songlines and/or [Individual 2] are relevant for this activity.	Yes
Historical heritage groups or organisations			
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 is known shipwrecks overlapping the EMBA which the Western Australian Museum may be responsible for.	Yes
Local government and elected Parliamentary representatives, community groups or organisations			
Broome Chamber of Commerce and Industry (CCI)	Independent not-for-profit organisation responsible for promoting the interests of its members in the business	Woodside has applied its methodology for 'Local government and community representative groups or	Yes

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
	community in the town of Broome and surrounding areas.	organisations' under regulation 25(1)(d) of the Environment Regulations. The Broome Chamber of Commerce and Industry's interests have the potential to be impacted by the proposed activities.	
Carnarvon 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 Carnarvon and surrounding areas.	Woodside has applied its methodology for 'Local government and community representative groups or organisations' under regulation 25(1)(d) of the Environment Regulations. The Carnarvon Chamber of Commerce and Industry's interests have the potential to be impacted by the proposed activities.	Yes
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 community representative 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 community representative 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

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
Port Hedland 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 Port Hedland and surrounding areas.	Woodside has applied its methodology for 'Local government and community representative groups or organisations' under regulation 25(1)(d) of the Environment Regulations. The Port Hedland 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 community representative 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, 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
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 community representative 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	Yes

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
		of Education, Pilbara Ports Authority, 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)*. *NFYL and MAC were consulted directly as described above. The Exmouth CLG's area of responsibility under its terms of reference overlaps the EMBA.	
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 community representative 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 community representative 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 Broome	Local government governed by the Local Government Act 1995 representing the suburbs and localities of Mile, Bilingurr, Broome, Cable Beach, Cape Leveque, Coconut Well, Djugun, Lombadina, Minyirr, Morell Park, Skuthorpe	Woodside has applied its methodology for 'Local government and community representative groups or organisations' under regulation 25(1)(d) of the Environment Regulations. The Shire of Broome's area of responsibility overlaps the EMBA.	Yes

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
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 community representative groups or organisations' under regulation 25(1)(d) of the Environment Regulations. The Shire of Carnarvon's area of responsibility overlaps the EMBA.	Yes
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 community representative groups or organisations' under regulation 25(1)(d) of the Environment Regulations. The Shire of Exmouth's area of responsibility overlaps the EMBA.	Yes
Town of Port Hedland	Local government governed by the Local Government Act 1995 representing the suburbs of South Hedland and Port Hedland and the industrial precinct of Wedgefield.	Woodside has applied its methodology for 'Local government and community representative groups or organisations' under regulation 25(1)(d) of the Environment Regulations. The Town of Port Hedland's area of responsibility does not overlap the EMBA. Woodside, at its discretion, chose to assess the Town of Port Hedland as a relevant person under Regulation 25(1)(d).	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 (insert name)'s relevance for the proposed activity. Woodside has assessed that Australian Conservation Foundation does not have a publicly available statement (or purpose), website or social media material that demonstrates its functions, interests or activities are	No

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
		relevant to the potential risks and impacts associated with planned activities in accordance with the intended outcome of consultation (as set out in Section 5.3.4). Woodside chose to contact Australian Conservation Foundation at its discretion in line with Section 5.3.7.	
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 Australian Marine Conservation Society's relevance for the proposed activity. Woodside has assessed that Australian Marine Conservation Society does not have a publicly available statement (or purpose), website or social media material that demonstrates its functions, interests or activities are relevant to the potential risks and impacts associated with planned activities in accordance with the intended outcome of consultation (as set out in Section 5.3.4). Woodside chose to contact AMCS at its discretion in line with Section 5.3.7.	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 Conservation Council of Western Australia's relevance for the proposed activity. Woodside has assessed that CCWA does not have a publicly available statement (or purpose), website or social media material that demonstrates its functions, interests or activities are relevant to the potential risks and impacts associated with planned activities in accordance with the intended outcome of consultation (as set out in Section 5.3.4). Woodside chose to contact CCWA at its discretion in line with Section 5.3.7.	No

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
Greenpeace Australia Pacific (GAP)	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 Greenpeace Australia Pacific's relevance for the proposed activity. Woodside has assessed that Greenpeace Australia Pacific does not have a publicly available statement (or purpose), website or social media material that demonstrates its functions, interests or activities are relevant to the potential risks and impacts associated with planned activities in accordance with the intended outcome of consultation (as set out in Section 5.3.4). Woodside chose to contact Greenpeace at its discretion in line with Section 5.3.7.	No
Australasian Centre for Corporate Responsibility (ACCR)	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 Australasian Centre for Corporate Responsibility's relevance for the proposed activity. Woodside has assessed that Australasian Centre for Corporate Responsibility does not have a publicly available statement (or purpose), website or social media material that demonstrates its functions, interests or activities are relevant to the potential risks and impacts associated with planned activities in accordance with the intended outcome of consultation (as set out in Section 5.3.4). Woodside chose to contact ACCR at its discretion in line with Section 5.3.7.	No
Market Forces	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 Market Forces relevance for the proposed activity.	No

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
		Woodside has assessed that Market Forces does not have a publicly available statement (or purpose), website or social media material that demonstrates its functions, interests or activities are relevant to the potential risks and impacts associated with planned activities in accordance with the intended outcome of consultation (as set out in Section 5.3.4). Woodside chose to contact Market Forces at its discretion in line with Section 5.3.7.	
Friends of the Earth Australia	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 Friends of the Earth's relevance for the proposed activity. Woodside has assessed that Friends of the Earth Australia has a publicly available statement (or purpose), website or social media material that demonstrates that its functions, interests or activities may be relevant to the potential risks and impacts associated with planned activities in accordance with the intended outcome of consultation (as set out in Section 5.3.4).	Yes
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 The Wilderness Society's relevance for the proposed activity. Woodside initially assessed that The Wilderness Society did not have a publicly available statement (or purpose), website or social media material that demonstrated its functions, interests or activities are relevant to the potential risks and impacts associated with planned activities in accordance with the intended outcome of consultation (as set out in Section 5.3.4).	Yes

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
		Woodside initially chose to contact The Wilderness Society at its discretion in line with Section 5.3.7. The Wilderness Society responded to Woodside demonstrating how its functions, interest and activities could be potentially impacted by the proposed activities under the EP and Woodside has assessed The Wilderness Society as relevant for this EP.	
Environs Kimberley	Non-government organisation	Woodside has applied its methodology for 'Other non-government groups or organisations' under regulation 25(1)(d) of the Environment Regulations. Woodside has assessed that Environs Kimberley's public website material demonstrates an interest in the potential risks and impacts associated with planned activities in accordance with the intended outcome of consultation (as set out in Section 5.2 of the EP).	Yes
Maritime Union of Australia (MUA)	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 Maritime Union of Australia's relevance for the proposed activity. Woodside has assessed that the Maritime Union of Australia does not have a publicly available statement (or purpose), website or social media material that demonstrates that its functions, interests or activities may be relevant to the potential risks and impacts associated with planned activities in accordance with the intended outcome of consultation (as set out in Section 5.3.4). Woodside chose to contact the MUA at its discretion in line with Section 5.3.7.	No
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.	Yes

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
		There are known Telstra communication cables that intersect within the Operational Area.	
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.	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.	Yes
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 is no known research being undertaken by the insert name 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 is no known research being undertaken by the 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

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
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. There is no known research being undertaken by the 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.	No
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 is no known research being undertaken by the 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 is no known research being undertaken by the 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 is no known research being undertaken by the 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.	Yes

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
		CCG's conservation activities have the potential to intersect with the EMBA as the EMBA overlaps North West Cape.	
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 with the EMBA as the EMBA overlaps North West Cape and Ningaloo Reef.	Yes

3. CONSULTATION ACTIVITIES

3.1 North West Shelf Phase 1 Plug and Abandonment and TPA03 Well Intervention Environment Plan EP consultation activities

Woodside has been conducting extensive consultation with relevant persons and other parties for this EP since September 2024 when consultation commenced with interested and affected stakeholders as part of a planned, integrated and consistent approach to stakeholder engagement for Woodside's proposed opportunities.

A broad consultation process has been undertaken with relevant persons for the North West Shelf Phase 1 Plug and Abandonment and TPA03 Well Intervention Environment Plan. 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

Woodside advertised the planned activities proposed for this EP in national, state and relevant local newspapers (see Record of Consultation, reference 6.4). Regional newspapers do not require subscription and are available directly to households. All communities within or adjacent to the EMBA had access to this information via this media.

No direct comments or feedback were received from the advertisements.

Newspaper	Coverage	Publication dates
The Australian	National	30 September 2024
The West Australian	Regional (WA)	30 September 2024
Pilbara News	Local (WA)	2 October 2024
North West Telegraph	Local (WA)	2 October 2024
Midwest Times	Local (WA)	1 October 2024
Broome Advertiser	Local (WA)	3 October 2024
Kimberley Echo	Local (WA)	3 October 2024
Koori Mail	Indigenous	2 October 2024
National Indigenous Times	Indigenous	24 September 2024

A Consultation Information Sheet was provided to relevant persons and persons Woodside chose to contact (see Section 5.3.4 in the EP), which included details such as an activity overview, maps, a summary of key risks and/or impacts and management measures (Record of Consultation, reference 6.1.1).

Since the commencement of the initial consultation period (September 2024), the Consultation Information Sheet has been available on Woodside's website and the updated Consultation Information Sheet since October 2024. The Woodside Consultation Information Sheets include a 1800 phone number and Woodside's feedback email address (consultation@feedback.woodside.com).

The Woodside Consultation Activities webpage (accessible on the Consultation Information Sheet via a QR code, banners at community events and via social media content and advertisements) includes Consultation Information Sheets for the EPs on which Woodside is currently consulting, including this EP. The website page also features a subscribe field for EP-focussed communications from Woodside.

Additional targeted information was provided to select relevant persons based on their roles and responsibilities such as a vessel density map (Record of Consultation, reference 6.1.5), GIS shape

files, shipwreck information (Record of Consultation, reference 6.1.6), a submarine communication cable map (Record of Consultation, reference 6.1.7) and a defence zone map (Record of Consultation, reference 6.1.4).

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 in 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 5.3.4 in the EP) or self-identified and Woodside assessed as not relevant are summarised at Appendix F, Table 3.

From September 2024, Woodside commenced a geotargeted sponsored social media campaign (Record of Consultation, reference 6.5) covering various local government authorities within, or coastally adjacent to, the EMBA for the proposed activities. The campaign brought the proposed activity to the attention of persons who may be interested and advised persons or organisations on how they can find out about Woodside's proposed activities by visiting Woodside's website.

Platform	Geotargeted Reach	Post Dates	Impact	Feedback
Meta - Facebook & Instagram	265,173	4 – 30 October 2024	Reach: 265,173 Frequency: 10.02 Impressions: 2,658,246 Clicks: 2,896 Click Through Rate%: 0.10%	• 31 comments • 0 comments relevant to EP • 75 likes • 17 sad • 7 shares

3.3 Proactive consultation

3.3.1 Community engagement

The Community Information Sessions or community events that Woodside has conducted or attended are outlined below and captured in more detail in (Record of Consultation, reference 6.6). Woodside published advertisements ahead of these sessions and events in relevant local newspapers and on social media to support attendance.

Date (2024)	Location	Event (if applicable)
12 October	Dampier	Dampier Beachside Markets
2 November	Dampier	Dampier Beachside Markets
14 November	Exmouth	Community Pop-up Exmouth Mall

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 region. Woodside regularly meets with the two CLGs to discuss a range of issues including consultation of specific EPs. For this EP, see 4.13.2 for consultation with Exmouth CLG and 4.13.3 for Karratha CLG.

3.3.3 Newsletters

Woodside's EP focussed newsletter *Let's Talk* is designed to reach existing and potential stakeholders and encourage self-identification about Woodside's EP-related activities. The newsletter provides quarterly 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 as well as across digital platforms including Woodside's website and social media channels. People can also subscribe to receive it on Woodside's website. (Record of Consultation, reference 6.7.4).

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 about EPs. (Record of Consultation, reference 6.7.3).

3.4 Traditional custodian specific consultation

In addition to the approaches 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 6.1.2 in 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, was provided to relevant Traditional Custodian groups (Record of Consultation, reference 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
- invitations to and/or attendance at community monthly luncheons for Traditional Custodians.

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 First Nations relations 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, 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, reference 6.1.1) and Summary Consultation Information Sheets (Record of Consultation, reference 6.1.2) are available at face-to-face consultation
- meeting costs such as sitting fees, travel, legal support and executive support and other support required
- advertising in Indigenous publications such as the National Indigenous Times (24 September 2024) and Koori Mail (2 October 2024) (Record of Consultation, reference 6.4.1.8 – 6.4.1.9)
- advertising on Ngaarda radio, the only licensed Aboriginal broadcaster in the Pilbara (26 August 2024 – 30 November 2024). (Record of Consultation, reference 6.5)

Newspaper	Coverage	Publication dates
Koori Mail	Indigenous	2 October 2024
National Indigenous Times	Indigenous	24 September 2024
Ngaarda Radio	National	26 August 2024 – 30 November 2024

Woodside also ran a geotargeted sponsored social media campaign (Record of Consultation, reference 6.6.1) 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 covered in the book 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, interests or activities 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.

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 stakeholder. The green numbering **(N)** in this section denotes Woodside's response to that item.

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 27 September 2024, 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 11 October 2024, Woodside emailed ABF an activity update regarding well location coordinates and included an updated Consultation Information Sheet (Record of Consultation, reference 6.2.1).
- On 22 October 2024, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.3.1).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
No feedback, objection or claim 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 7.7.1).	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:

- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since September 2024. Woodside gave this information to ABF on 27 September 2024, 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 PAP, 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 this 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 four months ago in September 2024.
- 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 9 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 1 targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- In line with NOPSEMA's guideline for engagement with Commonwealth government departments or agencies, Woodside used email for its consultation with ABF.
- In the absence of feedback, Woodside sent a follow-up consultation email on 22 October 2024, 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.

4.1.2 Australian Communications and Media Authority (ACMA)

Summary of information provided and record of consultation for this EP:

- On 27 September 2024, Woodside emailed ACMA advising of the proposed activity (Record of Consultation, reference 6.1.12), provided a Consultation Information Sheet, a map of the submarine communication cables and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.*
- On 11 October 2024, Woodside emailed ACMA an activity update regarding well location coordinates and included an updated Consultation Information Sheet (Record of Consultation, reference 6.2.1).
- On 17 October 2024, ACMA emailed to thank Woodside for the opportunity to comment (SI Report, reference 1.1) and:
  - **(1)** confirmed the Operational Area is not in the vicinity of existing ACMA protection zones.
  - **(2)** noted the Operational Area maybe in the vicinity of cables operated by Telstra and Vocus and recommended contacting them.
  - **(3)** recommended contacting AHO for navigational materials which can assist in identifying submarine cables in Australian waters. **(3)** Woodside has consulted with AHO on this EP. AHO has requested notification on any activities impacting maritime safety and final positions of permanent features for charting which has been incorporated into this EP.
  - **(4)** advised no additional consultation for activity was needed.
- On 28 October 2024, Woodside responded to ACMA (SI Report, reference 1.2) and:
  - **(1)** confirmed the advice on the ACMA protection zones.
  - **(2)** confirmed Woodside's awareness of the cable infrastructure owned by Telstra and Vocus.
  - **(4)** acknowledged that ACMA did not require further consultation on the EP.

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
(1) Operational areas are not in the vicinity of any existing protection zones.	**(1)** **Woodside assessment:** Woodside noted ACMA's confirmation that the operational areas were not in the vicinity of existing protection zones. Woodside has consulted Telstra as a relevant person for this EP. There are no Vocus cables within the Operational Areas and therefore not relevant for this EP **Woodside response:** Woodside acknowledged the advice regarding existing protection zones.	**(1)** Not required.
(2) Operational areas are in the vicinity of submarine	**(2)** **Woodside assessment:** Woodside noted ACMA's	**(2)** Communications infrastructure located in the vicinity of

cables.	advice that the operational areas were in the vicinity of submarine cables. **Woodside response:** Woodside confirmed it had consulted with Telstra and noted Vocus cable infrastructure.	the operational areas is set out in Section 4.9.7 of the EP.
(3) Contact AHO for navigational materials information.	**(3)** **Woodside assessment:** Woodside noted ACMA's recommendation to contact the AHO for navigational materials to assist in identifying further assistance identifying cables. **Woodside response:** Woodside has consulted with AHO on this EP and AHO has requested notification on any activities impacting maritime safety and the final positions of permanent features for charting.	**(3)** Not required.
(4) No further consultation required for this activity**.**	**(4)** **Woodside assessment:** Woodside accepts that ACMA does not require further consultation. **Woodside response:** Woodside noted that ACMA does not require further consultation.	**(4)** Not 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 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 7.7.1).	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 ACMA for the purpose of regulation 25 is 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 September 2024. Woodside gave this information to ACMA on 27 September 2024, 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 PAP, 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.
- On 17 October 2024, ACMA consulted and shared its feedback, claims or objections 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.
- In addition to the information provided in the Consultation Information Sheet, Woodside provided ACMA with further information in response to ACMA's feedback (email of 28 October 2024).

Reasonable Period

Woodside allowed ACMA a reasonable period for consultation in the preparation of this 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 4 months ago.
- In this context, Woodside allowed ACMA a reasonable period for consultation in preparation of the EP as evidenced by its response on 17 October 2024.

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 9 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 1 targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- In line with NOPSEMA's guideline for engagement with Commonwealth government departments or agencies, Woodside used email for its consultation with ACMA.
- Woodside considers a reasonable opportunity was provided to ACMA as evidenced by its response on 17 October 2024.

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 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 27 September 2024, Woodside emailed AFMA 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.*
- On 11 October 2024, Woodside emailed AFMA an activity update regarding well location coordinates and included an updated Consultation Information Sheet (Record of Consultation, reference 6.2.1).
- On 22 October 2024, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.3.2).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
No feedback, objection or claim 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 7.7.1).	Woodside has assessed the potential for interaction with Commonwealth managed fisheries in Section 4.9.2 of this EP. Woodside will provide notifications to AFMA, CFA, DAFF – Fisheries, and individual Commonwealth relevant fishery licence holders (see Table 7-5 of this EP) ten days before activity commences, and following completion of activities, as referenced as PS 1.3 of this 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 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 September 2024. Woodside gave this information to AFMA on 27 September 2024, 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 PAP, 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 AFMA a reasonable period for consultation in the preparation of this 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 4 months ago. • In this context, Woodside allowed AFMA 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 AFMA is appropriate and adapted to the nature of interests of AFMA: • Woodside published advertisements in 9 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 1 targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.

- In line with NOPSEMA's guideline for engagement with Commonwealth government departments or agencies, Woodside used email for its consultation with AFMA.
- In the absence of feedback, Woodside sent a follow-up consultation email on 22 October 2024, reminding AFMA 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 AFMA 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 AFMA's functions, interests or activities.

4.1.4 Australian Hydrographic Office (AHO)

Summary of information provided and record of consultation for this EP:

- On 27 September 2024, Woodside emailed AHO advising of the proposed activity (Record of Consultation, reference 6.1.10), provided a Consultation Information Sheet, a shipping lanes map and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.*
- On 1 October 2024, AHO responded to Woodside (SI Report, reference 2.1) and acknowledged receipt of Woodside's email for this EP and:
  - **(1)** Noted it had no further comments but requested updates on any activities impacting maritime safety and final positions of permanent features for charting.
  - **(2)** Advised a fact sheet on reporting requirements would be provided at a later date.
- On 4 October 2024, Woodside replied (SI Report, reference 2.2) noting:
  - **(1)** AHO had no further comments on this EP and advised Woodside will notify AHO at the start and completion of activities for reporting the final position of permanent features for charting.
  - **(2)** AHO is developing a fact sheet for reporting requirements and will advise once this is available.
- On 11 October 2024, Woodside emailed AHO an activity update regarding well location coordinates and included an updated Consultation Information Sheet (Record of Consultation, reference 6.2.1).
- **(3)** On 11 October 2024, AHO replied acknowledging Woodside's email had been received. AHO advised the data supplied would be used for the preparation of AHO's navigational charting products (SI Report, reference 2.3). **(3)** Woodside noted AHO's feedback but no response was required.

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
(1) Requested updates on any activities impacting maritime safety and final positions of permanent features for charting.	**(1)** **Woodside assessment:** Woodside notifies AHO of activities to enable AHO to report final position of permanent features for charting.	**(1)** Woodside will notify the AHO no less than four working weeks before operations commence and after wellhead removal, as referenced in PS 1.1 and PS 1.2 in this EP.

	Woodside response: Woodside advised it will notify AHO at the start and completion of activities for reporting the final position of permanent features for charting.	No additional measures or controls are required.
(2) A fact sheet on reporting requirements would be provided at a later date.	**(2)** **Woodside assessment:** Woodside noted that a fact sheet on reporting requirements would be provided by AHO at a later date. **Woodside response:** Woodside confirmed it had noted an AHO fact sheet on reporting requirements would be provided at a later date.	**(2)** Not required.
(3) Acknowledged receipt of consultation email and advised on updates to its navigational charting products.	**(3)** **Woodside assessment:** Woodside acknowledges AHO has received data regarding the activity and has no specific feedback for this activity. **Woodside response:** Woodside noted AHO's acknowledgement of its email and that it would use data supplied to update its navigational charting products.	**(3)** Not 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 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 7.7.1).	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:		

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 September 2024. Woodside gave this information to AHO on 27 September 2024, 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 PAP, 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 shipping lanes map relevant to the activity.
- On 1 October 2024, AHO consulted and shared its feedback, claims or objections 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.
- In addition to the information provided in the Consultation Information Sheet, Woodside provided AHO with further information in response to AHO's feedback (email of 4 October 2024).

Reasonable Period

Woodside allowed AHO a reasonable period for consultation in the preparation of this 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 4 months ago.
- In this context, Woodside allowed AHO a reasonable period for consultation in preparation of the EP as evidenced by AHO's response on 1 October 2024.

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 9 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 1 targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- In line with NOPSEMA's guideline for engagement with Commonwealth government departments or agencies, Woodside used email for its consultation with AHO.
- Woodside considers a reasonable opportunity was provided to AHO as evidenced by its response on 1 October 2024.

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:

- AHO provided feedback but had no objections or claims. In line with the intended outcome of consultation as set out in Section 5.2 and regulations 24 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 27 September 2024, 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 11 October 2024, Woodside emailed AMSA – Marine Pollution an activity update regarding well location coordinates and included an updated Consultation Information Sheet (Record of Consultation, reference 6.2.1).
- On 22 October 2024, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.3.1).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
No feedback, objection or claim 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 7.7.1).	Woodside has addressed oil spill preparedness and response strategy in 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 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 – Marine Pollution 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:

- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since September 2024. Woodside gave this information to AMSA – Marine Pollution on 27 September 2024, 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 PAP, 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 this 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 4 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 9 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 1 targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- In line with NOPSEMA's guideline for engagement with Commonwealth government departments or agencies, Woodside used email for its consultation with AMSA – Marine Pollution.
- In the absence of feedback, Woodside sent a follow-up consultation email on 22 October 2024, 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.

4.1.6 Australian Maritime Safety Authority (AMSA) – Marine Safety

Summary of information provided and record of consultation for this EP:

- On 27 September 2024, Woodside emailed AMSA – Marine Safety advising of the proposed activity (Record of Consultation, reference 6.1.11), provided a Consultation Information Sheet, shipping lanes map and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.*
- On 9 October 2024, AMSA – Marine Safety responded (SI Report, reference 3.1) to acknowledge Woodside had considered information that AMSA – Marine Safety communicates regarding navigation safety. AMSA – Marine Safety confirmed back to Woodside its commitments to:
  - **(1)** notify the AHO no less than 4 weeks before operations commence.
  - **(2)** notify AMSA's JRCC at least 24-48 hours before operations commence and end.
  - **(3)** provide updates to both the AHO and AMSA on any material changes to planned activities.
  - **(4)** 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.
  - **(5)** evaluate and implement adequate anti-collision measures including but not limited to installation of Automatic Identification System (AIS) units, offshore guard vessel/s that can monitor traffic, and additional warnings and/or lights to attract attention.
- On 9 October 2024, AMSA – Marine Safety provided a further follow up email (SI Report, reference 3.2) clarifying that its earlier email that day incorrectly referred to the Angel Subsea Infrastructure Removal EP. It advised all other wording in the email remained correct and still stands.
- On 11 October 2024, Woodside emailed AMSA – Marine Safety an activity update regarding well location coordinates and included an updated Consultation Information Sheet (Record of Consultation, reference 6.2.1).
- On 11 October 2024, AMSA – Marine Safety acknowledged Woodside's activity update (SI Report, reference 3.3) and further confirmed its previous feedback from 9 October 2024 remained unchanged.
- On 6 November 2024, Woodside responded to AMSA – Marine Safety (SI Report, reference 3.4) and:
  - **(1)** confirmed it would notify AHO no less than 4 weeks before operations commence
  - **(2)** confirmed it would notify AMSA's JRCC at least 24-48 hours before operations commence and end.
  - **(3)** advised it would provide updates to both the AHO and AMSA on any material changes to planned activities.

– **(4)** confirmed that vessels will exhibit appropriate lights and shapes to reflect the nature of operations.
– **(5)** confirmed it will implement adequate anti-collision measures and clarified that offshore guard vessels would not be utilised as an anti-collision measure for this EP as other measures identified would mitigate the risk.

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
(1) Requested the AHO be contacted no less than 4 weeks before operations commence.	**(1)** **Woodside assessment:** Woodside will provide notifications to relevant stakeholders as outlined in Table 7-5 of this EP. **Woodside response:** Woodside confirmed it will notify the AHO 4 weeks before operations commence.	**(1)** Woodside will notify the AHO no less than four working weeks before operations commence, as referenced as PS 1.1 and PS 1.2 in this EP.
(2) Requested the JRCC be notified 24-48 hours before operations commence.	**(2)** **Woodside assessment:** Woodside will provide notifications to relevant stakeholders as outlined in Table 7-5 of this EP. **Woodside response:** Woodside confirmed it will notify the JRCC 24-48 hours before operations commence.	**(2)** Woodside will notify the JRCC at least 24–48 hours before operations commence, as referenced as PS 1.4 in this EP.
(3) Requested to be advised of any material changes to planned activities.	**(3)** **Woodside assessment:** Woodside will provide notifications to relevant stakeholders as outlined in Table 7-5 of this EP. **Woodside response:** Woodside confirmed it will notify AHO of any material changes to planned activities.	**(3)** Woodside will notify the AHO of any material changes to this EP, as referenced as PS 1.1 in this EP.
(4) Vessels should exhibit appropriate lights and shapes to reflect nature of operations.	**(4)** **Woodside assessment:** Woodside complies with the International Rules for Preventing Collisions at Sea. **Woodside response:** Woodside confirmed vessels would 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.	**(4)** Section 6 of the EP contains a number of controls that address AMSA's feedback on lighting and compliance with the international rule for preventing collisions at sea, specifically safety zones are established, vessels are required to comply with marine orders and the facility's collision prevention system will be implemented.
(5)	**(5)**	**(5)**

Woodside to evaluate and implement adequate anti-collision measures including offshore guard vessels.	**Woodside assessment:** Woodside is continuously evaluating existing collision risk mitigation measures. **Woodside response:** Woodside confirmed it will implement adequate anti-collision measures and clarified offshore guard vessels would not be utilised as an anti-collision measure for this EP as other measures identified would mitigate the risk.	Section 6 of the EP contains a number of controls that address AMSA's feedback on lighting and compliance with the international rule for preventing collisions at sea, specifically safety zones are established, vessels are required to comply with marine orders and the facility's collision prevention system will be implemented.
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 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 7.7.1).	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 – Marine 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 – Marine Safety sufficient information to allow AMSA – Marine 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 September 2024. Woodside gave this information to AMSA – Marine Safety on 27 September 2024, 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 PAP, 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 – Marine Safety with information tailored to AMSA – Marine Safety by including a map of shipping lanes.
- On 9 October 2024, AMSA – Marine Safety consulted and shared its feedback, claims or objections regarding this activity, indicating the information provided was sufficient to enable AMSA – Marine Safety to make an informed assessment of the possible consequences of the activity on its functions, interests or activities.
- In addition to the information provided in the Consultation Information Sheet, Woodside provided AMSA with further information in response to AMSA's feedback (email of 6 November 2024).

Reasonable Period

Woodside allowed AMSA – Marine Safety a reasonable period for consultation in the preparation of this EP because:

- A consultation period was stated in the initial correspondence to AMSA – Marine 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 – Marine Safety 30 days for consultation.
- Consultation for this EP commenced 4 months ago.
- In this context, Woodside allowed AMSA – Marine Safety a reasonable period for consultation in preparation of the EP as evidenced by AMSA – Marine Safety's response on 9 and 11 October 2024.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with AMSA – Marine Safety is appropriate and adapted to the nature of interests of AMSA – Marine Safety:

- Woodside published advertisements in 9 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 1 targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- In line with NOPSEMA's guideline for engagement with Commonwealth government departments or agencies, Woodside used email for its consultation with AMSA – Marine Safety.
- Woodside considers a reasonable opportunity was provided to AMSA as evidenced by its response on 9 and 11 October 2024.

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 – Marine Safety 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 and 34(g), Woodside has:

- Responded to feedback from AMSA – Marine Safety.
- As standard practice (and as requested by AMSA – Marine Safety during consultation), Woodside will provide activity notifications to AHO and AMSA's JRCC as referenced at PS 1.1 and PS 1.4.

- 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 4 October 2024, Woodside emailed DAFF - Fisheries advising of the proposed activity (Record of Consultation, reference 6.1.53), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.*
- On 11 October 2024, Woodside emailed DAFF - Fisheries an activity update regarding well location coordinates and included an updated Consultation Information Sheet (Record of Consultation, reference 6.2.1).
- On 22 October 2024, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.3.6).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
No feedback, objection or claim about the adverse impact of the activity received despite follow-up.	Woodside has consulted AFMA, DAFF – Fisheries, CFA and individual relevant licence holders. 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 7.7.1).	Woodside has assessed the potential for interaction with Commonwealth managed fisheries in Section 4.9.2 of this EP. Woodside will provide notifications to AFMA, CFA, DAFF – Fisheries, and individual Commonwealth relevant fishery licence holders (see Table 7-5 of this EP) ten days before activity commences, and following completion of activities, as referenced as PS 1.3 of this 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 September 2024. Woodside gave this information to DAFF - Fisheries on 4 October 2024, 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 PAP, 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 this EP because:

- 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 4 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 9 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 1 targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- In line with NOPSEMA's guideline for engagement with Commonwealth government departments or agencies, Woodside used email for its consultation with DAFF - Fisheries.
- In the absence of feedback, Woodside sent a follow-up consultation email on 22 October 2024, 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 27 September 2024, Woodside emailed DoD advising of the proposed activity (Record of Consultation, reference 6.1.20), provided a Consultation Information Sheet, a map of the defence zones and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.*
- On 11 October 2024, Woodside emailed DoD an activity update regarding well location coordinates and included an updated Consultation Information Sheet (Record of Consultation, reference 6.2.1).
- On 22 October 2024, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.3.1).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
No feedback, objection or claim 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 7.7.1).	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 September 2024. Woodside gave this information to DoD on 27 September 2024, 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 PAP, 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 relevant to the activity.

Reasonable Period

Woodside allowed DoD a reasonable period for consultation in the preparation of this EP because:

- 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 4 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 9 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 1 targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- In line with NOPSEMA's guideline for engagement with Commonwealth government departments or agencies, Woodside used email for its consultation with DoD.
- In the absence of feedback, Woodside sent a follow-up consultation email on 22 October 2024, 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 27 September 2024, Woodside emailed DPLH advising of the proposed activity (Record of Consultation, reference 6.1.22), provided a Consultation Information Sheet, a list of shipwrecks and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.*
- On 11 October 2024, Woodside emailed DPLH an activity update regarding well location coordinates and included an updated Consultation Information Sheet (Record of Consultation, reference 6.2.1).
- On 22 October 2024, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.3.7).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
No feedback, objection or claim 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 7.7.1).	The EP demonstrates that there are no known underwater heritage sites or shipwrecks within the PAP and identifies that there are no credible impacts to the values of any underwater heritage or shipwrecks as a result of planned activities (Section 4.9.1 of this EP). While impacts to underwater heritage sites or shipwrecks are possible in the event of an unplanned hydrocarbon spill, Woodside considers it adopts appropriate controls to prevent a hydrocarbon spill and controls to respond in the highly unlikely event of a hydrocarbon spill, as demonstrated in Section 6.7 of this 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 September 2024. Woodside gave this information to DPLH on 27 September 2024, 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 PAP, 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 DPLH with information tailored to DPLH by including a list of shipwrecks relevant to the EP in State waters.

Reasonable Period

Woodside allowed DPLH a reasonable period for consultation in the preparation of this 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 4 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 9 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 1 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 22 October 2024, 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:

- On 27 September 2024, Woodside emailed DPIRD 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 11 October 2024, Woodside emailed DPIRD an activity update regarding well location coordinates and included an updated Consultation Information Sheet (Record of Consultation, reference 6.2.1).
- On 22 October 2024, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.3.8).
- On 23 October 2024, DPIRD responded to Woodside (SI Report, reference 19.1) advising it would like to be considered as a relevant person and would like an extension of two weeks to 13 November 2024 to review the EP consultation information. DPIRD advised its reason for the extension was due to a high volume of requests at the time.
- On 28 October 2024, Woodside responded to DPIRD (SI Report, reference 19.2) confirming its request for the consultation date to be extended to 13 November 2024 for this EP. Woodside also noted DPIRD's confirmation that it is a relevant person for this EP.
- On 12 November 2024, DPIRD responded (SI Report, reference 19.3) with the following feedback and requests prior to submission of the EP to the regulator:
  - **(1)** Consider DPIRD as a relevant person for this EP.
  - **(2)** Noted the proposed activities may have an effect on fish resources and the aquatic environment managed under WA fisheries legislation.
  - **(3)** Confirmed the commercial fishing interests as well as customary, recreational and charting fishing resources existing, or in proximity to, the areas associated with the proposed activities.
  - **(4)** Recommended Woodside initiate and maintain ongoing consultation with WAFIC, Recfishwest and Aquaculture Council of Western Australia including sending start and stop notifications and exclusion zones.
  - **(5)** Recommended contacting the relevant Traditional Owners in the area impacted by the proposed activities.
  - **(6)** Requested DPIRD is advised within 24 hours of Woodside reporting an oil spill incident to the appropriate authority.
  - **(7)** Requested when developing the Oil Spill Contingency Plan (OSCP) that there is baseline marine data included to compare against any post-spill monitoring to determine impacts. This data should be available to DPIRD upon request.
  - **(8)** Noted spawning and nursery areas for key fish species are particularly vulnerable to the impacts of spills. DPIRD requested specific strategies in the EP to mitigate these risks.
  - **(9)** Requested that DPIRD is advised within 24 hours of any suspected or confirmed marine pests or diseases from vessels. Contact details for notifications were provided and it was requested to share this with vessel operators.
  - **(10)** Requested all potential impacts to fisheries, fish resources and the aquatic environment are acknowledged in the Environment Plan with strategies to mitigate or minimise these impacts.
  - **(11)** Advised should any relevant, significant changes affecting fisheries occur prior to completion of Woodside's operations, DPIRD reserves the right to request further consultation and resolution as appropriate
  - **(12)** Provided new contact at DPIRD for further questions related the feedback provided for this EP.
- On 13 December 2024, Woodside responded to DPIRD (SI Report, reference 19.4) as follows:

- **(1)** Confirmed DPIRD's feedback that it is a relevant person.
- **(2)** Noted assessment of potential spatial and temporal extent for interaction with each fishery occurred by reviewing AFMA, ABARES and DPIRD Fishcube data with the Operational Area and EMBA.
- **(3)** Confirmed the list of fisheries provided by DPIRD in its response with interest in the area of proposed activities aligned with Woodside's understanding from its data.
- **(4)** Confirmed consultation had occurred with relevant fishery licence holders upon advice from WAFIC and was conducted by WAFIC.
- **(4)** Advised that around annually, Woodside updated fishing licence holder contact details via DPIRD's licencing division.
- **(4)** Confirmed consultation had occurred with Recfishwest and Aquaculture Council of Western. Information provided included specific start and end dates of the activities, and the spatial extent of the proposed activities (including any exclusion zones).
- **(5)** Confirmed Woodside had consulted with the relevant Traditional Owners in the preparation of this EP.
- **(6)** Confirmed Department of Transport (DoT) is notified within 2 hours of a marine pollution incident and DPIRD would be advised within 24 hours of this DoT notification as outlined in the EP. Woodside requested a dedicated role or person for this notification if this was available.
- **(7,8)** Advised the risk of spill events was mitigated through a range of preventative controls including offshore response actions. The aim of the response is to reduce hydrocarbon contact with sensitive coastal areas, including commercially important fish species spawning and aggregation areas.
- **(7)** Advised Woodside is a member of the Australian Energy Producers (AEP) Joint Industry Operational and Scientific Monitoring (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 damage.
- **(9)** Advised Woodside works closely with vessel contractors to ensure compliance with DPIRD's biosecurity policy. This includes a notification to DPIRD within 24 hours of any suspected or confirmed marine pests or diseases from vessels. Woodside confirmed this information would be communicated to vessel operators.
- **(10)** Confirmed all vessels are required to comply with relevant regulations to prevent introducing invasive marine species (IMS). Vessels will be assessed and managed to prevent the introduction of IMS in accordance with Woodside's Invasive Marine Species Management Plan. This includes a risk assessment process with outcomes ensuring management measures commensurate with the risk are implemented. Confirmed potential impacts to fisheries, fish resources and the aquatic environment are considered in the EP with strategies to mitigate or minimise these impacts.
- **(11)** Acknowledged that should any significant and relevant changes affecting fisheries occur prior to the completion of our activities, DPIRD reserved the right to request further consultation and resolution, as appropriate.
- **(12)** Noted the new contact at DPIRD and advised Woodside records have been updated accordingly.

- **(13)** On 16 December 2024, DPIRD responded to Woodside (SI Report, reference 19.5) confirming receipt of Woodside's response.
- **(13)** On 18 December 2024, Woodside responded to DPIRD (SI Report, reference 19.7) confirming it had received DPIRD's response from 16 December 2024.

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
(1) DPIRD confirmed it is a relevant person.	**(1)**	**(1)**

	Woodside assessment: Woodside uses a methodology for identifying relevant persons in accordance with regulation 25 (1) and had identified DPIRD as a relevant person when applying the methodology for this EP. **Woodside response:** Woodside confirmed DPIRD's feedback that it is a relevant person.	Section 5.3 in the EP defines the methodology for identifying relevant persons for consultation.
(2) The proposed activities may have an effect on fish resources and the aquatic environment managed under WA fisheries legislation.	**(2)** **Woodside assessment:** Woodside assesses for potential spatial and temporal extent for interaction with each fishery occurred by reviewing AFMA, ABARES and DPIRD Fishcube data with the Operational Area and EMBA. **Woodside response:** Woodside confirmed assessment of potential spatial and temporal extent for interaction with each fishery occurred by reviewing AFMA, ABARES and DPIRD Fishcube data with the Operational Area and EMBA.	**(2)** Section 5.3 in the EP defines the methodology for identifying Commonwealth and State fisheries and their representative bodies.
(3) There are commercial fishing interests as well as customary, recreational and charting fishing resources existing, or in proximity to, the areas associated with the proposed activities.	**(3)** **Woodside assessment:** Woodside notes the list of fisheries provided by DPIRD with fishing interests in the area aligns with Woodside data. **Woodside response:** Woodside confirmed the list of fisheries provided by DPIRD in its response with interest in the area of proposed activities aligned with Woodside's understanding from its data.	**(3)** Not required.
(4) Recommended Woodside initiate and maintain ongoing consultation with WAFIC, Recfishwest and Aquaculture Council of Western Australia including sending start and stop notifications and exclusion zones.	**(4)** **Woodside assessment:** Woodside consults with WAFIC, Recfishwest and now, Aquaculture Council of Western Australia, at DPIRD's request. **Woodside response**: Woodside confirmed consultation had occurred with relevant fishery licence holders upon advice from WAFIC and was conducted by WAFIC. Confirmed consultation had occurred with Recfishwest and Aquaculture Council of Western	**(4)** Not required.

	Australia. Information provided included specific start and end dates of the activities, and the spatial extent of the proposed activities (including any exclusion zones).	
(5) Recommended consultation with relevant Traditional Owners.	**(5)** **Woodside assessment:** Woodside consults with Traditional Custodian groups or individuals and Nominated Representative Corporations. **Woodside response:** Woodside confirmed consultation had occurred with relevant Traditional Owners in the preparation of this EP.	**(5)** Section 5.3 in the EP defines the methodology for identifying Traditional Custodians (individuals and/or groups/entity) and Nominated Representative Corporations.
(6) Requested DPIRD is advised within 24 hours of Woodside reporting an oil spill incident to the appropriate authority.	**(6)** **Woodside assessment:** Woodside notes DPIRD requests within 24 hours a notification of an oil spill reporting to the appropriate authority. **Woodside response:** Woodside confirmed with DPIRD that Department of Transport (DoT) is notified within 2 hours of an oil spill and DPIRD would be advised within 24 hours if this occurred for this EP.	**(6)** Woodside will consult DoT if there is a spill impacting State waters from the proposed activity, as referenced in the OSPRMA (Appendix H). Woodside will notify DPIRD within 24 hours of a notification to DoT for this EP, as referenced at Table 7-7 in this EP.
(7) Requested baseline marine data be collected to compare against post-spill monitoring. This data to be made available to DPIRD upon request.	**(7)** **Woodside assessment:** Woodside is a member of the Australian Energy Producers (AEP) Joint Industry Operational and Scientific Monitoring (OSM) Framework (AEP, 2021). In the event of a spill, the OSM Framework guides the situational awareness and response as well as undertake a suite of comprehensive science-based monitoring programs to evaluate environmental damage. **Woodside response:** Woodside responded advising the OSM Framework guides the situational awareness and response and undertakes comprehensive science-based monitoring programs to evaluate environmental damage.	**(7)** Woodside has addressed oil spill preparedness and response strategy in Appendix H.
(8)	**(8)**	**(8)**

Spawning and nursery areas for key fish species are particularly vulnerable to the impacts of spills. Requested specific strategies are in the EP to mitigate these risks.	**Woodside assessment:** Woodside notes DPIRD's request for specific strategies in the EP to mitigate risks of impact on vulnerable fish species. **Woodside response:** Woodside responded advising that mitigation of oil spill events occurs though a range of preventative controls and is particularly focused on sensitive coastal areas, including important fish species spawning and in aggregation areas.	Woodside has addressed oil spill preparedness and response strategy in Appendix H.
(9) Requested DPIRD is advised within 24 hours of any suspected or confirmed marine pests or diseases from vessels, rigs or equipment.	**(9)** **Woodside assessment:** Woodside notes DPIRD's biosecurity policy and its request for notification within 24 hours of suspected or confirmed marine pests or diseases from vessels. **Woodside response:** Woodside confirmed its compliance with DPIRD's biosecurity policy which includes notification within 24 hours of any suspected or confirmed marine pests or diseases from vessels.	**(9)** Woodside, Qualified IMS Inspector or contractor will notify DPIRD within 24 hours of any suspected or confirmed marine pests or diseases from vessels, rigs or equipment for this EP, as referenced in Section 7.10.4.3 of this EP.
(10) All potential impacts from invasive marine species to fisheries, fish resources and the aquatic environment are acknowledged in the EP with strategies to mitigate or minimise these impacts.	**(10)** **Woodside assessment:** Woodside complies with all relevant regulations to prevent introducing of invasive marine species (IMS). Woodside noted DPIRD's request for all fisheries, fish resources and the aquatic environment to be acknowledged in the EP with strategies to mitigate or minimise impacts. **Woodside response:** Woodside advised of its compliance with all relevant regulations to prevent introducing of IMS. Woodside also advised vessels will be assessed and managed to prevent the introduction of IMS in accordance with Woodside's Invasive Marine Species Management Plan.	**(10)** Introduction and establishment of invasive marine species risk evaluation is outlined in Section 6.7.10 and Section 7.2.2 of this EP.
(11) DPIRD reserves the right to request further consultation and resolution as appropriate should there be any relevant, significant changes affecting fisheries prior to completion of Woodside's operations.	**(11)** **Woodside assessment:** Feedback and comments received from relevant persons continue to be assessed and responded to, as required, throughout the life of an EP.	**(11)** Woodside's ongoing consultation approach (refer to Section 7.9 of this EP), outlines that should consultation feedback be received following EP acceptance that identifies relevant new information or a

	Woodside response: Woodside confirmed DPIRD reserved the right to request further consultation and resolution throughout the life of the EP.	measure or control that requires implementation or update to meet the intended outcome of consultation, Woodside will apply its EP Management of Knowledge process and Management of Change Process as appropriate.
(12) New DPIRD contact provided for further questions related to feedback for this EP.	**(12)** **Woodside assessment:** Woodside ensures contact details are kept up to date for all relevant persons. **Woodside response:** Woodside noted the new DPIRD contact and advised records were updated accordingly.	**(12)** Not required.
(13) Woodside response received.	**(13)** **Woodside assessment:** Woodside addressed DPIRD's feedback and DPIRD has viewed this response as evidenced by its email confirmation of this. **Woodside response:** Woodside responded confirming DPIRD had received Woodside's response.	**(13)** Not 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 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 7.7.1).	Woodside considers the measures and controls in the EP are appropriate.
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 September 2024. Woodside gave this information to DPIRD on 27 September 2024, 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 PAP, 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 12 November 2024, DPIRD consulted and shared its feedback, claims or objections regarding this activity, indicating the information provided was sufficient to enable DPIRD to make an informed assessment of the possible consequences of the activity on its functions, interests or activities.
- In addition to the information provided in the Consultation Information Sheet, Woodside provided DPIRD with further information in response to DPIRD's feedback (email of 13 December 2024).

Reasonable Period

Woodside allowed DPIRD a reasonable period for consultation in the preparation of this 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 4 months ago.
- In this context, Woodside allowed DPIRD a reasonable period for consultation in preparation of the EP as evidenced by its response on 12 November 2024.

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 9 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 1 targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside considers a reasonable opportunity was provided to DPIRD as evidenced by its response on 12 November 2024.

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:

- DPIRD 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 and 34(g), Woodside has:
  - Responded to feedback from DPIRD.
  - As a result of consultation included a notification to DPIRD within 24 hours of any suspected or confirmed marine pests or species as referenced in Section 7.10.4.3 of 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 (DoT)

Summary of information provided and record of consultation for this EP:

- On 27 September 2024, Woodside emailed DoT 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*.
- **(1)** On 7 October 2024, DoT responded to Woodside (SI Report, reference 6.1) requesting that DoT is consulted if there is a risk of a spill impacting State waters as outlined in the Offshore Petroleum Industry Guidance Note – Marine Oil Pollution: Response and Consultation Arrangements.
- **(1)** On 7 October 2024, Woodside responded to DoT (SI Report, reference 6.2) confirming if there was a risk of a spill impacting State waters from the proposed activities for this EP, the DoT would be consulted as per the Offshore Petroleum Industry Guidance Note.
- On 11 October 2024, Woodside emailed DoT an activity update regarding well location coordinates and included an updated Consultation Information Sheet (Record of Consultation, reference 6.2.1).
- On 10 December 2024, Woodside emailed DoT (SI Report, reference 6.3) and provided the Oil Pollution First Strike Plan (FSP) and a succinct summary of the FSP as requested by DoT in previous EP correspondence unrelated to this EP.

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
(1) DoT requested to be consulted if there was a risk of spill impacting State waters as outlined in the Offshore Petroleum Guidance Note.	**(1)** **Woodside assessment:** Woodside consults with DoT within two hours of a spill event occurring as described in Woodside's FSP. **Woodside response:** Woodside confirmed it would consult with DoT if there was a risk of spill impacting	**(1)** Woodside will consult DoT if there is a spill impacting State waters from the proposed activity, as referenced in the OSPRMA (Appendix H).

	State waters in line with the Offshore Petroleum Industry Guidance Note.	
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 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 7.7.1).	Woodside will provide DoT with a copy of the accepted Oil Pollution First Strike Plan, as referenced in the OSPRMA (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 DoT 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 DoT sufficient information to allow DoT 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 September 2024. Woodside gave this information to DoT on 27 September 2024, 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 PAP, 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 7 October 2024, DoT consulted and shared its feedback, claims or objections regarding this activity, indicating the information provided was sufficient to enable DoT to make an informed assessment of the possible consequences of the activity on its functions, interests or activities.
- In addition to the information provided in the Consultation Information Sheet, Woodside provided DoT with further information in response to DoT's feedback (email of 7 October 2024).

Reasonable Period

Woodside allowed DoT a reasonable period for consultation in the preparation of this EP because:

- A consultation period was stated in the initial correspondence to DoT 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 DoT 30 days for consultation.
- Consultation for this EP commenced 4 months ago.
- In this context, Woodside allowed DoT a reasonable period for consultation in preparation of the EP as evidenced by DoT's response on 7 October 2024.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with DoT is appropriate and adapted to the nature of interests of DoT:

- Woodside published advertisements in 9 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 1 targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside considers a reasonable opportunity was provided to DoT as evidenced by its response on 7 October 2024 when it provided 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:

- DoT 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 and 34(g), Woodside has:
  - Responded to feedback from DoT.
- 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.

4.1.12 Western Australian Museum (WAM)

Summary of information provided and record of consultation for this EP:

- On 27 September 2024, Woodside emailed WA Museum advising of the proposed activity (Record of Consultation, reference 6.1.31), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.*
- On 11 October 2024, Woodside emailed WA Museum an activity update regarding well location coordinates and included an updated Consultation Information Sheet (Record of Consultation, reference 6.2.1).
- On 22 October 2024, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.3.11).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
No feedback, objection or claim 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 7.7.1).	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 WA Museum 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 Museum sufficient information to allow WA Museum 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 September 2024. Woodside gave this information to WA Museum on 27 September 2024, 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 PAP, 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 Museum a reasonable period for consultation in the preparation of this EP because:

- A consultation period was stated in the initial correspondence to WA Museum 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 Museum 30 days for consultation.
- Consultation for this EP commenced 4 months ago.
- In this context, Woodside allowed WA Museum 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 Museum is appropriate and adapted to the nature of interests of WA Museum:

- Woodside published advertisements in 9 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 1 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 22 October 2024, reminding WA Museum 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 WA Museum 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 Museum's functions, interests or activities.

4.1.13 Pilbara Ports Authority (PPA)

Summary of information provided and record of consultation for this EP:

- On 27 September 2024, Woodside emailed PPA 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 11 October 2024, Woodside emailed PPA an activity update regarding well location coordinates and included an updated Consultation Information Sheet (Record of Consultation, reference 6.2.1)
- On 22 October 2024, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.3.1)

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
No feedback, objection or claim 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 7.7.1).	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 PPA 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 PPA sufficient information to allow PPA 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 September 2024. Woodside gave this information to PPA on 27 September 2024, 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 PAP, 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 PPA a reasonable period for consultation in the preparation of this EP because:

- A consultation period was stated in the initial correspondence to PPA 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 PPA 30 days for consultation.
- Consultation for this EP commenced 4 months ago.
- In this context, Woodside allowed PPA 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 PPA is appropriate and adapted to the nature of interests of PPA:

- Woodside published advertisements in 9 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 1 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 22 October 2024, reminding PPA 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 PPA 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 PPA's functions, interests or activities.

4.2 Commonwealth and WA State Government departments or agencies – environment

4.2.1 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 27 September 2024, Woodside emailed DAFF - Biosecurity 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 11 October 2024, Woodside emailed DAFF - Biosecurity an activity update regarding well location coordinates and included an updated Consultation Information Sheet (Record of Consultation, reference 6.2.1).
- On 22 October 2024, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.3.6)

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
No feedback, objection or claim 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 7.7.1).	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 September 2024. Woodside gave this information to DAFF - Biosecurity on 27 September 2024, 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 PAP, 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 this 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 4 months ago.
- In this context, Woodside allowed DAFF - Biosecurity 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 - Biosecurity is appropriate and adapted to the nature of interests of DAFF - Biosecurity:

- Woodside published advertisements in 9 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 1 targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- In line with NOPSEMA's guideline for engagement with Commonwealth government departments or agencies, Woodside used email for its consultation with DAFF.
- In the absence of feedback, Woodside sent a follow-up consultation email on 22 October 2024, 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.

4.2.2 Department of Biodiversity, Conservation and Attractions (DBCA)

Summary of information provided and record of consultation for this EP:

- On 27 September 2024, Woodside emailed DBCA 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 11 October 2024, Woodside emailed DBCA an activity update regarding well location coordinates and included an updated Consultation Information Sheet (Record of Consultation, reference 6.2.1).
- On 22 October 2024, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.3.1)
- On 1 November 2024, DBCA responded (SI Report, reference 5.1) thanking Woodside for the email and consultation information. DBCA noted:
  - **(1)** The operations were in vicinity of reserves managed by DBCA under the CALM act. These include, but are not limited to, the Montebello Islands Marine Park, Ningaloo Marine Park and Thevenard Island Reserve. Given the ecological importance of areas potentially affected by a hydrocarbon release from the proposed activities, it was considered important that the baseline values and state of the potentially affected environment were appropriately understood and documented prior to operations commencing.
  - **(2)** It would like to have confidence that Woodside had established appropriate baseline survey data on the current state of areas supporting important ecological values and any current contamination if present within the area of potential impact of hydrocarbon releases.
  - **(3)** It undertakes monitoring in marine parks and reserves and published monitoring reports which are available on its website, however Woodside should be aware this monitoring is targeted to inform DBCA's values and objectives and is not necessarily suitable to provide baseline information for oil spill risk assessment and management planning and encouraged Woodside to implement a Before-After, Control-Impact (BACI) framework.
  - **(4)** It recommended Woodside refer to the Department of Climate Change, Energy, the Environment and Water's National Light Pollution Guidelines for Wildlife as a best-practice industry standard for managing potential impacts of light pollution on marine fauna.
  - **(5)** In the event of a hydrocarbon release, it was requested that Woodside notify DBCA's Pilbara regional office as soon as practicable.
  - **(6)** It would not implement an oiled wildlife management response on behalf of a petroleum operator except as part of a whole of government response mandated by regulatory decision makers.
  - **(7)** Woodside should refer to the Department of Transport's web content regarding marine pollution and the Offshore Petroleum Industry Guidance Note of 2020 titled Marine Oil Pollution: Response and Consultation Arrangements. **(7)** Woodside refers to DoT's content in the development of its response plans however this was not noted in the Woodside email response to DBCA.
- On 22 November 2024, Woodside responded thanking DBCA for its feedback (SI Report, reference 5.2). Woodside:
  - **(1)** Confirmed it maintained knowledge and an understanding of areas of ecological importance within and adjacent to operational areas.
  - **(2,3)** Advised its oil spill scientific monitoring program would provide for a quantitative assessment of the overall environmental impacts in the event of an unplanned hydrocarbon release.

– **(4)** Confirmed it had considered DCCEEW's National Light Pollution Guidelines with respect to vessel activities. The impact assessment determined that the impacts of lighting were as low as reasonably practicable. – **(5)** Advised it had incorporated the DBCA Pilbara regional office telephone number as part of the notifications listed in the Oil Pollution First Strike Plan. – **(6)** Noted that DBCA would not implement an oiled wildlife management response on behalf of a petroleum operator.		
Summary of Feedback, Objection or Claim	**Assessment of Merits of Feedback, Objection or Claim and Woodside's Response**	**Inclusion in Environment Plan**
(1) Baseline values are understood and documented prior to commencement of activities.	**(1)** **Woodside assessment:** Woodside maintains knowledge of areas of ecological importance, including marine parks and island conservation reserves adjacent to the Operational Areas. **Woodside response:** Woodside reaffirmed that areas of ecological importance in the proximity of the EP Operational Areas would be not impacted by planned activities.	**(1)** The EP demonstrates that the proposed activities are outside the boundaries of a proclaimed State Marine Park and identifies that there are no credible impacts to the values of any State Marine Parks as a result of planned activities (Section 4.8 and Section 6.7 of the EP). While impacts to Commonwealth Marine Parks are possible in the event of an unplanned hydrocarbon spill, Woodside considers it adopts appropriate controls to prevent a hydrocarbon spill and controls to respond in the highly unlikely event of a hydrocarbon spill, as demonstrated in Sections 6.7 of the EP.
(2) Establish the appropriate baseline survey data on the current state of the areas.	**(2)** **Woodside assessment:** Woodside confirmed it maintained knowledge and an understanding of areas of ecological importance adjacent to Operational Areas and its oil spill scientific monitoring program provides for a quantitative assessment of overall impacts in the event of an unplanned hydrocarbon release. **Woodside response:** Woodside responded that it utilises an information system to track current existing environment knowledge that is regularly updated. Woodside advised its oil spill scientific monitoring program provides for a quantitative assessment of overall impacts in the event of an unplanned hydrocarbon release.	**(2)** Under the Oil Spill Scientific Monitoring Program preparedness, an annual review and update to environmental baseline studies database is completed and documented as described in this EP.
(3)	**(3)**	**(3)**

Encourages implementation of Before-After Control-Impact (BACI) framework.	**Woodside assessment:** Woodside reviewed the request about implementing a BACI framework and noted it maintains knowledge of areas of ecological importance and its oil spill scientific monitoring program (SMP) would provide for a quantitative assessment of the overall environmental impacts in the event of an unplanned hydrocarbon release. **Woodside response:** Woodside advised its oil spill scientific monitoring program (SMP) would provide for a quantitative assessment of the overall environmental impacts in the event of an unplanned hydrocarbon release and that it maintains knowledge of areas of ecological importance within and adjacent to the Operational Areas.	Under the Oil Spill Scientific Monitoring Program preparedness, an annual review and update to environmental baseline studies database is completed and documented as described in this EP.
(4) Refer to DCCEEW's National Light Pollution Guidelines for Wildlife.	**(4)** **Woodside assessment:** Woodside noted DCCEEW's National Light Pollution Guidelines for Wildlife and that its impact assessment for light emissions is based on these recommendations. **Woodside response:** Woodside confirmed it had considered DCCEEW's National Light Pollution Guidelines for Wildlife and that lighting associated with this EP is required as a priority for safe operation.	**(4)** Woodside's impact assessment for light emissions is based on recommendations of the National Light Pollution Guidelines for Wildlife (see Section 6.6.4).
(5) Notify DBCA's Pilbara office as soon as practicable in the event of a hydrocarbon release.	**(5)** **Woodside assessment:** Woodside noted DBCA's 'Incidents and Emergency Response' process and need to include DBCA's Pilbara's contact information in Oil Pollution First Strike Plan. **Woodside response:** Woodside confirmed the DBCA Pilbara number had been incorporated as part of the Oil Pollution First Strike Plan.	**(5)** DBCA's Pilbara phone number has been incorporated into the Oil Pollution First Strike Plan for this EP (see Appendix H).
(6)	**(6)**	**(6)**

No oiled wildlife management response will be implemented except as part of a mandated government response.	**Woodside assessment:** Woodside accepts that DBCA would not implement an oiled wildlife management response and notes its own Oiled Wildlife Response is included in the Oil Spill Preparedness and Response Mitigation Assessment for this EP. **Woodside response:** Woodside confirmed that DBCA would not implement an oiled wildlife management response on behalf of a petroleum operator.	Woodside's Oiled Wildlife Response is included in the Oil Spill Preparedness and Response Mitigation Assessment for this EP (see Appendix H).
(7) Refer to the Department of Transport's guidance note: Marine Oil Pollution: Response and Consultation Arrangements.	**(7)** **Woodside assessment:** Woodside appreciated the recommendation to refer to DoT's web content regarding marine pollution and the Offshore Petroleum Industry Guidance Note of 2020 titled Marine Oil Pollution: Response and Consultation Arrangements. **Woodside response:** Woodside noted the DoT's web content regarding marine pollution and the Offshore Petroleum Industry Guidance Note of 2020 titled Marine Oil Pollution: Response and Consultation Arrangements.	**(7)** Not 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 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 7.7.1).	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:

- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since September 2024. Woodside gave this information to DBCA on 27 September 2024, 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 PAP, 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 1 November 2024, DBCA consulted and 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 provided in the Consultation Information Sheet, Woodside provided DBCA with further information in response to DBCA's feedback (email of 22 November 2024).

Reasonable Period

Woodside allowed DBCA a reasonable period for consultation in the preparation of this 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 4 months ago.
- Woodside considers a reasonable opportunity was provided to DBCA as evidenced in its response on 1 November 2024.

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 9 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 1 targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside considers a reasonable opportunity was provided to DBCA as evidenced by its response on 1 November 2024.

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 and 34(g), Woodside has:
  - 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.

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

Summary of information provided and record of consultation for this EP:

- On 27 September 2024, Woodside emailed DCCEEW - Environmental Compliance advising of the proposed activity (Record of Consultation, reference 6.1.16), provided a Consultation Information Sheet, shipwreck information and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.*
- On 11 October 2024, Woodside emailed DCCEEW - Environmental Compliance an activity update regarding well location coordinates and included an updated Consultation Information Sheet (Record of Consultation, reference 6.2.1)
- On 22 October 2024, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.3.4).
- On 26 November 2024, Woodside emailed DCCEEW – Underwater Cultural Heritage advising of the proposed activity (Record of Consultation, reference 6.1.17), provided a Consultation Information Sheet, shipwreck information and a link to NOPSEMA's brochure Consultation on offshore petroleum environment plans: Information for the community.
- On 12 December 2024, as no response had been received from DCCEEW - Underwater Cultural Heritage, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.3.5).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
No feedback, objection or claim 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 7.7.1).	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 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 September 2024. Woodside gave this information to DCCEEW on 27 September and 26 November 2024, 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 PAP, 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 list of shipwrecks relevant to the EP in Commonwealth waters.

Reasonable Period

Woodside allowed DCCEEW a reasonable period for consultation in the preparation of this 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 4 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 9 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 1 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 22 October and 12 December 2024, reminding DCCEEW 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 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.

4.2.4 Director of National Parks (DNP)

Summary of information provided and record of consultation for this EP:

- On 27 September 2024, Woodside emailed DNP 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.*
- On 11 October 2024, Woodside emailed DNP an activity update regarding well location coordinates and included an updated Consultation Information Sheet (Record of Consultation, reference 6.2.1).
- On 22 October 2024, as no response had been received from DNP, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.3.9).
- On 30 October 2024, DNP emailed Woodside (SI Report, reference 7.1) and noted:
  - **(1)** the planned activity did not overlap any Australian Marine Parks (AMPs) therefore there were no authorisation requirements from the DNP.
  - **(2)** to assist in the preparation of an EP for petroleum activities, NOPSEMA had worked closely with Parks Australia to develop and publish a guidance note that outlined what titleholders needed to consider and evaluate. Titleholders should ensure the EP:
    - Identifies and manages all impacts and risks on Australian marine park values (including ecosystem values) and had considered all options to avoid or reduce them to as low as reasonably practicable.
    - Clearly demonstrates the activity would not be inconsistent with the North-west Marine Parks Network Management Plan 2018.
  - **(3)** it did not require further notification of progress made in relation to this activity unless details regarding the activity changed and resulted in an overlap with a marine park or new impact, or for emergency responses.
  - **(4)** it wished to clarify the operational area for this activity as per DNP's definition.
  - **(3)** the requirements for emergency responses in the event of pollution incidences.
- On 8 November 2024, Woodside responded (SI Report, reference 7.2) thanking DNP for its email and:
  - **(1)** noted DNP's confirmation that planned activities did not overlap any AMPs and there were no authorisation requirements.
  - **(2)** confirmed Woodside had taken into consideration the 'Petroleum Activities and Australian Marine Parks' guidance note to ensure the EP:

- identified and managed all impacts and risks on AMP values (including ecosystem values) to an acceptable level.
- clearly demonstrated that the activities would not be inconsistent with the North-west Marine Parks Network Management Plan 2018.

– **(3)** confirmed Woodside would notify DNP in relation to these activities if details regarding the activities changed and resulted in an overlap with or new impact to a marine park, or for emergency responses.

– **(4)** outlined in consultation information that the operational area was 90 km from Dampier marine park.

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
(1) Confirmed activities don't overlap AMPs.	**(1)** **Woodside assessment:** Woodside noted there were no authorisation requirements from the DNP. **Woodside response:** Woodside noted the DNP's confirmation that planned activities did not overlap AMPs and there are no authorisation requirements.	**(1)** Not required.
(2) Ensure the EP identifies and manages all impacts and risks on AMP values, and clearly demonstrates that activities will not be inconsistent with the management plan.	**(2)** **Woodside assessment:** Woodside has considered the 'Petroleum Activities and Australian Marine Parks' guidance note to assess and manage impacts and risks to AMPs. **Woodside response:** Woodside confirmed it had taken into consideration the 'Petroleum Activities and Marine Parks' guidance note to ensure the EP identified and managed all risks on AMP values and clearly demonstrated that activities would not be inconsistent with the management plan.	**(2)** The EP demonstrates how Woodside will identify and manage all impacts and risks on AMP values (including ecosystem values) to an ALARP and acceptable level and that the activity is not inconsistent with the management plan (see Section 6.7 of the EP).
(3) No further notification required in relation to this activity unless the activity changed and resulted in an overlap with a marine park or new impact, or for emergency responses.	**(3)** **Woodside assessment:** Woodside noted no further notification is required unless the activity changed resulting in an overlap with a marine park or for emergency responses. **Woodside response:** Woodside confirmed it will notify DNP if details regarding the activities changed and resulted in an overlap with or new impact to a marine park, or for emergency responses.	**(3)** Woodside will provide notification of significant change, as appropriate, to relevant persons as referenced in Table 7-7 in the EP. Woodside will ensure DNP is made aware of any incidences within a marine park for the activity, as per the commitment in the Oil Pollution First Strike Plan (Appendix H).

(4) Provided DNP's definition of operational areas which includes operational activities including line turns / repositioning, equipment maintenance, deployment and recovery, crew change and resupply to be included in the EP as relevant risks.	**(4)** **Woodside assessment:** Woodside noted that the Operational Area is 90 km north of Dampier Marine Park. Activities including vessel repositioning, maintenance, deployment and resupply are not occurring in proximity to the Dampier marine Park. **Woodside response:** Woodside notes DNP operational areas definition and has incorporated the relevant risks and mitigations for vessel activities in the EP.	**(4)** The EP demonstrates how Woodside will manage impacts and risks related to interaction with third-party vessels (see Section 6.6.1 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 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 7.7.1).	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 September 2024. Woodside gave this information to DNP on 27 September 2024, 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 PAP, 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 30 October 2024, DNP consulted and 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 provided in the Consultation Information Sheet, Woodside provided DNP with further information in response to DNP's feedback (email of 8 November 2024).

Reasonable Period

Woodside allowed DNP a reasonable period for consultation in the preparation of this 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 4 months ago.
- In this context, Woodside allowed DNP a reasonable period for consultation in preparation of the EP as evidenced by DNP's response on 30 October 2024.

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 9 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 1 targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- In line with NOPSEMA's guideline for engagement with Commonwealth government departments or agencies, Woodside used email for its consultation with DNP.
- Woodside considers a reasonable opportunity was provided to DNP as evidenced by its response on 8 November 2024 when it provided 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:

- 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 and 34(g), Woodside has:
  - Responded to feedback from DNP.
  - Made no changes or inclusions to the EP as a result of consultation with DNP 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.

4.2.5 Ningaloo Coast World Heritage Advisory Committee (NCWHAC)

Summary of information provided and record of consultation for this EP:

- On 27 September 2024, 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 11 October 2024, Woodside emailed NCWHAC an activity update regarding well location coordinates and included an updated Consultation Information Sheet (Record of Consultation, reference 6.2.1).
- On 22 October 2024, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.3.1).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
No feedback, objection or claim 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 7.7.1).	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 September 2024. Woodside gave this information to NCWHAC on 27 September 2024, 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 PAP, 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 this 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.
- Consultation for this EP commenced 4 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 9 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 1 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 22 October 2024, 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 Energy, Mines, Industry Regulation and Safety (DEMIRS)

Summary of information provided and record of consultation for this EP:

- On 27 September 2024, Woodside emailed DEMIRS 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 11 October 2024, Woodside emailed DEMIRS an activity update regarding well location coordinates and included an updated Consultation Information Sheet (Record of Consultation, reference 6.2.1).
- On 22 October 2024, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.3.1).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
No feedback, objection or claim 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 7.7.1).	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 DEMIRS 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 DEMIRS sufficient information to allow DEMIRS 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 September 2024. Woodside gave this information to DEMIRS on 27 September 2024, 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 PAP, 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 DEMIRS a reasonable period for consultation in the preparation of this EP because:

- A consultation period was stated in the initial correspondence to DEMIRS 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 DEMIRS 30 days for consultation.
- Consultation for this EP commenced 4 months ago.
- In this context, Woodside allowed DEMIRS 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 DEMIRS is appropriate and adapted to the nature of interests of DEMIRS:

- Woodside published advertisements in 9 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 1 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 22 October 2024, reminding DEMIRS 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 DEMIRS 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 DEMIRS' 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 27 September 2024, 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 11 October 2024, Woodside emailed DISR an activity update regarding well location coordinates and included an updated Consultation Information Sheet (Record of Consultation, reference 6.2.10).
- On 22 October 2024, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.3.1).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
No feedback, objection or claim 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	No additional measures or controls are required.

	appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7.1).	

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 September 2024. Woodside gave this information to DISR on 27 September 2024, 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 PAP, 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 this 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 4 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 9 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 1 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 22 October 2024, 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 Commonwealth Fisheries Association (CFA)

Summary of information provided and record of consultation for this EP:

- On 27 September 2024, Woodside emailed CFA 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.*
- On 11 October 2024, Woodside emailed CFA an activity update regarding well location coordinates and included an updated Consultation Information Sheet (Record of Consultation, reference 6.2.5).
- On 22 October 2024, as no response had been received from CFA, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.3.2).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
No feedback, objection or claim 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 7.7.1).	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:

- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since September 2024. Woodside gave this information to CFA on 27 September 2024, 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 PAP, 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 this 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 4 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 9 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 1 targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- From 12 October 2024, Woodside held, or hosted information stalls at 3 community events in Dampier and Exmouth 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 27 September 2024, 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.

4.4.2 North West Slope Trawl Fishery and Western Deepwater Trawl Fishery

Summary of information provided and record of consultation for this EP:

- On 27 September 2024, Woodside emailed the relevant Commonwealth fisheries (North West Slope Trawl Fishery and Western Deepwater Trawl Fishery) 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.*
- On 11 October 2024, Woodside emailed the relevant Commonwealth fisheries an activity update regarding well location coordinates and included an updated Consultation Information Sheet (Record of Consultation, reference 6.2.1).
- On 22 October 2024, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.3.10).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
No feedback, objection or claim 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 7.7.1).	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 relevant Commonwealth 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 the relevant Commonwealth fisheries sufficient information to allow the relevant Commonwealth 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 September 2024. Woodside gave this information to the relevant Commonwealth fisheries on 27 September 2024, 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 PAP, 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 the relevant Commonwealth fisheries a reasonable period for consultation in the preparation of this EP because:

- A consultation period was stated in the initial correspondence to the relevant Commonwealth 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 the relevant Commonwealth fisheries 30 days for consultation.
- Consultation for this EP commenced 4 months ago.
- In this context, Woodside allowed the relevant Commonwealth 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 the relevant Commonwealth fisheries is appropriate and adapted to the nature of interests of the relevant Commonwealth fisheries:

- Woodside published advertisements in 9 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 1 targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- From 12 October 2024, Woodside held, or hosted information stalls at 3 community events in Dampier and Exmouth 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 22 October 2024, reminding the relevant Commonwealth 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 the relevant Commonwealth 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 the relevant Commonwealth fisheries' functions, interests or activities.

4.5 State commercial fisheries and peak representative bodies

4.5.1 Western Australian Fishing Industry Council (WAFIC)

Summary of information provided and record of consultation for this EP:

- On 27 September 2024, Woodside emailed WAFIC advising of the proposed activity (Record of Consultation, reference 6.1.30), provided a list of the relevant WA fisheries to contact, a Consultation Information Sheet and a link to NOPSEMA's brochure Consultation on offshore petroleum environment plans: Information for the community.
- **(1)** On 27 September 2024, WAFIC replied to Woodside confirming it would send the consultation information to the relevant fishery licence holders. (SI Report, reference 13.1).
- **(1)** On 30 September 2024, Woodside responded to WAFIC (SI Report, reference 13.2) confirming it would like to use Option A of the fee-for-service agreement to distribute the consultation materials to the relevant WA fisheries.
- **(1)** On 30 September 2024, WAFIC emailed the relevant fishery licence holders (SI Report, reference 13.4) advising of the proposed activity, provided a Consultation Information Sheet and a link to NOPSEMA's brochure Consultation on offshore petroleum environment plans: Information for the community.
- **(1)** On 30 September 2024, WAFIC advised Woodside (SI Report, reference 13.3) that it had sent the EP consultation materials to relevant licence holders.
- **(1)** On 1 October 2024, Woodside responded to WAFIC (SI Report, reference 13.5) thanking it for confirming consultation materials had been sent to the relevant licence holders.
- On 11 October 2024, Woodside emailed WAFIC an activity update regarding well location coordinates and included an updated Consultation Information Sheet (Record of Consultation, reference 6.2.1).
- **(1)** On 15 October 2024, WAFIC emailed Woodside (SI Report, reference 13.6) to advise the update to Woodside's 30 September 2024 notification had been sent to relevant licence holders.
- **(2)** On 30 October 2024, WAFIC emailed Woodside (SI Report, reference 13.7) confirming it did not have any feedback from licence holders regarding this EP. **(2)** Woodside noted WAFIC did not have any feedback from licence holders related to this EP. WAFIC provided the following further comments and questions:
  - **(3)** What is the maximum amount of time the infrastructure will be on the seabed?
  - **(4)** How far above the mudline will well infrastructure be removed?
  - **(4,5)** No infrastructures are to be left in-situ that presents a snagging risk and no material or contaminants that will present an unacceptable risk to aquatic resources or marine environment
  - **(6)** Concerns around the impact of decreased water quality on commercial species from subsea discharges
  - **(6)** Has consideration been given to the cumulative impacts of decreased water quality on the marine environment?

- **(7)** Sought confirmation on what Woodside had in place for oil spill response planning, including notifying WAFIC within 24 hours of event notification. Also offered assistance to communicate with WA fisheries should this be required.
- **(8)** Sought confirmation that Woodside had an effective Operational and Scientific Monitoring Program (OSMP) for the purposes of determining impacts and monitoring the recovery of the marine environment
- **(9)** Sought confirmation Woodside had a current list of WA commercial fisheries that could be impacted by an unplanned spill scenario
- **(10)** Shared its position on consultation with the WA fishing industry for unplanned events
- **(11)** Advised Woodside's ongoing communication with mariners regarding notices on activities was appreciated and asked to be included in any vessel operation look ahead
- **(12)** Confirmed it had no further comments and questions related to the proposed activities. **(12)** Woodside noted WAFIC's response that it had no further comments.

- On 29 November 2024, Woodside responded to WAFIC (SI Report, reference 13.8) as follows:
  - **(3)** Well infrastructure would only be temporarily wet stored for less than a year
  - **(4)** The wellheads are planned to be cut below the mudline (3-5m). There is a contingency option to cut above the mudline however this is a worst-case conservative option. If this occurs all efforts will be made to complete the cut as close as possible to the mudline (up to 1 m maximum only). The location of wellheads will be marked on navigation charts
  - **(5)** The area that would be occupied by any remaining wellhead infrastructure is small (<6m^2) and any remaining wellhead infrastructure will degrade into seabed sediments. Any potential corrosion is only expected in trace amounts over hundreds of years. Iron is the main constituent (98) of wellhead infrastructure and not considered a significant contaminant to the marine environment. Wellhead infrastructure left in-situ assessment indicates that there will be no additional impacts to benthic habitats and no impacts would occur to any protected species
  - **(6)** There has been a thorough impact assessment of all planned subsea discharges
  - **(6)** Impacts to water quality are expected to be negligible with no impact to protected species due to the small volume of short intermittent discharges
  - **(6)** Discharges of cement/subsea fluids indicate reduction in water quality will be temporary and subject to rapid dispersion and dilution
  - **(6)** No cumulative impacts to water quality are expected to occur.
  - **(7)** An Oil Strike Plan is in place for all EPs and contact would be made with WAFIC within 24 hours should this occur.
  - **(8)** Woodside had an effective Operational and Scientific Monitoring Program (OSMP) for the purposes of determining impacts and monitoring the recovery of the marine environment.
  - **(9)** Woodside had a current list of WA commercial fisheries that could be impacted by an unplanned spill scenario
  - **(10)** Confirmed Woodside has incorporated WAFIC's consultation guidance into its consultation methodology
  - **(11)** Confirmed activity notifications to WAFIC had been incorporated into the EP as standard controls

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
(1)	**(1)**	**(1)**

Confirmed consultation information was sent to fisheries/licence holders.	**Woodside assessment:** Woodside noted that consultation information had been distributed to relevant fishery licence holders via WAFIC. **Woodside response:** Woodside thanked WAFIC for distributing consultation information to relevant fishery licence holders.	Not required.
(2) No feedback from fishery licence holders.	**(2)** **Woodside assessment:** Woodside noted that WAFIC did not get any feedback from fishing licence holders. **Woodside response:** Woodside acknowledged that WAFIC did not receive any feedback resulting from consultation with fishery licence holders.	**(2)** Not required.
(3) Enquired how long the infrastructure will be on the seabed.	**(3)** **Woodside assessment:** Woodside temporarily stores well infrastructure on the seabed during decommissioning activities for no longer than one year. **Woodside response:** Woodside advised the well infrastructure would only be temporarily wet stored for less than a year.	**(3)** Section 3.12.4 of the EP addresses the impacts and appropriate measures when temporarily wet storing well infrastructure.
(4) Enquired how far above the mudline well infrastructure will be removed as there is to be no infrastructure to be left in-situ that presents a snagging risk.	**(4)** **Woodside assessment:** Woodside intends to cut below the mudline however if this is not successful a cut will be made as close as possible to the mudline but no more than 1 metre above. **Woodside response:** Woodside advised the wellheads are planned to be cut below the mudline (3-5m), however if this is not successful it may be cut 1m above the mudline with all efforts made to cut as close as possible to the mudline.	**(4)** In the event that the well infrastructure cannot be removed, remaining infrastructure (up to 1 m) will comply with the *Environmental Protection (Sea Dumping) Act 1981,* as referenced in C 2.2 in this EP.
(5) No material or contaminants left in-situ that will present unacceptable risk to aquatic resources or the marine environment from contamination.	**(5)** **Woodside assessment:** Woodside does not consider there will be any unacceptable risk to aquatic resources or the marine environment from contamination.	**(5)** Section 6.6.2 of the EP evaluates the impact of disturbance to seabed from in situ decommissioning of remaining well infrastructure if removal is not possible.

	Woodside response: Woodside advised WAFIC any remaining wellhead infrastructure is small (<6 m²) and the remaining infrastructure will eventually degrade into seabed sediments. Any potential corrosion of wellhead infrastructure left in-situ is only expected in trace amounts over hundreds of years. Iron, the main constituent (around 98%), is not considered a significant contaminant in the marine environment. Wellhead infrastructure left in-situ assessment indicates that there will be no additional impacts to benthic habitats and no impacts would occur to any protected species.	
(6) Concern about decreased water quality on the marine environment due to cumulative impacts	**(6)** **Woodside assessment:** After a thorough water quality impact assessment, Woodside expects there will be negligible impacts to water quality from well/drilling fluids due to small volumes of short intermittent discharges. Any reduction in water quality from cement/subsea fluids bulk discharge will be temporary and will rapidly disperse and dilute. No cumulative impacts from water quality are expected to occur. **Woodside response:** Woodside advised it had undertaken a thorough impact assessment of all planned subsea discharges. Water quality impact assessment for discharges of well/drilling fluids are expected to be negligible with no impacts to any protected species, due to the small volumes of short period intermittent discharges. Water quality impact assessment for discharges of cement/subsea fluids indicates that reduction in water quality from bulk discharges will be temporary and subject to rapid dispersion and dilution. No cumulative impacts to water quality are expected to occur, as discharged cements etc. are predicted to settle in between the plug and abandon activities for each well.	**(6)** Section 6.6 of the EP evaluates the impact of the proposed planned activities on water quality.
(7)	**(7)**	**(7)**

Sought confirmation on oil spill arrangements including that WAFIC would be advised within 24 hours of an event notification. Offer made to communicate with the WA fishing industry if required.	**Woodside assessment:** Woodside has an Oil Pollution Strike Plan in place for all EPs and in the unlikely event of an unplanned hydrocarbon spill contact would be made with WAFIC within 24 hours**.** **Woodside response:** Woodside advised WAFIC it had an Oil Pollution First Strike Plan in place for this EP and confirmed in the unlikely event of an unplanned hydrocarbon spill, contact would be made with WAFIC within 24 hours. Woodside thanked WAFIC for confirming it would assist Woodside with communications with the fishing industry should this be required.	Woodside has addressed oil spill preparedness and response strategy in Appendix H.
(8) Sought confirmation that Woodside had an effective Operational and Scientific Monitoring Program (OSMP).	**(8)** **Woodside assessment:** Woodside has a well established OSMP in place executed under the Joint Industry OSM Framework (AEP, 2021). **Woodside response:** Woodside confirmed with WAFIC an OSMP was in place executed under the Joint Industry OSM Framework.	**(8)** The EP demonstrates Woodside has an effective OSMP in Annex C of the Oil Spill Preparedness and Response Mitigation Assessment (OSPRMA) (Appendix G).
(9) Sought confirmation that Woodside had a current list of WA fisheries that could be impacted by an unplanned spill scenario.	**(9)** **Woodside assessment:** Woodside retains a list of commercial fishery licence holders which is updated approximately annually. **Woodside response:** Woodside advised WAFIC it had a list of commercial fishery licence holders which is updated approximately annually.	**(9)** Woodside receives WA fisheries licence holder details annually as referenced in 5.4.1 of the EP.
(10) Shared WAFIC consultation guidance with the WA fishing industry – *Consultation for unplanned events.*	**(10)** **Woodside assessment:** Woodside accepts WAFIC's guidance on consultation with the WA fishing industry and has incorporated this into the Woodside consultation methodology. **Woodside response:** Woodside advised WAFIC it had incorporated WAFIC's consultation guidance into the Woodside consultation methodology.	**(10)** Woodside consultation methodology (see Section 5.3.4 Table 5-2) incorporates WAFIC's consultation guidance.

(11) Asked to be included in any vessel operation look ahead associated with this EP.	**(11)** **Woodside assessment:** Woodside notifies WAFIC on activity commencement and completion as well as distances around temporary exclusion zones. **Woodside response:** Woodside advised WAFIC that activity notifications are incorporated into this EP as standard controls.	**(11)** WAFIC will provide notifications to WAFIC (see Table 7-5 of this EP) prior to commencement and upon completion of activities, as referenced as PS 1.3 of the EP.
(12) No further comments related to this EP.	**(12)** **Woodside assessment:** Woodside accepts WAFIC has no further comments related to the proposed activities for this EP. **Woodside response:** Woodside noted WAFIC had no further comments related to this EP.	**(12)** Not 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 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 7.7.1).	Woodside has assessed the potential for interaction with State-managed fisheries in Section 4.9.2 of the EP. Woodside will provide notifications to DPIRD and WAFIC (see Table 7-5 of this EP) prior to the commencement and at the completion of the activity, as referenced at PS 1.3 in this 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 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:

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 September 2024. Woodside gave this information to WAFIC on 27 September 2024, 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 PAP, 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 30 October 2024, WAFIC shared its feedback, claims or objections regarding this activity, indicating the information provided was sufficient to enable WAFIC to make an informed assessment of the possible consequences of the activity on its functions, interests or activities.
- Woodside provided additional information on 29 November 2024.

Reasonable Period

Woodside allowed WAFIC a reasonable period for consultation in the preparation of this 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 4 months ago.
- In this context, Woodside allowed WAFIC a reasonable period for consultation in preparation of the EP as evidenced by WAFIC's response on 30 October 2024.

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 9 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 1 targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- From 12 October 2024, Woodside held, or hosted information stalls at 3 community events in Dampier and Exmouth to raise awareness of the EP and provide another opportunity for feedback. These events were promoted in local newspapers and on social media.
- Woodside considers a reasonable opportunity was provided to WAFIC as evidenced by its response on 30 October 2024.

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 WAFIC 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.

4.5.2 Aquaculture Council of Western Australia (ACWA)

Summary of information provided and record of consultation for this EP:

- On 21 November 2024, Woodside emailed Aquaculture Council of Western Australia advising of the proposed activity (Record of Consultation, reference 6.1.9) and provided a Consultation Information Sheet and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.*
- On 9 December 2024, as no response had been received from ACWA, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.3.15).
- **(1)** On 9 December 2024, ACWA responded to Woodside (SI Report, reference 20.1) to advise the proposed activities are sufficiently distant from current aquaculture activities to present any direct impacts. ACWA also:
  - **(2)** acknowledged the rare likelihood of consequences from unplanned hydrocarbon release due to the appropriate mitigation measures put in place by Woodside.
  - **(3)** advised it had no objection to the proposed activities.
- **(1)** On 17 December 2024, Woodside responded to ACWA (SI Report, reference 20.2) noting its feedback that the proposed activities are sufficiently distant from aquaculture activities to ensure no direct impacts. Woodside also:
  - **(2)** confirmed ACWA understood that appropriate mitigation measures would be in place in the event of a hydrocarbon release.
  - **(3)** noted ACWA's feedback that it had no objection to the proposed activities.

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
(1) Proposed activities are sufficiently distant from current aquaculture activities to present any direct impacts.	**(1)** **Woodside assessment:** Woodside notes ACWA's feedback that there is a sufficient distance from current aquaculture activities to present direct impacts. **Woodside response:** Woodside responded noting the feedback that the proposed activities are sufficiently distant from aquaculture activities to ensure no direct impacts.	**(1)** Not required.
(2) Low likelihood of consequences from unplanned hydrocarbon release due to the appropriate mitigation measures put in place.	**(2)** **Woodside assessment:** Woodside notes ACWA's feedback that there is low likelihood of consequences from unplanned hydrocarbon release due to the appropriate mitigation measures put in place.	**(2)** Woodside's Oil Spill Preparedness and Response Mitigation Assessment is in Appendix H of the EP.

	Woodside response: Woodside responded confirming the feedback that ACWA understood that appropriate mitigation measures would be put in place in the event of a hydrocarbon release.	
(3) No objection to proposed activities.	**(3)** **Woodside assessment:** Woodside accepts ACWA's feedback that it had no objections to the proposed activities for this EP. **Woodside response:** Woodside thanked ACWA for its feedback that it had no objections to proposed activities for the EP.	**(3)** Not 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 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 7.7.1).	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 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:

- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since September 2024. Woodside gave this information to ACWA on 21 November 2024, 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 PAP, 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 9 December 2024, ACWA shared its feedback, claims or objections regarding this activity, indicating the information provided was sufficient to enable ACWA to make an informed assessment of the possible consequences of the activity on its functions, interests or activities.
- Woodside responded to ACWA noting its feedback on 17 December 2024.

Reasonable Period

Woodside allowed ACWA a reasonable period for consultation in the preparation of this 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 2 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 9 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 1 targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- From 12 October 2024, Woodside held, or hosted information stalls at 3 community events in Dampier and Exmouth to raise awareness of the EP and provide another opportunity for feedback. These events were promoted in local newspapers and on social media.
- Woodside considers a reasonable opportunity was provided to ACWA as evidenced by its response on 7 December 2024.

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.

4.5.3 Mackerel Managed Fishery (Area 2 and 3), Pilbara Line Fishery, Pilbara Trap Fishery, Pilbara Trawl Fishery

Summary of information provided and record of consultation for this EP:

- On 30 September 2024, WAFIC, on behalf of Woodside, emailed the relevant WA fishery individual licence holders advising of the proposed activity (SI Report, reference 13.4), and provided a Consultation Information Sheet.
- On 30 October 2024, WAFIC emailed Woodside reporting that no feedback had been received for this activity from licence holders (SI Report, reference 13.7).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
No feedback, objection or claim 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 7.7.1).	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 through WAFIC with 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 State licence holders sufficient information to allow State 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 September 2024. Woodside gave this information to licence holders on 30 September 2024, 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 PAP, 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 licence holders a reasonable period for consultation in the preparation of this EP because:

- A consultation period was stated in the initial correspondence to 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 licence holders 30 days for consultation.
- Consultation for this EP commenced 4 months ago.
- In this context, Woodside allowed 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 licence holders is appropriate and adapted to the nature of interests of licence holders:

- Woodside published advertisements in 9 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 1 targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- From 12 October 2024, Woodside held, or hosted information stalls at 3 community events in Dampier and Exmouth to raise awareness of the EP and provide another opportunity 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 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 licence holders' functions, interests or activities.

4.6 Recreational marine users and peak representative bodies

4.6.1 Gascoyne Recreational Marine Users and Pilbara/Kimberley Recreational Marine Users

Summary of information provided and record of consultation for this EP:

- On 27 September 2024, Woodside sent a letter or email to individual Gascoyne and Pilbara/Kimberley Recreational Marine Users advising of the proposed activity (Record of Consultation, reference 6.1.24 and 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 11 October 2024, Woodside emailed Gascoyne and Pilbara/Kimberley Recreational Marine Users an activity update regarding well location coordinates and included an updated Consultation Information Sheet (Record of Consultation, reference 6.2.1).

- **(1)** On 11 October 2024, a Pilbara Recreational Marine User requested to be unsubscribed from Woodside's consultation list as they were no longer involved with the fishing club (SI Report, reference 10.1)
- **(1)** On 17 October 2024, Woodside responded to the Pilbara Recreational Marine User confirming they had been removed from the consultation list (SI Report, reference 10.2).
- On 22 October 2024, as no response had been received from all but one Gascoyne or Pilbara/Kimberley Recreational Marine Users, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.3.13).
- On 9 January 2024, as no response had been received from Gascoyne or Pilbara/Kimberley Recreational Marine Users who were sent a letter, Woodside proactively sent a follow-up letter (Record of Consultation, reference 6.3.14).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
(1) Recreational marine user advised they were no longer involved in the fishing club and asked to be removed from consultation list.	**(1)** **Woodside assessment:** Woodside noted one recreational marine user was no longer part of the relevant fishing club and therefore did not require consultation information. **Woodside response:** Woodside noted the recreational marine users request to be removed from the consultation list and confirmed they had been removed.	**(1)** Not 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 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 7.7.1).	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 Gascoyne and 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 Gascoyne and Pilbara/Kimberley Recreational Marine Users sufficient information to allow Gascoyne and 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 September 2024. Woodside gave this information to Gascoyne and Pilbara/Kimberley Recreational Marine Users on 27 September 2024, 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 PAP, 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 17 October 2024, one recreational marine user shared its feedback regarding this activity, indicating the information provided was sufficient to enable Gascoyne and Pilbara/Kimberley Recreational Marine Users to make an informed assessment of the possible consequences of the activity on its functions, interests or activities.
- Woodside responded to one recreational marine user confirmed its feedback had been actioned on 17 October 2024.

Reasonable Period

Woodside allowed Gascoyne and Pilbara/Kimberley Recreational Marine Users a reasonable period for consultation in the preparation of this EP because:

- A consultation period was stated in the initial correspondence to Gascoyne and 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 Gascoyne and Pilbara/Kimberley Recreational Marine Users 30 days for consultation.
- Consultation for this EP commenced four months ago.
- In this context, Woodside allowed Gascoyne and 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 Gascoyne and Pilbara/Kimberley Recreational Marine Users is appropriate and adapted to the nature of interests of Gascoyne and Pilbara/Kimberley Recreational Marine Users:

- Woodside published advertisements in 9 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 1 targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.

- From 12 October 2024, Woodside held, or hosted information stalls at 3 community events in Dampier and Exmouth 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 for the majority, Woodside sent a follow-up consultation email on 22 October 2024, reminding Gascoyne and 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 Gascoyne and Pilbara/Kimberley Recreational Marine Users did not provide material 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.

4.6.2 Marine Tourism WA

Summary of information provided and record of consultation for this EP:

- On 27 September 2024, 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 11 October 2024, Woodside emailed Marine Tourism WA an activity update regarding well location coordinates and included an updated Consultation Information Sheet (Record of Consultation, reference 6.2.1).
- On 22 October 2024, as no response had been received from Marine Tourism WA, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.3.1).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
No feedback, objection or claim 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 7.7.1).	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:		

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 September 2024. Woodside gave this information to Marine Tourism WA on 27 September 2024, 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 PAP, 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 this 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 4 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 9 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 1 targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- From 12 October 2024, Woodside held, or hosted information stalls at 3 community events in Dampier and Exmouth 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 22 October 2024, 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.
- 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 Recfishwest

Summary of information provided and record of consultation for this EP:

- On 27 September 2024, 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.*
- **(1)** On 2 October 2024, Recfishwest responded to Woodside (SI Report, reference 11.1) acknowledging its plans to conduct this EP's activities from Q2 2025 to Q4 2026. **(1)** Woodside noted Recfishwest's response confirming timing but did not respond on this topic. Recfishwest also:
  - **(2)** advised that the proposed activities occurring 125 km north of Dampier will affect areas accessed by recreational fishers.
  - **(2)** requested updates to inform the fishing community about the 500m exclusion zones.
- On 4 October 2024, Woodside responded to Recfishwest (SI Report, reference 11.2):
  - **(2)** noting its feedback that the general area for the proposed activities is accessed by the charter industry and recreational fishers in larger vessels.
  - **(2)** committing to notifying Recfishwest of activity dates for communication to the recreational fishing community.
- On 11 October 2024, Woodside emailed Recfishwest an activity update regarding well location coordinates and included an updated Consultation Information Sheet (Record of Consultation, reference 6.2.1).
- On 16 October 2024, Recfishwest replied to Woodside's email (SI Report, reference 11.3) to advise it had received the activity update with new co-ordinates and water depths. Recfishwest confirmed it had no additional comments to those provided on 2 October 2024.
- On 23 October 2024, Woodside replied to Recfishwest acknowledging its confirmation that it had received the revised co-ordinates and water depths for this EP. Woodside also acknowledged Recfishwest had no additional comments to make to those it had provided on 2 October 2024.

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
(1) Acknowledged plans to conduct the proposed activities from Q2 2025 to Q4 2026.	**(1)** **Woodside assessment:** Woodside plans to conduct the proposed activities for this EP from Q2 2025 to Q4 2026.	**(1)** Not required.

	Woodside response: Woodside noted Recfishwest understood the timing for the proposed activities for this EP.	
(2) Proposed activities will affect areas accessed by recreational fishers and therefore requested activity updates to inform the fishing community of exclusion zones.	**(2)** **Woodside assessment:** Woodside understands the general area is accessed by the charter industry and recreational fishers in large vessels and commits to provided notifications to Recfishwest to keep this community informed of activities. **Woodside response:** Woodside advised Recfishwest it would be notified of activity dates for communication to the recreational fishing community.	**(2)** Woodside will provide notifications to Recfishwest (see Table 7-5 of this EP) ten days before activity commences, and following completion of activities, as referenced as PS 1.3 of this 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 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 7.7.1).	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 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 September 2024. Woodside gave this information to Recfishwest on 27 September 2024, 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 PAP, 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 2 October 2024, Recfishwest shared its feedback, claims or objections regarding this activity, indicating the information provided was sufficient to enable Recfishwest to make an informed assessment of the possible consequences of the activity on its functions, interests or activities.
- Woodside provided additional information on 4 October 2024.

Reasonable Period

Woodside allowed Recfishwest a reasonable period for consultation in the preparation of this 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 4 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 9 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 1 targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- From 12 October 2024, Woodside held, or hosted information stalls at 3 community events in Dampier and Exmouth to raise awareness of the EP and provide another opportunity for feedback. These events were promoted in local newspapers and on social media.
- Woodside considers a reasonable opportunity was provided to Recfishwest as evidenced by its response on 2 October 2024.

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 had no objections or claims. In line with the intended outcome of consultation as set out in Section 5.2 and regulations 24 and 34(g), Woodside has:

- Responded to feedback from Recfishwest and assessed the merits of any objection or claim about the adverse impact of activities to which this EP relates.
- As a result of Recfishwest's feedback requesting activity notifications, this was added to Section 7.9, Table 7-5 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.

4.6.4 WA Game Fishing Association

Summary of information provided and record of consultation for this EP:

- On 27 September 2024, 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 11 October 2024, Woodside emailed WA Game Fishing Association an activity update regarding well location coordinates and included an updated Consultation Information Sheet (Record of Consultation, reference 6.2.1).
- On 22 October 2024, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.3.1).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
No feedback, objection or claim 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 7.7.1).	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 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 September 2024. Woodside gave this information to WA Game Fishing Association on 27 September 2024, 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 PAP, 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 this 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 4 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 9 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 1 targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- From 12 October 2024, Woodside held, or hosted information stalls at 3 community events in Dampier and Exmouth 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 22 October 2024, reminding WA Game Fishing Association 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 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 Beagle No. 1 / Longreach Capital Investment, Bounty Oil and Gas, Carbon CQ, Coastal Oil and Gas, Finder Energy (Finder No 16), InCapture, INPEX Alpha, Jadestone Energy, JX Nippon, KATO Energy / KATO Corowa / KATO NWS / KATO Amulet, Kyushu Electric Wheatstone, OMV Australia, Pathfinder Energy, PE Wheatstone, Skye Napoleon, Vermilion Oil and Gas, Western Gas

Summary of information provided and record of consultation for this EP:

- On 27 September 2024, 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 11 October 2024, Woodside emailed titleholders an activity update regarding well location coordinates and included an updated Consultation Information Sheet (Record of Consultation, reference 6.2.1).
- On 22 October 2024, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.3.1).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
No feedback, objection or claim 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 7.7.1).	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 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 September 2024. Woodside gave this information to titleholders on 27 September 2024, 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 PAP, 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 this 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 4 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 9 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 1 targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- From 12 October 2024, Woodside held, or hosted information stalls at 3 community events in Dampier and Exmouth 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 22 October 2024, reminding titleholders 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 titleholders 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 each titleholder's functions, interests or activities.

4.7.2 BP Developments Australia

Summary of information provided and record of consultation for this EP:

- On 27 September 2024, Woodside emailed BP 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 11 October 2024, Woodside emailed BP an activity update regarding well location coordinates and included an updated Consultation Information Sheet (Record of Consultation, reference 6.2.1).
- **(1)** On 21 October 2024, BP responded to Woodside (SI Report, reference 42.1) to advise it considered the impacts and risks identified will be appropriately managed and it had no feedback or objections at this time.
- **(1)** On 23 October 2024, Woodside responded to BP (SI Report, reference 42.2) to thank it for considering the impacts and risks for this EP will be appropriately managed under the proposed measures. Woodside also noted BP had no objections or other feedback at this time.

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
(1) Considered impacts and risks identified were appropriately managed and therefore had no feedback or objections.	**(1)** **Woodside assessment:** Woodside accepts that BP has no feedback at this time as it considers impacts and risks will be appropriately managed. **Woodside response:** Woodside noted BP's feedback that risks and impacts for this EP will be appropriately managed and therefore it had no feedback or objections.	**(1)** Not 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 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 7.7.1).	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 BP 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 sufficient information to allow BP 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 September 2024. Woodside gave this information to BP on 27 September 2024, 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 PAP, 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 October 2024, BP shared its feedback, claims or objections regarding this activity, indicating the information provided was sufficient to enable BP to make an informed assessment of the possible consequences of the activity on its functions, interests or activities.
- Woodside responded to BP noting its feedback on 23 October 2024.

Reasonable Period

Woodside allowed BP a reasonable period for consultation in the preparation of this EP because:

- A consultation period was stated in the initial correspondence to BP 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 30 days for consultation.
- Consultation for this EP commenced 4 months ago.
- In this context, Woodside allowed BP a reasonable period for consultation in preparation of the EP as evidenced by BP's response on 21 October 2024.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with BP is appropriate and adapted to the nature of interests of BP:

- Woodside published advertisements in 9 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 1 targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- From 12 October 2024, Woodside held, or hosted information stalls at 3 community events in Dampier and Exmouth to raise awareness of the EP and provide another opportunity for feedback. These events were promoted in local newspapers and on social media.
- Woodside considers a reasonable opportunity was provided to BP as evidenced by its response on 21 October 2024.

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 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 and 34(g), Woodside has:
  - Responded to feedback from BP and assessed the merits of any objection or claim about the adverse impact of activities to which this EP relates.
  - Made no changes or inclusions to the EP as a result of consultation with BP 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 Carnarvon Energy

Summary of information provided and record of consultation for this EP:

- On 27 September 2024, Woodside emailed Carnarvon 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.*
- **(1)** On 1 October 2024, Carnarvon Energy thanked Woodside for the information related to this EP and advised it had no comment/feedback to provide. (SI Report, reference 4.1).
- **(1)** On 2 October 2024, Woodside responded to Carnarvon Energy (SI Report, reference 4.2) acknowledging receipt of its email advising Carnarvon Energy had no feedback or comments to make about this EP.
- **(2)** On 3 October 2024, Woodside emailed Carnarvon Energy (SI Report, reference 4.3) seeking permission to include Carnarvon Energy's response in the EP (publicly available) and Sensitive Information report for NOPSEMA. This email was sent in response to a disclaimer placed on Carnarvon Energy's email.
- **(2)** On 3 October 2024, Carnarvon Energy advised Woodside (SI Report, reference 4.4) that it understood all correspondence in relation to this EP would be summarised in the EP (which is publicly available) and would also be provided to the regulator in full in a Sensitive Information report.
- On 11 October 2024, Woodside emailed Carnarvon Energy an activity update regarding well location coordinates and included an updated Consultation Information Sheet (Record of Consultation, reference 6.2.1).
- **(3)** On 17 October 2024, Carnarvon Energy responded to Woodside (SI Report, reference 4.5) to confirm it had received the updated co-ordinates and had no additional feedback or comments for the EP.
- **(3)** On 13 December 2024, Woodside responded to Carnarvon Energy acknowledging Carnarvon Energy had received the updated co-ordinates and had no additional comments or feedback (SI Report, reference 4.6).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
(1) No feedback or comments.	**(1)** **Woodside assessment:** Woodside accepted Carnarvon Energy has no feedback or comments on this EP. **Woodside response:** Woodsides noted Carnarvon Energy had no feedback or comments to make on this EP.	**(1)** Not required.
(2) Permission provided to summarise Carnarvon Energy's feedback in this EP.	**(2)** **Woodside assessment:** Carnarvon Energy's email signature had a disclaimer advising the content of the email could not be shared. Woodside therefore sought permission to summarise Carnarvon Energy's related emails in this EP. **Woodside response:** Woodside confirmed it had received permission from Carnarvon Energy to summarise its feedback in this EP.	**(2)** Not required.
(3) No further feedback upon receipt of the updated co-ordinates from Woodside.	**(3)** **Woodside assessment:** Woodside accepts Carnarvon Energy has no further feedback on this EP. **Woodside response:** Woodside noted Carnarvon Energy's response that it had no further feedback on this EP.	**(3)** Not 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 after the EP has been accepted, it will be assessed and, where	No additional controls or measures are required.

	appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7.1).	

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with Carnarvon 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 Carnarvon Energy sufficient information to allow Carnarvon 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 September 2024. Woodside gave this information to Carnarvon Energy on 27 September 2024, 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 PAP, 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 1,3 and 17 October 2024, Carnarvon Energy shared its feedback, claims or objections regarding this activity, indicating the information provided was sufficient to enable Carnarvon Energy to make an informed assessment of the possible consequences of the activity on its functions, interests or activities.
- Woodside provided additional information on 3 October 2024.

Reasonable Period

Woodside allowed Carnarvon Energy a reasonable period for consultation in the preparation of this EP because:

- A consultation period was stated in the initial correspondence to Carnarvon 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 Carnarvon Energy 30 days for consultation.
- Consultation for this EP commenced 4 months ago.
- In this context, Woodside allowed Carnarvon Energy a reasonable period for consultation in preparation of the EP as evidenced by Carnarvon Energy's responses on 1,3 and 17 October 2024.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with Carnarvon Energy is appropriate and adapted to the nature of interests of Carnarvon Energy:

- Woodside published advertisements in 9 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 1 targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- From 12 October 2024, Woodside held, or hosted information stalls at 3 community events in Dampier and Exmouth to raise awareness of the EP and provide another opportunity for feedback. These events were promoted in local newspapers and on social media.
- Woodside considers a reasonable opportunity was provided to Carnarvon Energy as evidenced by its responses on 1,3 and 17 October 2024.

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:

- Carnarvon 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 and 34(g), Woodside has:
  - Responded to feedback from Carnarvon Energy and assessed the merits of any objection or claim about the adverse impact of activities to which this EP relates.
  - Made no changes or inclusions to the EP as a result of consultation with Carnarvon 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.

4.7.4 Chevron Australia/ MidOcean Gorgon/ Osaka Gas Gorgon/ JERA Gorgon

Summary of information provided and record of consultation for this EP:

- On 27 September 2024, Woodside emailed Chevron Australia 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 11 October 2024, Woodside emailed Chevron Australia an activity update regarding well location coordinates and included an updated Consultation Information Sheet (Record of Consultation, reference 6.2.1).
- On 22 October 2024, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.3.18).
- **(1)** On 24 October 2024, Chevron Australia responded to Woodside (SI Report, reference 17.1) and requested a further 30 days to provide feedback for this EP due to internal resourcing
- **(1)** On 31 October 2024, Woodside responded to Chevron Australia (SI Report, reference 17.2) noting its request for a further 30 days to respond to feedback. Woodside confirmed it looked forward to receiving this feedback by 30 November 2024.
- **(2)** On 12 November 2024, Chevron Australia emailed Woodside (SI Report, reference 17.3) advising there were no issues identified related to this EP. In addition, Chevron advised:

- **(3)** as a general comment across all proposed activities if the work plan is executed during the cyclone season, then Woodside should provide cyclone anchor configuration
- **(4)** it is to be informed of any potential risks to its assets within the affected leases.

- **(2)** On 21 November 2024, Woodside emailed Chevron Australia (SI Report, reference 17.4) noting its feedback that there were no issues identified with the EP. Woodside also confirmed:
  - **(3)** there were no plans for activities to occur in cyclone season, however in the unlikely case this was to occur the MODU contractor and vessel contractors will implement a Cyclone Contingency Plan
  - **(3)** if there are any potential risks it will provide detailed information to Chevron Australia.

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
(1) Requested a further 30 days to provide feedback.	**(1)** **Woodside assessment:** Woodside extended the consultation period an additional 30 days to give Chevron a reasonable period to make an informed assessment of the possible consequences of the proposed activity on its functions, interests or activities. **Woodside response:** Woodside confirmed it had given Chevron an additional 30 days to provide feedback on this EP.	**(1)** Not required.
(2) No issues identified.	**(2)** **Woodside assessment:** Woodside accepts that Chevron identified no issues with proposed EP activities. **Woodside response:** Woodside confirmed with Chevron that it had no issues with EP activities.	**(2)** Not required.
(3) Requested information related to cyclone season.	**(3)** **Woodside assessment:** Woodside understands that Chevron would want to be informed of risks to its assets if activities progressed during cyclone season but can confirm no planned operational activities will occur during this time. **Woodside response:** Woodside confirmed that planned activities associated with the EP will not occur	**(3)** Woodside Cyclone Contingency Plan is referenced in Section 7.11.9 of this EP.

	during cyclone season however in the unlikely case it was to occur a Cyclone Contingency Plan would be put in place and detailed information about risks provided to Chevron.	
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 after the EP is accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7.1).	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 Chevron 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 Chevron Australia sufficient information to allow Chevron 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 September 2024. Woodside gave this information to Chevron Australia on 27 September 2024, 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 PAP, 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).
- Woodside followed-up to remind Chevron Australia of consultation on 22 October 2024.

- On 12 November 2024, Chevron Australia shared its feedback, claims or objections regarding this activity, indicating the information provided was sufficient to enable Chevron Australia to make an informed assessment of the possible consequences of the activity on its functions, interests or activities.
- Woodside provided additional information on 21 November 2024.

Reasonable Period

Woodside allowed Chevron Australia a reasonable period for consultation in the preparation of this EP because:

- A consultation period was stated in the initial correspondence to Chevron 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 Chevron Australia 60 days for consultation at Chevron Australia's request.
- Consultation for this EP commenced 4 months ago.
- In this context, Woodside allowed Chevron Australia a reasonable period for consultation in preparation of the EP as evidenced by its response on 12 November 2024.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with Chevron Australia is appropriate and adapted to the nature of interests of Chevron Australia:

- Woodside published advertisements in 9 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 1 targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- From 12 October 2024, Woodside held, or hosted information stalls at 3 community events in Dampier and Exmouth to raise awareness of the EP and provide another opportunity for feedback. These events were promoted in local newspapers and on social media.
- Woodside considers a reasonable opportunity was provided to Chevron Australia as evidenced by its response on 12 November 2024.

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 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 and 34(g), Woodside has:
  - Responded to feedback from Chevron Australia and assessed the merits of any objection or claim about the adverse impact of activities to which this EP relates.
  - Made no changes or inclusions to the EP as a result of consultation with Chevron 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.

4.7.5 KUFPEC Australia

Summary of information provided and record of consultation for this EP:

- On 27 September 2024, Woodside emailed KUFPEC 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 11 October 2024, Woodside emailed KUFPEC an activity update regarding well location coordinates and included an updated Consultation Information Sheet (Record of Consultation, reference 6.2.1).
- On 22 October 2024, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.3.1).
- **(1)** On 11 November 2024, KUFPEC responded to Woodside (SI Report, reference 8.1) advising it had no objections on the proposed activities for this EP
- **(1)** On 15 November 2024, Woodside responded to KUFPEC (SI Report, reference 8.2) confirming it had received KUFPEC's feedback that it had no objections to the proposed activities for this EP.

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
(1) No objections on the proposed activities.	**(1)** **Woodside assessment:** Woodside accepts KUFPEC had no objections to the proposed activities for this EP. **Woodside response:** Woodside noted KUFPEC's feedback that it had no objections to the proposed activities for this EP.	**(1)** Not 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 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 7.7.1).	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 September 2024. Woodside gave this information to KUFPEC on 27 September 2024, 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 PAP, 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).
- Woodside followed-up to remind KUFPEC of consultation on 22 October 2024.
- On 11 November 2024, KUFPEC shared its feedback, claims or objections 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.
- Woodside responded noting KUFPEC's feedback on 15 November 2024.

Reasonable Period

Woodside allowed KUFPEC a reasonable period for consultation in the preparation of this 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.
- Consultation for this EP commenced 4 months ago.
- In this context, Woodside allowed KUFPEC a reasonable period for consultation in preparation of the EP as evidenced by its response on 11 November 2024.

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 9 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 1 targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.

- Woodside considers a reasonable opportunity was provided to KUFPEC as evidenced by its response on 11 November 2024.

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 and 34(g), Woodside has:
  - Responded to feedback from KUFPEC and assessed the merits of any objection or claim about the adverse impact of activities to which this EP relates.
  - 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 Mobil Australia Resources Company

Summary of information provided and record of consultation for this EP:

- On 27 September 2024, Woodside emailed Mobil 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 11 October 2024, Woodside emailed Mobil an activity update regarding well location coordinates and included an updated Consultation Information Sheet (Record of Consultation, reference 6.2.1).
- On 22 October 2024, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.3.1).
- On 20 November 2024, Woodside provided an update to Mobil (SI Report, reference 9.1) advising that vessel movements related to this EP may occur on the periphery of the adjacent title. Woodside provided this information to Mobil as the titleholder for the adjacent title.

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and 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 7.7.1).	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 Mobil 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 Mobil sufficient information to allow Mobil 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 September 2024. Woodside gave this information to Mobil on 27 September 2024, 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 PAP, 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 Mobil a reasonable period for consultation in the preparation of this EP because:

- A consultation period was stated in the initial correspondence to Mobil 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 Mobil 30 days for consultation.
- Consultation for this EP commenced 4 months ago.
- In this context, Woodside allowed Mobil 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 Mobil is appropriate and adapted to the nature of interests of Mobil:

- Woodside published advertisements in 9 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 1 targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- From 12 October 2024, Woodside held, or hosted information stalls at 3 community events in Dampier and Exmouth 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 22 October 2024 and 20 November 2024, reminding Mobil 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 Mobil 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 Mobil's functions, interests or activities.

4.7.7 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:

- On 27 September 2024, 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 11 October 2024, Woodside emailed Santos an activity update regarding well location coordinates and included an updated Consultation Information Sheet (Record of Consultation, reference 6.2.1).
- **(1)** On 18 October 2024, Santos responded to Woodside (SI Report, reference 15.1) and advised that it had planned activities in the same timeframe and vicinity of survey area and requested notification of planned vessel movements.
- **(1)** On 28 October 2024, Woodside responded (SI Report, reference 15.2) noting that Santos may have planned activities during a similar timeframe and confirmed Woodside would notify Santos on planned vessel activities as well as commencement activities.
- On 18 November 2024, Woodside provided an update to Santos (SI Report, reference 15.3) advising that vessel movements related to this EP may occur on the periphery of the adjacent title.
- On 21 November 2024, Santos responded to Woodside (SI Report, reference 15.4):
  - **(2)** confirming it understood that additional information was provided regarding the possibility of temporary vessel operations within Santos' adjacent title.
  - **(3)** seeking Woodside's understanding that it wanted notification prior to any activities commencing.
  - **(4)** advising it had no objections of further comments on the planned activities and its previous input remained valid.
- On 13 December 2024, Woodside responded to Santos (SI Report, reference 15.5) and:
  - **(2)** thanked Santos for acknowledging the possibility of temporary vessel operations within Santos' adjacent title.
  - **(3)** confirmed it would provide Santos with start and end of activity notifications as requested.
  - **(4)** noted Santos had no objections or further comments related to this EP.

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan

(1) Requested notification of planned vessel movements as Santos had planned activities in the same timeframe and vicinity of the area.	**(1)** **Woodside assessment:** Woodside acknowledges that Santos may have planned activities at the same time in the same vicinity of Woodside's proposed activities for this EP. Woodside accepts its responsibility to advise Santos of these planned activities. **Woodside response:** Woodside confirmed with Santos it will provide notification prior to the commencement of activities.	**(1)** Santos will be notified prior to commencement and upon completion of activities, as referenced in Table 7-5 (PS 1.3) of the EP.
(2) Confirmed understanding there is the possibility of temporary vessel operations within Santos' adjacent title.	**(2)** **Woodside assessment:** Woodside advises adjacent titleholders of the possibility of vessel movements on the periphery of their titles. **Woodside response:** Woodside acknowledged Santos' response that there was the possibility of temporary vessel operations within Santos' adjacent title.	**(2)** Not required.
(3) Requested activity notifications.	**(3)** **Woodside assessment:** Woodside acknowledges Santos's requirement for activity notifications as Santos may have planned activities in the same period and vicinity of the proposed activities for this EP. **Woodside response:** Woodside confirmed with Santos that it will receive start and end notifications for this EP as requested.	**(3)** Santos will be notified prior to commencement and upon completion of activities, as referenced in Table 7-5 (PS 1.3) of the EP.
(4) No further objections or claims.	**(4)** **Woodside assessment:** Woodside accepts that Santos has not further objections or claims related to this EP. **Woodside response:** Woodside noted that Santos had no further objections or claims for this EP.	**(4)** Not 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 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 7.7.1).	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 September 2024. Woodside gave this information to Santos on 27 September 2024, 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 PAP, 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 18 October and 21 November 2024, Santos shared its feedback, claims or objections regarding this activity, indicating the information provided was sufficient to enable Santos to make an informed assessment of the possible consequences of the activity on its functions, interests or activities.
- Woodside provided additional information on 28 October and 13 December 2024.

Reasonable Period

Woodside allowed Santos a reasonable period for consultation in the preparation of this 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 4 months ago.
- In this context, Woodside allowed Santos a reasonable period for consultation in preparation of the EP as evidenced by Santos' response on 18 October and 21 November 2024.

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 9 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 1 targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- From 12 October 2024, Woodside held, or hosted information stalls at 3 community events in Dampier and Exmouth to raise awareness of the EP and provide another opportunity for feedback. These events were promoted in local newspapers and on social media.
- Woodside considers a reasonable opportunity was provided to Santos as evidenced by its response on 18 October and 21 November 2024.

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 and 34(g), Woodside has:
  - Responded to feedback from Santos and assessed the merits of any objection or claim about the adverse impact of activities to which this EP relates.
  - As a result of Santos' feedback requesting activity notifications, this was added to Section 7.9 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.

4.7.8 Shell Australia

Summary of information provided and record of consultation for this EP:

- On 16 December 2024, Woodside emailed Shell Australia advising of the proposed activity (Record of Consultation, reference 6.1.27), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.*
- On 8 January 2025, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.3.16).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
No feedback, objection or claim 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 7.7.1).	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 Shell 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 Shell Australia sufficient information to allow Shell 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 September 2024. Woodside gave this information to Shell Australia on 13 December 2024, 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 PAP, 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 Shell Australia a reasonable period for consultation in the preparation of this EP because:

- A consultation period was stated in the initial correspondence to Shell 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 Shell Australia 30 days for consultation.
- Consultation for this EP commenced 4 months ago.
- In this context, Woodside allowed Shell 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 Shell Australia is appropriate and adapted to the nature of interests of Shell Australia:

- Woodside published advertisements in 9 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 1 targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- From 12 October 2024, Woodside held, or hosted information stalls at 3 community events in Dampier and Exmouth 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 8 January 2025, reminding Shell Australia 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 Shell Australia 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 Shell's functions, interests or activities.

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 27 September 2024, 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 11 October 2024, Woodside emailed AEP an activity update regarding well location coordinates and included an updated Consultation Information Sheet (Record of Consultation, reference 6.2.1).
- On 22 October 2024, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.3.1).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
No feedback, objection or claim 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	No additional measures or controls are required.

	appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7.1).	

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 September 2024. Woodside gave this information to AEP on 27 September 2024, 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 PAP, 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 AEP a reasonable period for consultation in the preparation of this 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 4 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 9 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 1 targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- From 12 October 2024, Woodside held, or hosted information stalls at 3 community events in Dampier and Exmouth 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 22 October 2024, 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 Traditional custodians and nominated representative corporations

4.9.1 Buurabalayji Thalanyji Aboriginal Corporation (BTAC)

BTAC is established under the *Native Title Act 1993* 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.

Historical engagement:

- On 26 July 2023, Woodside emailed BTAC Woodside's planned *Program of Ongoing Engagement with Traditional Custodians*.

Please see Scarborough Seabed Intervention and Trunkline Installation EP (Appendix F and SI Report) for further details of this correspondence.

Summary of information provided and record of consultation for this EP:

- On 30 September 2024, Woodside emailed BTAC advising of the proposed activity (Record of Consultation, reference 6.1.32), which included the activity's Summary Information Sheet and Consultation Information Sheet. The email included:
  - 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.
  - Information on the interests that BTAC and its members may have within the EMBA.
  - **(1)** Details of BTAC's cultural values previously provided by BTAC to Woodside during consultation for other activities that may be relevant to the proposed activity. These cultural values include BTAC's cultural obligation to care for the environmental values of Sea Country, such as archaeological sites identified on nearshore islands including the Montebello Islands, Barrow Island and the Mackerel Islands.

- **(1)** A request from Woodside that BTAC 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 feedback by 30 October 2024.
- Information on how BTAC would like 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, and working with BTAC to understand how it would like information to be managed.
- 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.
- A request for BTAC to provide information about the proposed activity to other individuals, as required.
- Acknowledgement that discussions relating to Woodside's framework agreement has been ongoing and that these discussions will progress in parallel with consultation for the proposed activity's EP.

- On 3 October 2024, Woodside emailed BTAC an invitation to share stories and receive updates from Woodside at its Monthly Community Luncheon for Traditional Owners to be held in Roebourne on 23 October 2024 (SI Report, reference 21.1).
- On 21 October 2024, Woodside emailed BTAC a reminder about the proposed activity (SI Report, reference 21.2). The email included:
  - A reference to the original consultation email for this EP sent to BTAC on 30 September 2024, which included Summary and Consultation Information Sheets and listed cultural values previously provided by BTAC to Woodside.
  - A reminder that consultation for the preparation of this EP closes on 30 October 2024.
  - An update on the activity's well location co-ordinates and water depths.
  - A request for information on how BTAC would like 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, and working with BTAC to understand how it would like information to be managed.
  - 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.
  - A request for BTAC to provide information about the proposed activity to other individuals, as required.
- On 21 October, Woodside received an automated email 'failed delivery notice' to the reminder email sent earlier on the same day (SI Report, reference 21.3).
- On 21 October 2024, Woodside resent the reminder email to BTAC and copied another BTAC nominated officer to ensure the email was successfully delivered (SI Report, reference 21.4).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
(1) BTAC has a cultural obligation to care for the environmental values of Sea Country. BTAC's interests	**(1)** **Woodside assessment:** Woodside assessed BTAC's cultural obligation to care for environmental values of	**(1)** Woodside has recorded BTAC's interests and potential cultural values in Section 4.9.1: Cultural values and

include archaeological sites identified on nearshore islands including the Montebello Islands, Barrow Island and the Mackerel Islands.	Sea Country to represent potential cultural values. The nearshore islands identified by BTAC are adjacent to the EMBA. **Woodside response:** Updated relevant sections in the EP to record interests and potential cultural values and assessed the potential impact on these and included controls. The islands may be impacted by the activities set out in the EP and Sea Country mapping will therefore continue even though consultation for this EP is closed.	heritage, and assessed potential impact on these, including controls, in Section 6: Environmental impact and risk assessment, performance outcomes, standards and measurements criteria.
Woodside has addressed objections and claims, as noted above.	Woodside has assessed the merits of any 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 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 7.7.1 of this 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 with BTAC for the purpose of Regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.5 of the EP. Specifically:

Sufficient Information

Sufficient information has been provided because:

- On 27 September 2024, Woodside made the Consultation Information Sheet available on the Woodside website.
- Woodside provided information to BTAC on 30 September 2024 when consultation commenced. Woodside provided:
  - A Summary Information Sheet developed specifically for First Nations groups and reviewed by a member of the First Nations Engagement team. This sheet included an overview of the proposed activity, the location of the activity, the timing of the activity, the potential risks and impacts of the activity, diagrams and details about how to provide feedback.
  - Confirmation of the purpose of consultation, what was being sought by Woodside through consultation including understanding the nature of BTAC's 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 this EP has been provided because:

- Woodside commenced consultation on this EP with BTAC on 30 September 2024 and requested BTAC provide feedback by 30 October 2024 for the purposes of preparation of this EP in line with Woodside's methodology of a 30-day period for consultation.
- Woodside has addressed and responded to BTAC 4 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 BTAC's preferred method of consultation and has consulted in a way that Woodside understands is appropriate for First Nations groups.
- Woodside has made information on this EP publicly available for 4 months. This has included publishing advertisements in national, state and local newspapers including Indigenous newspapers, the Koori Mail (2 October 2024) and National Indigenous Times (24 September 2024) advising of the proposed activities and requesting comments or feedback.
- Woodside's initial email about this EP on 30 September 2024:
  - 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 First Nations Engagement team. Woodside also provided contact details for NOPSEMA.
  - Offered for Woodside to speak with BTAC members as well as the BTAC Board.
  - Asked BTAC to advise how it would like Woodside to engage and whether BTAC required further information.
- Woodside offered to meet with BTAC on a number of occasions.
- Throughout the consultation period, Woodside and BTAC have had direct contact lines to each other during the period.
- Woodside invites BTAC to Monthly Community Luncheons.

Outcomes of Consultation

The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- BTAC advised Woodside that it has a cultural obligation to care for the environmental values of Sea Country which include archaeological sites identified on nearshore islands including the Montebello Islands, Barrow Island and the Mackerel Islands.
- Woodside has assessed BTAC's cultural obligation to care for environmental values of Sea Country to represent potential cultural values, and recorded these interests and potential cultural values in Section 4.9.1: Cultural values and heritage, and assessed potential impact on these, including controls, in Section 6: Environmental impact and risk assessment, performance outcomes, standards and measurements criteria.
- During the past 4 months, BTAC has not raised objections or claims about the adverse impact of each 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 7.7.1 of this EP).

4.9.2 Gogango Aboriginal Corporation (GAC)

GAC is established under the *Native Title Act 1993* by the Jabirr Jabirr/Ngumbarl and Bindunbur people to represent the Jabirr Jabirr/Ngumbarl and Bindunbur 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.

Historical engagement:

- On 26 July 2023, Woodside emailed GAC Woodside's planned Program of Ongoing Engagement with Traditional Custodians.

Please see Ngujima-Yin Floating Production Storage and Offloading Facility Operations EP (Appendix F and SI Report) for further details of this correspondence.

Summary of information provided and record of consultation for this EP:

- On 30 September 2024, Woodside emailed GAC advising of the proposed activity (Record of Consultation, reference 6.1.33), which included the activity's Summary Information Sheet and Consultation Information Sheet. The email included:
  - 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.
  - Information on the interests that GAC and its members may have within the EMBA.
  - A request for feedback by 30 October 2024.
  - Information on how GAC would like 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, and working with GAC to understand how it would like information to be managed.
  - 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.
  - A request for GAC to provide information about the proposed activity to other individuals, as required.
- On 21 October 2024, Woodside emailed GAC a reminder about the proposed activity (SI Report, reference 22.1). The email included:
  - A reference to the original consultation email for this EP sent to GAC on 30 September 2024, which included Summary and Consultation Information Sheets.
  - A reminder that consultation for the preparation of this EP closes on 30 October 2024.
  - An update on the activity's well location co-ordinates and water depths.
  - A request for information on how GAC would like 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, and working with GAC to understand how it would like information to be managed.
  - 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.

– A request for GAC to provide information about the proposed activity to other individuals, as required.

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
No feedback, objection or claim 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 7.7.1 of this 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 with GAC for the purpose of Regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.5 of the EP. Specifically:

Sufficient Information

Sufficient information has been provided because:

- On 27 September 2024, Woodside made the Consultation Information Sheet available on the Woodside website.
- Woodside provided information to GAC on 30 September 2024 when consultation commenced. Woodside provided:
  - A Summary Information Sheet developed specifically for First Nations groups and reviewed by a member of the First Nations Engagement team. This sheet included an overview of the proposed activity, the location of the activity, the timing of the activity, the potential risks and impacts of the activity, diagrams and details about how to provide feedback.
  - Confirmation of the purpose of consultation, what was being sought by Woodside through consultation including understanding the nature of GAC's 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 this EP has been provided because:

- Woodside commenced consultation on this EP with GAC on 30 September 2024 and requested GAC provide feedback by 30 October 2024 for the purposes of preparation of this EP in line with Woodside's methodology of a 30-day period for consultation.
- Woodside has addressed and responded to GAC for 4 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 GAC's preferred method of consultation and has consulted in a way that Woodside understands is appropriate for First Nations groups.
- Woodside has made information on this EP publicly available for 4 months. This has included publishing advertisements in national, state and local newspapers including Indigenous newspapers, the Koori Mail (2 October 2024) and National Indigenous Times (24 September 2024) advising of the proposed activities and requesting comments or feedback.
- Woodside's initial email about this EP on 30 September 2024:
  - 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 First Nations Engagement team. Woodside also provided contact details for NOPSEMA.
  - Offered for Woodside to speak with GAC members as well as the GAC Board.
  - Asked GAC to advise how it would like Woodside to engage and whether GAC required further information.
- Woodside offered to meet with GAC on a number of occasions.
- Throughout the consultation period, Woodside and GAC have had direct contact lines to each other during the period.

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 4 months, GAC has not raised objections or claims about the adverse impact of each 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 7.7.1 of this EP).

4.9.3 Karajarri Traditional Lands Association (KTLA) (Aboriginal Corporation)

KTLA is established under the *Native Title Act 1993* by the Karajarri people to represent the Karajarri 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.

Historical engagement:

- On 26 July 2023, Woodside emailed KTLA Woodside's planned Program of Ongoing Engagement with Traditional Custodians.

Please see Scarborough Seabed Intervention and Trunkline Installation EP (Appendix F and SI Report) for further details of this correspondence.

Summary of information provided and record of consultation for this EP:

- On 30 September 2024, Woodside emailed KTLA advising of the proposed activity (Record of Consultation, reference 6.1.34), which included the activity's Summary Information Sheet and Consultation Information Sheet. The email included:
  - 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.

- Information on the interests that KTLA and its members may have within the EMBA.
- A request for feedback by 30 October 2024.
- Information on how KTLA would like 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, and working with KTLA to understand how it would like information to be managed.
- 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.
- A request for KTLA to provide information about the proposed activity to other individuals, as required.

- On 21 October 2024, Woodside emailed KTLA a reminder about the proposed activity (SI Report, reference 23.1). The email included:
  - A reference to the original consultation email for this EP sent to KTLA on 30 September 2024, which included Summary and Consultation Information Sheets.
  - A reminder that consultation for the preparation of this EP closes on 30 October 2024.
  - An update on the activity's well location co-ordinates and water depths.
  - A request for information on how KTLA would like 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, and working with KTLA to understand how it would like information to be managed.
  - 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.
  - A request for KTLA to provide information about the proposed activity to other individuals, as required.

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
No feedback, objection or claim 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 7.7.1 of this 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 with KTLA for the purpose of Regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.5 of the EP. Specifically:

Sufficient Information

Sufficient information has been provided because:

- On 27 September 2024, Woodside made the Consultation Information Sheet available on the Woodside website.
- Woodside provided information to KTLA on 30 September 2024 when consultation commenced. Woodside provided:
  - A Summary Information Sheet developed specifically for First Nations groups and reviewed by a member of the First Nations Engagement team. This sheet included an overview of the proposed activity, the location of the activity, the timing of the activity, the potential risks and impacts of the activity, diagrams and details about how to provide feedback.
  - Confirmation of the purpose of consultation, what was being sought by Woodside through consultation including understanding the nature of KTLA's 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 this EP has been provided because:

- Woodside commenced consultation on this EP with KTLA on 30 September 2024 and requested KTLA provide feedback by 30 October 2024 for the purposes of preparation of this EP in line with Woodside's methodology of a 30-day period for consultation.
- Woodside has addressed and responded to KTLA for 4 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 KTLA's preferred method of consultation and has consulted in a way that Woodside understands is appropriate for First Nations groups.
- Woodside has made information on this EP publicly available for 4 months. This has included publishing advertisements in national, state and local newspapers including Indigenous newspapers, the Koori Mail (2 October 2024) and National Indigenous Times (24 September 2024) advising of the proposed activities and requesting comments or feedback.
- Woodside's initial email about this EP on 30 September 2024:
  - 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 First Nations Engagement team. Woodside also provided contact details for NOPSEMA.
  - Offered for Woodside to speak with KTLA members as well as the KTLA Board.
  - Asked KTLA to advise how it would like Woodside to engage and whether KTLA required further information.
- Woodside offered to meet with KTLA on a number of occasions.
- Throughout the consultation period, Woodside and KTLA have had direct contact lines to each other during the period.

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 4 months, KTLA has not raised objections or claims about the adverse impact of each 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 7.7.1 of this EP).

4.9.4 Kariyarra Aboriginal Corporation (KAC)

KAC is established under the *Native Title Act 1993* 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.

Historical engagement:

- On 26 July 2023, Woodside emailed KAC Woodside's Program of Ongoing Engagement with Traditional Custodians.
- On 4 September 2024, Woodside met with KAC to present information about other EPs. KAC requested:
  - Mitigation measures to be put in place for:
    - **(1)** Sea turtle nesting.
    - **(1)** Impacts to food sources.
    - **(1)** Impacts to whale migration as Elders have a connection to whale migration through Songlines.

  Woodside noted and responded at this meeting that:
  - **(1)** Similar concerns had been raised in relation to sea turtle nesting, whale migration and food source by other relevant Traditional Owner groups in the Pilbara and subsequently mitigation and avoidance measures had been included in subsequent EPs including this EP.

Please see Scarborough Seabed Intervention and Trunkline Installation EP (Appendix F and SI Report) for further details of this correspondence.

Summary of information provided and record of consultation for this EP:

- On 27 September 2024, Woodside emailed KAC advising of the proposed activity (Record of Consultation, reference 6.1.34), which included the activity's Summary Information Sheet and Consultation Information Sheet. The email included:
  - 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.
  - Information on the interests that KAC and its members may have within the EMBA.
  - Details of KAC's cultural values previously provided by KAC to Woodside during consultation for other activities that may be relevant to the proposed activity. These cultural values include:
    - **(1)** KAC's access Sea Country rights and duties, including:
      - looking after and protecting Sea Country
      - fishing, trapping, crabbing, catching turtle and collecting shellfish

- hunting dugong and taking stingray barbs for spears
- the protection of Sea Country and totems such as mythic snakes.

▪ **(2)** The potential impacts on coastal landforms and coastal native vegetation.

▪ **(3)** The tangible and intangible heritage associated with the coast and the ocean.

– **(1, 2, 3)** Woodside request KAC to confirm if there were any changes or additional information regarding cultural values that Woodside should consider in the preparation for the EP.

– A request for feedback by 30 October 2024.

– Information on how KAC would like 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, and working with KAC to understand how it would like information to be managed.

– 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.

– A request for KAC to provide information about the proposed activity to other individuals, as required.

– Acknowledgement that discussions relating to Woodside's framework agreement has been ongoing and that these discussions will progress in parallel with consultation for the proposed activity's EP.

- On 3 October 2024, Woodside emailed KAC an invitation to share stories and receives updates from Woodside at its Monthly Community Luncheon for Traditional Owners to be held in Roebourne on 23 October 2024 (SI Report, reference 24.1)**.**
- On 21 October 2024, Woodside emailed KAC a reminder about the proposed activity (SI Report, reference 24.2). The email included:
  - A reference to the original consultation email for this EP sent to KAC on 27 September 2024, which included Summary and Consultation Information Sheets and listed cultural values previously provided by KAC to Woodside.
  - A reminder that consultation for the preparation of this EP closes on 30 October 2024.
  - An update on the activity's well location co-ordinates and water depths.
  - A request for information on how KAC would like 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, and working with KAC to understand how it would like information to be managed.
  - 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.
  - A request for KAC to provide information about the proposed activity to other individuals, as required.

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
(1)	**(1)**	**(1)**

KAC has previously advised Woodside it has Sea Country rights and duties, including to look after and protect Sea Country and secret habitat totems. KAC has mentioned fishing, trapping, crabbing, catching turtle, hunting dugong, and using stingray barbs for spears and collecting shellfish, sea turtle nesting, impacts to food sources, and impacts to whale migration as Elders have a connection to whale migration through Songlines.	**Woodside assessment:** Woodside acknowledges KAC's feedback about Sea Country including rights and duties, marine species and impact on Songlines. **Woodside response:** Woodside has noted KAC's asserted values and interests in Sea Country in Section 4.9. Woodside understands cultural and environmental values are intrinsically linked; in addition to the specific controls for cultural features and heritage values, the controls and performance standards in Section 6 will reduce impacts to cultural features and heritage values, including marine species and habitats.	Woodside acknowledges KAC's asserted connection to Sea Country and Songlines in 4.9.1 Cultural Values and Heritage). Potential impacts on Cultural Features and Heritage Values are assessed in Section 6: Environmental impact and risk assessment, performance outcomes, standards and measurements criteria.
(2) KAC has previously requested Woodside include measures to avoid impacts to coastal landforms and coastal native vegetation.	**(2)** **Woodside assessment:** Assessment of the impacts and risks associated with the PAP is undertaken in accordance with and consistent with national and international standards and law and policies. **Woodside response:** Woodside has implemented controls to reduce potential risks and impacts on the environment to ALARP and to an acceptable level.	**(2)** Woodside acknowledges KAC's asserted connection to Sea Country (Section 4.9.1 Cultural Values and Heritage). Potential impacts on Cultural Features and Heritage Values are assessed in Section 6: Environmental impact and risk assessment, performance outcomes, standards and measurements criteria.
(3) KAC's legal representative has previously requested Woodside include measures to avoid impacts to tangible and intangible Aboriginal cultural heritage associated with the coast and the ocean.	**(3)** **Woodside assessment:** Woodside seeks to avoid damage or disturbance to cultural heritage (including intangible heritage) and assesses cultural heritage impacts, including both direct and indirect impacts and risks associated with PAPs. Mitigation can include any measure or control aimed at supporting the viability of the intangible cultural heritage and its intergenerational transmission. **Woodside response:** Woodside understands cultural and environmental values are intrinsically linked; in addition to the specific controls for cultural features and heritage values, the controls and performance standards in Section 6 will reduce impacts to cultural features and heritage values, including marine species and habitats.	**(3)** Woodside acknowledges KAC's asserted connection to Sea Country (Section 4.9.1 Cultural Values and Heritage). Potential impacts on Cultural Features and Heritage Values are assessed in Section 6: Environmental impact and risk assessment, performance outcomes, standards and measurements criteria.

Woodside has addressed objections and claims as noted above.	Woodside has assessed the merits of any 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 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 7.7.1 of this 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 with KAC for the purpose of Regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.5 of the EP. Specifically:

Sufficient Information

Sufficient information has been provided because:

- On 27 September 2024, Woodside made the Consultation Information Sheet available on the Woodside website.
- Woodside provided information to KAC on 27 September 2024 when consultation commenced. Woodside provided:
  - A Summary Information Sheet developed specifically for First Nations groups and reviewed by a member of the First Nations Engagement team. This sheet included an overview of the proposed activity, the location of the activity, the timing of the activity, the potential risks and impacts of the activity, diagrams and details about how to provide feedback.
  - Confirmation of the purpose of consultation, what was being sought by Woodside through consultation including understanding the nature of KAC's 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 this EP has been provided because:

- Woodside commenced consultation on this EP with KAC on 27 September 2024 and requested KAC provide feedback by 30 October 2024 for the purposes of preparation of this EP in line with Woodside's methodology of a 30-day period for consultation.
- Woodside has addressed and responded to KAC for 4 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 NAC's preferred method of consultation and has consulted in a way that Woodside understands is appropriate for First Nations groups.
- Woodside has made information on this EP publicly available for 4 months. This has included publishing advertisements in national, state and local newspapers including Indigenous newspapers, the Koori Mail (2 October 2024) and National Indigenous Times (24 September 2024) advising of the proposed activities and requesting comments or feedback.
- Woodside's initial email about this EP on 27 September 2024:
  - 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 First Nations Engagement team. Woodside also provided contact details for NOPSEMA.
  - Offered for Woodside to speak with KAC members as well as the KAC Board.
  - Asked KAC to advise how it would like Woodside to engage and whether KAC required further information.
- Woodside offered to meet with KAC on a number of occasions.
- Throughout the consultation period, Woodside and KAC have had direct contact lines to each other during the period.
- Woodside invites KAC to Monthly Community Luncheons.

Outcomes of Consultation

The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- KAC has previously advised Woodside that:
  - It has Sea Country rights and duties, including:
    - looking after and protecting Sea Country
    - fishing, trapping and crabbing
    - catching turtle
    - hunting dugong
    - using stingray barbs for spears and
    - collecting shellfish.
  - Impacts to whale migration as Elders have a connection to whale migration through Songlines.
  - The protection of Sea Country and totems such as mythic snakes.
  - There are potential impacts on coastal landforms and coastal native vegetation.
  - There is tangible and intangible heritage associated with the coast and the ocean.
  - Woodside has recorded KAC's interests and cultural values in the proposed EP in the following sections:
    - Section 4.9.1: Cultural values and heritage
    - Potential impacts on Cultural Features and Heritage Values (this includes cultural features and heritage values, marine species and habitats) in Section 6: Environmental impact and risk assessment, performance outcomes, standards and measurements criteria.

- During the past 4 months, KAC has not raised objections or claims about the adverse impact of each 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 7.7.1 of this EP).

4.9.5 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.

Historical engagement:

- On 26 July 2023, Woodside emailed MAC Woodside's planned *Program of Ongoing Engagement with Traditional Custodians*.

Please see Scarborough Seabed Intervention and Trunkline Installation EP (Appendix F and SI Report) for further details of this correspondence.

Summary of information provided and record of consultation for this EP:

- On 30 September 2024, Woodside emailed MAC advising of the proposed activity (Record of Consultation, reference 6.1.36), which included the activity's Summary Information Sheet and Consultation Information Sheet. The email included:
  - 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.
  - Information on the interests that MAC and its members may have within the EMBA.
  - Details of cultural values previously provided by MAC to Woodside during consultation for other activities that may be relevant to the proposed activity. These cultural values include:
    - **(1, 1)** There is a potential impact on Jinna (Songlines).
    - **(2, 2)** That any development could potentially affect the natural movement, migration and/or other behaviour of marine species, and may have an impact on the cultural interpretation of the seasonal landscape, seascape and associated cultural behaviours.
  - A request for feedback by 30 October 2024.
  - Information on how MAC would like 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, and working with MAC to understand how it would like information to be managed.
  - 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.
  - A request for MAC to provide information about the proposed activity to other individuals, as required.

- On 3 October 2024, Woodside emailed MAC an invitation to share stories and receives updates from Woodside at its Monthly Community Luncheon for Traditional Owners to be held in Roebourne on 23 October 2024 (SI Report, reference 25.1).
- On 21 October 2024, Woodside emailed MAC a reminder about the proposed activity (SI Report, reference 25.2). The email included:
  - A reference to the original consultation email for this EP sent to MAC on 30 September 2024, which included Summary and Consultation Information Sheets and listed cultural values previously provided by MAC to Woodside.
  - A reminder that consultation for the preparation of this EP closes on 30 October 2024.
  - An update on the activity's well location co-ordinates and water depths.
  - A request for information on how MAC would like 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, and working with MAC to understand how it would like information to be managed.
  - 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.
  - A request for MAC to provide information about the proposed activity to other individuals, as required.
- On 23 October 2024, Traditional Owner members from MAC attended Woodside's Monthly Community Luncheon for Traditional Owners held in Roebourne. During the lunch Woodside requested feedback from all attendees about EPs and provided information about the consultation process (SI Report, reference 25.3).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
(1) MAC have previously raised concerns lack of broader-scale bathymetric information on the submerged landscape and the potential for impact on Jinna (Songlines).	**(1)** **Woodside assessment:** Woodside acknowledges MAC's position that there is a lack of bathymetric information, which may have a potential impact on Jinna (Songlines). **Woodside response:** Woodside is working with MAC to develop a scope of works to determine further bathymetric information on the area. This proposal is under consideration by MAC and Woodside remains supportive of undertaking this work. Woodside also remains supportive of conducting further ethnographic surveys with MAC, following the initial phase of works in 2020 which focussed on Jinna and their connection from Murujuga to inland areas.	**(1)** Cultural features and heritage values including Jinna (Songlines) are identified and assessed in Sections Section 4.9.1: Cultural values and heritage, and Section 6: Environmental impact and risk assessment, performance outcomes, standards and measurements criteria.
(2)	**(2)**	**(2)**

MAC stated that any development could potentially affect the natural movement, migration and/or other behaviour of marine species, and may have an impact on the cultural interpretation of the seasonal landscape, seascape and associated cultural behaviours.	**Woodside assessment**: Woodside considers the potential cultural impacts on marine species including impacts and associated controls for marine mammal paths and behaviour. **Woodside response**: Woodside has undertaken numerous environmental studies that form part of the EPs and has an ongoing commitment to environmental studies and research some of which are set out on Woodside's website. Woodside also committed to ongoing consultation with MAC in relation to environmental impacts including to marine life.	Woodside has assessed impacts and risks to marine species in Section 6: Environmental impact and risk assessment, performance outcomes, standards and measurements criteria.
Woodside has addressed objections and claims as noted above.	Woodside has assessed the merits of any 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 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 7.7.1 of this 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 with MAC for the purpose of Regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.5 of the EP. Specifically:

Sufficient Information

Sufficient information has been provided because:

- On 27 September 2024, Woodside made the Consultation Information Sheet available on the Woodside website.
- Woodside provided information to MAC on 30 September 2024 when consultation commenced. Woodside provided:
  - A Summary Information Sheet developed specifically for First Nations groups and reviewed by a member of the First Nations Engagement team. This sheet included an overview of the proposed activity, the location of the activity, the timing of the activity, the potential risks and impacts of the activity, diagrams and details about how to provide feedback.
  - Confirmation of the purpose of consultation, what was being sought by Woodside through consultation including understanding the nature of MAC's 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 this EP has been provided because:

- Woodside commenced consultation on this EP with MAC on 30 September 2024 and requested MAC provide feedback by 30 October 2024 for the purposes of preparation of this EP in line with Woodside's methodology of a 30-day period for consultation.
- Woodside has addressed and responded to MAC for more than 4 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 MAC's preferred method of consultation and has consulted in a way that Woodside understands is appropriate for First Nations groups.
- Woodside has made information on this EP publicly available for more than 4 months. This has included publishing advertisements in national, state and local newspapers including Indigenous newspapers, the Koori Mail (2 October 2024) and National Indigenous Times (24 September 2024) advising of the proposed activities and requesting comments or feedback.
- Woodside's initial email about this EP on 30 September 2024:
  - 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 First Nations Engagement team. Woodside also provided contact details for NOPSEMA.
  - Offered for Woodside to speak with MAC members as well as the MAC Board.
  - Asked MAC to advise how it would like Woodside to engage and whether MAC required further information.
- Woodside offered to meet with MAC on a number of occasions.
- Throughout the consultation period, Woodside and MAC have had direct contact lines to each other during the period.
- Woodside invites MAC to Monthly Community Luncheons.

Outcomes of Consultation

The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- MAC advised Woodside that:
  - The lack of broader-scale bathymetric information on the submerged landscape and the potential for impact on Jinna (Songlines). Woodside has assessed cultural features and heritage impacts and risks in Cultural features and heritage values including Jinna (Songlines) are identified and assessed in Sections Section 4.9.1: Cultural values and heritage, and Section 6: Environmental impact and risk assessment, performance outcomes, standards and measurements criteria.
  - Any activities that could potentially affect the natural movement or behaviour of marine species may impact cultural values. Woodside has assessed impacts and risks to marine species in Section 6: Environmental impact and risk assessment, performance outcomes, standards and measurements criteria.
- During the past 4 months, MAC has not raised objections or claims about the adverse impact of each 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 7.7.1 of this EP).

4.9.6 Nganhurra Thanardi Garrbu Aboriginal Corporation (NTGAC)

NTGAC is established under the *Native Title Act 1993* 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.

Historical engagement:

- **(1)** On 16 February 2023, Woodside attended a meeting with the NTGAC Board and YMAC representatives. Matters discussed relevant to this EP include that NTGAC expressed interest in whales and whale sharks. **(1)** Woodside noted NTGAC's interest in whales and whale sharks.
- On 26 July 2023, Woodside emailed NTGAC via YMAC Woodside's planned *Program of Ongoing Engagement with Traditional Custodians*, noting that Woodside's Program would complement what is proposed in NTGAC's proposed Framework.

Please see Scarborough Seabed Intervention and Trunkline Installation EP (Appendix F and SI Report) and Angel Facility Operations EP (Appendix F and SI Report) for further details of this correspondence.

Summary of information provided and record of consultation for this EP:

- On 27 September 2024, Woodside emailed NTGAC advising of the proposed activity (Record of Consultation, reference 6.1.37), which included the activity's Summary Information Sheet and Consultation Information Sheet. The email included:
  - 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.
  - Information on the interests that NTGAC and its members may have within the EMBA.
  - A request for feedback by 30 October 2024.
  - Information on how NTGAC would like 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, and working with NTGAC to understand how it would like information to be managed.
  - 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.
  - A request for NTGAC to provide information about the proposed activity to other individuals, as required.
  - Acknowledgement that discussions relating to Woodside's framework agreement has been ongoing and that these discussions will progress in parallel with consultation for the proposed activity's EP.

- On 3 October 2024, Woodside emailed NTGAC an invitation to share stories and receives updates from Woodside at its Monthly Community Luncheon for Traditional Owners to be held in Roebourne on 23 October 2024 (SI Report, reference 26.1).
- On 21 October 2024, Woodside emailed NTGAC a reminder about the proposed activity (SI Report, reference 26.2). The email included:
  - A reference to the original consultation email for this EP sent to NTGAC on 27 September 2024, which included Summary and Consultation Information Sheets.
  - A reminder that consultation for the preparation of this EP closes on 30 October 2024.
  - An update on the activity's well location co-ordinates and water depths.
  - A request for information on how NTGAC would like 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, and working with NTGAC to understand how it would like information to be managed.
  - 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.
  - A request for NTGAC to provide information about the proposed activity to other individuals, as required.
- On 2 November 2024, Woodside's First Nations spoke with relevant persons from NTGAC and Elders at the Dampier Beachside Markets (SI Report, reference 26.3). The conversations included:
  - Information about Woodside's activities and related EPs including the proposed activity.
  - An offer to further consult and meet face to face with NTGAC and Elders.
  - Reference to printed Summary Information Sheets for a number of Woodside activities.
  - Elders noted they had no feedback, objections or claims relating to the proposed activity, and were comfortable with the information being sent via NTGAC. Woodside notes and respects the feedback from Elders.
  - NTGAC noted that upcoming AGMs, Sorry Business and Lore will impact its availability to consult over the next few months.

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
(1) NTGAC have expressed a general interest in whales and whale sharks.	**(1)** **Woodside assessment:** When developing EPs, Woodside considers potential cultural impacts on marine species including impacts and associated controls with whales and whale sharks. **Woodside response:** Woodside recognises that whales and other species of totemic importance need to be protected, including their populations and migration patterns. As assessed in Section 6, Woodside considers that when the impacts and risks to	**(1)** Woodside has assessed impacts and risks to marine species in Section 6 of the EP. Items relating to NTGAC appear in section 4.9.

	marine species, including potential totemic species, have been reduced to ALARP and an acceptable level in offshore areas, the potential impacts and risks to cultural values associated with coastal Indigenous connection with, or traditional uses of marine species and associated ecosystems in nearshore coastal waters are also reduced to ALARP and an acceptable level.	
No feedback, objection or claim 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 7.7.1 of this 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 with NTGAC for the purpose of Regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.5 of the EP. Specifically:

Sufficient Information

Sufficient information has been provided because:

- On 27 September 2024, Woodside made the Consultation Information Sheet available on the Woodside website.
- Woodside provided information to NTGAC on 27 September 2024 when consultation commenced. Woodside provided:
  - A Summary Information Sheet developed specifically for First Nations groups and reviewed by a member of the First Nations Engagement team. This sheet included an overview of the proposed activity, the location of the activity, the timing of the activity, the potential risks and impacts of the activity, diagrams and details about how to provide feedback.
  - Confirmation of the purpose of consultation, what was being sought by Woodside through consultation including understanding the nature of NTGAC's 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 this EP has been provided because:

- Woodside commenced consultation on this EP with NTGAC on 27 September 2024 and requested NTGAC provide feedback by 30 October 2024 for the purposes of preparation of this EP in line with Woodside's methodology of a 30-day period for consultation.

- Woodside has addressed and responded to NTGAC for 4 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 NTGAC's preferred method of consultation and has consulted in a way that Woodside understands is appropriate for First Nations groups.
- Woodside has made information on this EP publicly available for 4 months. This has included publishing advertisements in national, state and local newspapers including Indigenous newspapers, the Koori Mail (2 October 2024) and National Indigenous Times (24 September 2024) advising of the proposed activities and requesting comments or feedback.
- Woodside's initial email about this EP on 27 September 2024:
  - 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 First Nations Engagement team. Woodside also provided contact details for NOPSEMA.
  - Offered for Woodside to speak with NTGAC members as well as the NTGAC Board.
  - Asked NTGAC to advise how it would like Woodside to engage and whether NAC required further information.
- Woodside offered to meet with NTGAC on a number of occasions.
- Throughout the consultation period, Woodside and NTGAC have had direct contact lines to each other during the period.
- Woodside invites NTGAC to Monthly Community Luncheons.

Outcomes of Consultation

The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- NTGAC has expressed an interest in Whales and Whale sharks. Woodside has assessed impacts and risks to marine species in Section 6: Environmental impact and risk assessment, performance outcomes, standards and measurements criteria of the EP. Cultural values relating to NTGAC appear in Sections Section 4.9: Cultural values and heritage.
- During the past 4 months, NTGAC has not raised objections or claims about the adverse impact of each 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 7.7.1 of this EP).

4.9.7 Ngarluma Aboriginal Corporation (NAC)

NAC is established under the *Native Title Act 1993* 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.

Historical engagement:

- On 26 July 2023, Woodside emailed NAC Woodside's planned *Program of Ongoing Engagement with Traditional Custodians*.

Please see Scarborough Seabed Intervention and Trunkline Installation EP (Appendix F and SI Report) for further details of this correspondence.

Summary of information provided and record of consultation for this EP:

- On 27 September 2024, Woodside emailed NAC advising of the proposed activity (Record of Consultation, reference 6.1.38), which included the activity's Summary Information Sheet and Consultation Information Sheet. The email included:
  - 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.
  - Information on the interests that NAC and its members may have within the EMBA.
  - A request for feedback by 30 October 2024.
  - Information on how NAC would like 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, and working with NAC to understand how it would like information to be managed.
  - 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.
  - A request for NAC to provide information about the proposed activity to other individuals, as required.
  - Acknowledgment that discussions relating to Woodside's framework agreement has been ongoing and that these discussions will progress in parallel with consultation for the proposed activity's EP.
- On 3 October 2024, Woodside emailed NAC an invitation to share stories and receives updates from Woodside at its Monthly Community Luncheon for Traditional Owners to be held in Roebourne on 23 October 2024 (SI Report, reference 27.1).
- On 10 October 2024, NAC attended Woodside's Quarter 3 Heritage Meeting in Roebourne where Woodside presented to Traditional Owners (SI Report, reference 27.2). Matters relevant to this EP included:
  - Consultation outcomes for Woodside EPs.
  - An explanation of State and Commonwealth regulatory requirements.
  - An explanation of EMBAs.
  - The process Woodside undertakes to identify Traditional Owners groups.
  - How Traditional Owners can provide information to Woodside about cultural values, interests and activities.
  - If there are any other First Nations groups who should be consulted.
- On 14 October 2024, Woodside was notified that the cultural protocols associated with Sorry Business were in place, and that industry and government stakeholders had been asked to minimise contact with Traditional Owner groups including NAC as a sign of respect (SI Report, reference 27.3).
- On 21 October 2024, Woodside emailed NAC a reminder about the proposed activity (SI Report, reference 27.4). The email included:
  - A reference to the original consultation email for this EP sent to NAC on 30 September 2024, which included Summary and Consultation Information Sheets.

- A reminder that consultation for the preparation of this EP closes on 30 October 2024.
- An update on the activity's well location co-ordinates and water depths.
- A request for information on how NAC would like 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, and working with NAC to understand how it would like information to be managed.
- 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.
- A request for NAC to provide information about the proposed activity to other individuals, as required.

- On 23 October 2024, Traditional Owner members from NAC attended Woodside's Monthly Community Luncheon for Traditional Owners held in Roebourne. During the lunch Woodside requested feedback from all attendees about EPs and provided information about the consultation process (SI Report, reference 27.5).
- On 15 November 2024, Woodside emailed NAC to invite it to Woodside's Quarterly Heritage Meeting on 5 December 2024, as an opportunity for Woodside to provide updates on Woodside's activities to Traditional Owner groups and to receive feedback from the community. Woodside also requested a list attendees and attendance fees (SI Report, reference 27.6).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
No feedback, objection or claim 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 7.7.1 of this 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 with NAC for the purpose of Regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.5 of the EP. Specifically:

Sufficient Information

Sufficient information has been provided because:

- On 27 September 2024, Woodside made the Consultation Information Sheet available on the Woodside website.
- Woodside provided information to NAC on 27 September 2024 when consultation commenced. Woodside provided:
  - A Summary Information Sheet developed specifically for First Nations groups and reviewed by a member of the First Nations Engagement team. This sheet included an overview of the proposed activity, the location of the activity, the timing of the activity, the potential risks and impacts of the activity, diagrams and details about how to provide feedback.

  - Confirmation of the purpose of consultation, what was being sought by Woodside through consultation including understanding the nature of NAC's 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 this EP has been provided because:

- Woodside commenced consultation on this EP with NAC on 27 September 2024 and requested NAC provide feedback by 30 October 2024 for the purposes of preparation of this EP in line with Woodside's methodology of a 30-day period for consultation.
- Woodside has addressed and responded to NAC for 4 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 NAC's preferred method of consultation and has consulted in a way that Woodside understands is appropriate for First Nations groups.
- Woodside has made information on this EP publicly available for 4 months. This has included publishing advertisements in national, state and local newspapers including Indigenous newspapers, the Koori Mail (2 October 2024) and National Indigenous Times (24 September 2024) advising of the proposed activities and requesting comments or feedback.
- Woodside's initial email about this EP on 27 September 2024:
  - 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 First Nations Engagement team. Woodside also provided contact details for NOPSEMA.
  - Offered for Woodside to speak with NAC members as well as the NAC Board.
  - Asked NAC to advise how it would like Woodside to engage and whether NAC required further information.
- Woodside offered to meet with NAC on a number of occasions.
- Throughout the consultation period, Woodside and NAC have had direct contact lines to each other during the period.
- Woodside invites NAC to Quarterly Heritage Meetings and Monthly Community Luncheons.

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 4 months, NAC has not raised objections or claims about the adverse impact of each 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 7.7.1 of this EP).

4.9.8 Nimanburr Aboriginal Corporation (Nimanburr)

Nimanburr is established under the *Native Title Act 1993* by the Nimanburr people to represent the Nimanburr 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 30 September 2024, Woodside emailed the Broome Turf Club, thanking it for printing the EP documents for the proposed activity including the Summary and Consultation Information Sheets, which would also be emailed to Nimanburr. Woodside confirmed that individuals would be collecting the printed materials from the club and hand delivering the documents to Nimanburr in due course (SI Report, reference 28.1).
- On 30 September 2024, Woodside emailed Nimanburr (via the Broome Turf Club) (see point above) advising of the proposed activity (Record of Consultation, reference 6.1.39), which included the activity's Summary Information Sheet and Consultation Information Sheet. The email included:
  - 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.
  - Information on the interests that Nimanburr and its members may have within the EMBA.
  - A request for feedback by 30 October 2024.
  - Information on how Nimanburr would like 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, and working with Nimanburr to understand how it would like information to be managed.
  - 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.
  - A request for Nimanburr to provide information about the proposed activity to other individuals, as required.
- On 21 October 2024, Woodside emailed Nimanburr (via the Broome Turf Club) a reminder about the proposed activity (SI Report, reference 28.2). The email included:
  - A reference to the original consultation email for this EP sent to Nimanburr on 30 September 2024, which included Summary and Consultation Information Sheets.
  - A reminder that consultation for the preparation of this EP closes on 30 October 2024.
  - An update on the activity's well location co-ordinates and water depths.
  - A request for information on how Nimanburr would like 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, and working with Nimanburr to understand how it would like information to be managed.
  - 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.
  - A request for Nimanburr to provide information about the proposed activity to other individuals, as required.

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
No feedback, objection or claim 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 7.7.1 of this 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 with Nimanburr for the purpose of Regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.5 of the EP. Specifically:

Sufficient Information

Sufficient information has been provided because:

- On 27 September 2024, Woodside made the Consultation Information Sheet available on the Woodside website.
- Woodside provided information to Nimanburr on 30 September 2024 when consultation commenced. Woodside provided:
  - A Summary Information Sheet developed specifically for First Nations groups and reviewed by a member of the First Nations Engagement team. This sheet included an overview of the proposed activity, the location of the activity, the timing of the activity, the potential risks and impacts of the activity, diagrams and details about how to provide feedback.
  - Confirmation of the purpose of consultation, what was being sought by Woodside through consultation including understanding the nature of NAC's 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 this EP has been provided because:

- Woodside commenced consultation on this EP with Nimanburr on 30 September 2024 and requested Nimanburr provide feedback by 30 October 2024 for the purposes of preparation of this EP in line with Woodside's methodology of a 30-day period for consultation.
- Woodside has addressed and responded to Nimanburr for 4 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 Nimanburr's preferred method of consultation and has consulted in a way that Woodside understands is appropriate for First Nations groups.
- Woodside has made information on this EP publicly available for 4 months. This has included publishing advertisements in national, state and local newspapers including Indigenous newspapers, the Koori Mail (2 October 2024) and National Indigenous Times (24 September 2024) advising of the proposed activities and requesting comments or feedback.
- Woodside's initial email about this EP on 30 September 2024:
  - 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 First Nations Engagement team. Woodside also provided contact details for NOPSEMA.
  - Offered for Woodside to speak with Nimanburr members as well as the Nimanburr Board.
  - Asked Nimanburr to advise how it would like Woodside to engage and whether Nimanburr required further information.
- Woodside offered to meet with Nimanburr on a number of occasions.
- Throughout the consultation period, Woodside and Nimanburr have had direct contact lines to each other during the period.

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 4 months, Nimanburr has not raised objections or claims about the adverse impact of each 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 7.7.1 of this EP).

4.9.9 Nyangumarta Karajarri Aboriginal Corporation (NKAC)

NKAC is established under the Native Title Act 1993 by the Nyangumarta and Karajarri people to represent the Nyangumarta and Karajarri 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.

Historical engagement:

- On 26 July 2023, Woodside emailed NKAC/KLC Woodside's planned Program of Ongoing Engagement with Traditional Custodians.

Please see Scarborough Seabed Intervention and Trunkline Installation EP (Appendix F and SI Report) for further details of this correspondence.

Summary of information provided and record of consultation for this EP:

- On 30 September 2024, Woodside emailed NKAC advising of the proposed activity (Record of Consultation, reference 6.1.40), which included the activity's Summary Information Sheet and Consultation Information Sheet. The email included:
  - 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.
- Information on the interests that NKAC and its members may have within the EMBA.
- A request for feedback by 30 October 2024.
- Information on how NKAC would like 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, and working with NKAC AC to understand how it would like information to be managed.
- 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.
- A request for NKAC to provide information about the proposed activity to other individuals, as required.

- On 21 October 2024, Woodside emailed NKAC a reminder about the proposed activity (SI Report, reference 29.1). The email included:
  - A reference to the original consultation email for this EP sent to NKAC on 30 September 2024, which included Summary and Consultation Information Sheets.
  - A reminder that consultation for the preparation of this EP closes on 30 October 2024.
  - An update on the activity's well location co-ordinates and water depths.
  - A request for information on how NKAC would like 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, and working with NKAC to understand how it would like information to be managed.
  - 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.
  - A request for NKAC to provide information about the proposed activity to other individuals, as required.
- On 21 October 2024, NKAC (via KLC) emailed Woodside, confirming receipt of the reminder email (SI Report, reference 29.2). NKAC's email stated:
  - That there are often significant delays for third parties to receive responses from NKAC due to logistical and other complexities that Aboriginal corporations in the Kimberley face such as accessibility to emails/phones, Lore and cultural practices, compliance and management considerations, and seasonal/weather factors.
  - That Woodside is sending the EP emails via the correct channel of communication, and that information will be forwarded to NKAC's directors.
  - That NKAC will respond if and when it is in a position to do so, and appreciated Woodside's patience and understanding.

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
No feedback, objection or claim 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 7.7.1 of this 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 with NKAC for the purpose of Regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.5 of the EP. Specifically: **Sufficient Information** Sufficient information has been provided because: • On 27 September 2024, Woodside made the Consultation Information Sheet available on the Woodside website. • Woodside provided information to NKAC on 30 September 2024 when consultation commenced. Woodside provided: – A Summary Information Sheet developed specifically for First Nations groups and reviewed by a member of the First Nations Engagement team. This sheet included an overview of the proposed activity, the location of the activity, the timing of the activity, the potential risks and impacts of the activity, diagrams and details about how to provide feedback. – Confirmation of the purpose of consultation, what was being sought by Woodside through consultation including understanding the nature of NKAC's 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 this EP has been provided because: • Woodside commenced consultation on this EP with NKAC on 30 September 2024 and requested NKAC provide feedback by 30 October 2024 for the purposes of preparation of this EP in line with Woodside's methodology of a 30-day period for consultation. • Woodside has addressed and responded to NKAC for 4 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 NKAC's preferred method of consultation and has consulted in a way that Woodside understands is appropriate for First Nations groups. • Woodside has made information on this EP publicly available for 4 months. This has included publishing advertisements in national, state and local newspapers including Indigenous newspapers, the Koori Mail (2 October 2024) and National Indigenous Times (24 September 2024) advising of the proposed activities and requesting comments or feedback. • Woodside's initial email about this EP on 30 September 2024: – 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 First Nations Engagement team. Woodside also provided contact details for NOPSEMA. – Offered for Woodside to speak with NKAC members as well as the NKAC Board. – Asked NKAC to advise how it would like Woodside to engage and whether NAC required further information.

- Woodside offered to meet with NKAC on a number of occasions.
- Throughout the consultation period, Woodside and NKAC have had direct contact lines to each other during the period.

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 4 months, NKAC has not raised objections or claims about the adverse impact of each 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 7.7.1 of this EP).

4.9.10 Nyangumarta Warrarn Aboriginal Corporation (NWAC)

NWAC is established under the Native Title Act 1993 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.

Historical engagement:

- On 26 July 2023, Woodside emailed NWAC Woodside's planned *Program of Ongoing Engagement with Traditional Custodians*.

Please see Scarborough Seabed Intervention and Trunkline Installation EP (Appendix F and SI Report) for further details of this correspondence.

Summary of information provided and record of consultation for this EP:

- On 30 September 2024, Woodside emailed NWAC advising of the proposed activity (Record of Consultation, reference 6.1.41), which included the activity's Summary Information Sheet and Consultation Information Sheet. The email included:
  - 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.
  - Information on the interests that NWAC and its members may have within the EMBA.
  - A request for feedback by 30 October 2024.
  - Information on how NWAC would like 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, and working with NWAC to understand how it would like information to be managed.
  - 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.
  - A request for NWAC to provide information about the proposed activity to other individuals, as required.

  - Acknowledgement that discussions relating to Woodside's framework agreement has been ongoing and that these discussions will progress in parallel with consultation for the proposed activity's EP.
- On 3 October 2024, Woodside emailed NWAC the proposed activity's Summary and Consultation Information Sheets, and confirmed that Woodside is open to paying reasonable consultation costs, and for NWAC to send a cost estimation quote to Woodside (SI Report, reference 30.1).
- On 18 October 2024, NWAC emailed Woodside confirming that NWAC's Board of Directors would like to meet with Woodside at the next Board meeting on 24 October 2024, and requested a preferred time (SI Report, reference 30.2).
- On 18 October 2024, Woodside emailed NWAC confirming attendance at the Board meeting on the 24 October at 11.30am and requested NWAC provide a quote prior to the 24 October to allow time to invoice for costs. Woodside also stated that it was available to speak on the phone about the arrangements (SI Report, reference 30.3).
- On 18 October 2024, NWAC emailed Woodside confirming that it would schedule a time for Woodside to present at the meeting and would confirm attendance ahead of time (SI Report, reference 30.4).
- On 21 October 2024, Woodside emailed NWAC a reminder about the proposed activity (SI Report, reference 30.5). The email included:
  - A reference to the original consultation email for this EP sent to NWAC on 30 September 2024, which included Summary and Consultation Information Sheets.
  - A reminder that consultation for the preparation of this EP closes on 30 October 2024.
  - An update on the activity's well location co-ordinates and water depths.
  - A request for information regarding how NWAC would like 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, and working with NWAC to understand how it would like information to be managed.
  - Advice that feedback can continue to be provided to Woodside during the life of an EP, including after the EP consultation has closed, during EP assessment, and after an EP has been accepted by NOPSEMA.
  - A request for NWAC to provide information about the proposed activity to other individuals, as required.
- Between 21 – 23 October 2024 Woodside and NWAC exchanged emails to arrange a meeting with NWAC Board and YMAC on 24 October 2024. The emails included information about the meeting agenda, venue location and names of Woodside representatives attending (SI Report, references 30.6 – 30.9)
- On 24 October 2024, Woodside met with the NWAC Board at the YMAC office to provide an overview of Woodside's consultation process and the proposed activity (SI Report, reference 30.10). Discussions included:
  - An overview of Woodside assets and activities in Western Australia.
  - Woodside's commitment to working with First Nations communities, the process for consultation, and the importance of its relationships with, Traditional Owners.
  - Information about the Commonwealth regulator, NOPSEMA.
  - EPs and decommissioning activities including:
    - Information about the proposed activity and EP including an overview, planned activities, the EMBA and Operational Area, and potential impacts and controls.
    - Questions to consider when consulting on EPs.
    - Opportunities for questions and further discussions, action items and feedback on consultation.

- Woodside openness to discussing ways PBCs can develop Ranger Programs through training opportunities.
- Ways in which NWAC would like to be consulted on future activities, to understand concerns in relation to the proposed activities and the possible impacts they may impose on cultural interests.
- Woodside's commitment to understanding the types of activities and interests that are important to NWAC and any possible outcomes NWAC would like to consider.

A General feedback from NWAC and YMAC included:

- That Woodside's presentation was an information session. Woodside informed NWAC and YMAC that attendees were not obligated to provide feedback during the consultation, as feedback is welcome for the life of the EP. The NWAC Board confirmed that if it decided to provide feedback it may not be until 2025 due to other commitments taking priority but understood that the initial feedback period closed on the 1 November 2024.
- If Woodside was in regular contact with the Traditional Owners of Murujuga. Woodside confirmed that it had a close working relationship with MAC, and in contact with Traditional Owners.

In regard to the proposed activity:

- Woodside discussed that the EMBA in the event of an unplanned event, provided a comprehensive overview of the activities and information on how the EMBA is formulated, and explained that the EMBA is a result of predicated modelling that considers 200 different scenarios based on a number of conditions and factors.
- **(1)** NWAC raised questions in relation to the detection of oil leaks.
- **(1)** Woodside confirmed that the wells are continually monitored, and that it would be notified in the unlikely event a leak occurred. Woodside explained there was a crisis management team and confirmed it has the capacity to have its first response team deployed and onsite within a matter of hours. Woodside stated it with corporations to develop ranger programs to ensure Traditional Owners are equipped to act in the unlikely event of spill.
- **(2)** NWAC confirmed Traditional Owners would want their own independent monitoring processes.
- **(2)** Woodside confirmed there are social investment and cultural mapping opportunities that can be utilised to support Traditional Owners independent monitoring and survey projects.
- **(3)** NWAC Traditional Owners explained that their priority is to protect Eighty Mile Beach due to its cultural and ecological value to the Nyangumarta Custodians.
- **(3)** Woodside explained the impacts and controls to mitigate risk for the activity and assured NWAC Woodside explained the impacts and controls to mitigate risk for the activity and assured NWAC that Eighty Mile Beach will be acknowledged as a cultural value.
- **(4)** NWAC discussed the impacts of migrating birds, whales, turtles and vegetation.
- **(4)** Woodside acknowledged and reiterated the importance of ongoing consultation to ensure Traditional Owners are up to date with Woodsides activities.
- YMAC thanked Woodside for the information presented and confirmed that the meeting had been a good opportunity to learn about the EP consultation process and about Woodside.

- On 24 October 2024, Woodside emailed NWAC thanking the corporation for the opportunity to meet with Directors and Elders, and confirming if a quote for costs had been submitted to Woodside (SI Report, reference 30.11).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
(1)	**(1)**	**(1)**

NWAC raised questions in relation to the detection of oil spills.	**Woodside assessment:** Woodside notes NWAC's concerns about the unlikely event of an oil spill (leak). **Woodside response:** Woodside confirmed at the NWAC meeting that wells are continually monitored, and that NWAC would be notified in the unlikely event a spill occurred. Woodside informed NWAC that it engages with relevant cultural authorities in the event of oil spills.	See Appendix G: Oil spill preparedness and response strategy selection and evaluation, and Appendix H: First Strike Plan in the EP.
(2) NWAC confirmed Traditional Owners would want their own independent monitoring processes.	**(2)** **Woodside assessment:** Woodside acknowledges that NWAC requests independent monitoring processes. **Woodside response:** Woodside confirmed there are social investment and cultural mapping opportunities that can be utilised to support Traditional Owners independently monitor and survey projects.	**(2)** Woodside's environmental controls are described in Section 6: Environmental impact and risk assessment, performance outcomes, standards and measurements criteria.
(3) NWAC Traditional Owners explained that their priority is to protect Eighty Mile Beach due to its cultural and ecological value to the Nyangumarta Custodians.	**(3)** **Woodside assessment:** Woodside acknowledges NWAC's connection, and priority to protect, Eighty Mile Beach, and the cultural value to the Nyangumarta Custodians. **Woodside response:** Woodside explained the impacts and controls to mitigate risk for the activity and assured NWAC that Eighty Mile Beach will be acknowledged as a cultural value in the EP.	**(3)** Eighty Mile Beach is identified as a cultural feature and heritage value in Section 4.9.1: Cultural values and heritage, under Sea Country values in the EP.
(4) NWAC discussed the impacts to migrating birds, whales, turtles and vegetation.	**(4)** **Woodside assessment:** Woodside has developed response plans to mitigate or avoid impacts on birds and marine mammals in the highly unlikely event of a hydrocarbon response. **Woodside response:** Woodside advised the impact on animals depended on the timing, duration and extent of a spill. Response options included tracking, protective barriers, shoreline clean-up techniques, prevention of contact with wildlife and rehabilitation of wildlife where	**(4)** The potential environmental impacts of planned and unplanned activities are assessed in Section 6: Environmental impact and risk assessment, performance outcomes, standards and measurements criteria.

	contact occurs, and long-term monitoring of species and sites after a spill.	
Woodside has addressed objections and claims as noted above.	Woodside has assessed the merits of any 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 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 7.7.1 of this 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 with NWAC for the purpose of Regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.5 of the EP. Specifically:

Sufficient Information

Sufficient information has been provided because:

- On 27 September 2024, Woodside made the Consultation Information Sheet available on the Woodside website.
- Woodside provided information to NWAC on 30 September 2024 when consultation commenced. Woodside provided:
  - A Summary Information Sheet developed specifically for First Nations groups and reviewed by a member of the First Nations Engagement team. This sheet included an overview of the proposed activity, the location of the activity, the timing of the activity, the potential risks and impacts of the activity, diagrams and details about how to provide feedback.
  - Confirmation of the purpose of consultation, what was being sought by Woodside through consultation including understanding the nature of NAC's 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 this EP has been provided because:

- Woodside commenced consultation on this EP with NWAC on 30 September 2024 and requested NWAC provide feedback by 30 October 2024 for the purposes of preparation of this EP in line with Woodside's methodology of a 30-day period for consultation.
- Woodside has addressed and responded to NWAC for 4 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 NWAC's preferred method of consultation and has consulted in a way that Woodside understands is appropriate for First Nations groups.
- Woodside has made information on this EP publicly available for 4 months. This has included publishing advertisements in national, state and local newspapers including Indigenous newspapers, the Koori Mail (2 October 2024) and National Indigenous Times (24 September 2024) advising of the proposed activities and requesting comments or feedback.
- Woodside's initial email about this EP on 30 September 2024:
  - 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 First Nations Engagement team. Woodside also provided contact details for NOPSEMA.
  - Offered for Woodside to speak with NWAC members as well as the NWAC Board.
  - Asked NWAC to advise how it would like Woodside to engage and whether NWAC required further information.
- Woodside offered to meet with NWAC on a number of occasions.
- Throughout the consultation period, Woodside and NWAC have exchanged multiple emails and met on one occasion to present the proposed activity to the NWAC Board and YMAC officers, as well as direct contact lines of communication to each other during the period.

Outcomes of Consultation

The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- NWAC provided feedback to Woodside about:
  - The detection of oil spills. Woodside confirmed that wells are continually monitored, NWAC would be notified in the unlikely event a spill occurred, and that Woodside engages with relevant cultural authorities in the event of oil spills. This is outlined in Appendix G: Oil spill preparedness and response strategy selection and evaluation, and Appendix H: First Strike Plan in the EP.
  - Independent monitoring processes. Woodside advise that there are opportunities for independent monitoring. Woodside's environmental controls are described in Section 6: Environmental impact and risk assessment, performance outcomes, standards and measurements criteria.
  - The priority to protect Eighty Mile Beach due to its cultural and ecological value to the Nyangumarta Custodians. Woodside has assessed the impacts and controls to mitigate risk for the activity in Section 4.9.1: Cultural values and heritage, under Sea Country values in the EP.
  - The impacts to migrating birds, whales, turtles and vegetation. The potential environmental impacts of planned and unplanned activities are assessed in Section 6: Environmental impact and risk assessment, performance outcomes, standards and measurements criteria.
- During the past 4 months, NWAC has not raised objections or claims about the adverse impact of each 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 7.7.1 of this EP).

4.9.11 Nyul Nyul PBC Aboriginal Corporation (Nyul Nyul)

NNAC is established under the Native Title Act 1993 by the Nyul Nyul people to represent the Nyul Nyul 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 30 September 2024, Woodside emailed Nyul Nyul advising of the proposed activity (Record of Consultation, reference 6.1.42), which included the activity's Summary Information Sheet and Consultation Information Sheet. The email included:
  - 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.
  - Information on the interests that Nyul Nyul and its members may have within the EMBA.
  - A request for feedback by 30 October November 2024.
  - Information on how Nyul Nyul would like 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, and working with Nyul Nyul to understand how it would like information to be managed.
  - 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.
  - A request for Nyul Nyul to provide information about the proposed activity to other individuals, as required.
- On 21 October 2024, Woodside emailed Nyul Nyul a reminder about the proposed activity (SI Report, reference 31.1). The email included:
  - A reference to the original consultation email for this EP sent to Nyul Nyul on 30 September 2024, which included Summary and Consultation Information Sheets.
  - A reminder that consultation for the preparation of this EP closes on 30 October 2024.
  - An update on the activity's well location co-ordinates and water depths.
  - A request for information on how Nyul Nyul would like 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, and working with Nyul Nyul to understand how it would like information to be managed.
  - 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.
  - A request for Nyul Nyul to provide information about the proposed activity to other individuals, as required.

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan

No feedback, objection or claim 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 7.8 of this 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 with Nyul Nyul for the purpose of Regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.5 of the EP. Specifically:

Sufficient Information

Sufficient information has been provided because:

- On 27 September 2024, Woodside made the Consultation Information Sheet available on the Woodside website.
- Woodside provided information to Nyul Nyul on 30 September 2024 when consultation commenced. Woodside provided:
  - A Summary Information Sheet developed specifically for First Nations groups and reviewed by a member of the First Nations Engagement team. This sheet included an overview of the proposed activity, the location of the activity, the timing of the activity, the potential risks and impacts of the activity, diagrams and details about how to provide feedback.
  - Confirmation of the purpose of consultation, what was being sought by Woodside through consultation including understanding the nature of Nyul Nyul's 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 this EP has been provided because:

- Woodside commenced consultation on this EP with Nyul Nyul on 30 September 2024 and requested Nyul Nyul provide feedback by 30 October 2024 for the purposes of preparation of this EP in line with Woodside's methodology of a 30-day period for consultation.
- Woodside has addressed and responded to Nyul Nyul for 4 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 Nyul Nyul's preferred method of consultation and has consulted in a way that Woodside understands is appropriate for First Nations groups.

- Woodside has made information on this EP publicly available for 4 months. This has included publishing advertisements in national, state and local newspapers including Indigenous newspapers, the Koori Mail (2 October 2024) and National Indigenous Times (24 September 2024) advising of the proposed activities and requesting comments or feedback.
- Woodside's initial email about this EP on 30 September 2024:
  - 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 First Nations Engagement team. Woodside also provided contact details for NOPSEMA.
  - Offered for Woodside to speak with Nyul Nyul members as well as the Nyul Nyul Board.
  - Asked Nyul Nyul to advise how it would like Woodside to engage and whether Nyul Nyul required further information.
- Woodside offered to meet with Nyul Nyul on a number of occasions.
- Throughout the consultation period, Woodside and Nyul Nyul have had direct contact lines to each other during the period.

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 4 months, Nyul Nyul has not raised objections or claims about the adverse impact of each 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 7.7.1 of this EP).

4.9.12 Robe River Kuruma Aboriginal Corporation (RRKAC)

RRKAC is established under the Native Title Act 1993 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.

Historical engagement:

- On 26 July 2023, Woodside emailed RRKAC Woodside's planned *Program of Ongoing Engagement with Traditional Custodians*.

Please see Scarborough Seabed Intervention and Trunkline Installation EP (Appendix F and SI Report) for further details of this correspondence.

Summary of information provided and record of consultation for this EP:

- On 27 September 2024, Woodside emailed RRKAC advising of the proposed activity (Record of Consultation, reference 6.1.43), which included the activity's Summary Information Sheet and Consultation Information Sheet. The email included:
  - 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.
  - Information on the interests that RRKAC and its members may have within the EMBA.

- A request for feedback by 30 October 2024.
- Information on how RRKAC would like 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, and working with RRKAC to understand how it would like information to be managed.
- 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.
- A request for RRKAC to provide information about the proposed activity to other individuals, as required.

- On 27 September 2024, RRKAC emailed Woodside confirming receipt of the Record of Consultation email. RRKAC said it was conducting fieldwork and would respond when available (SI Report, reference 32.1).
- On 3 October 2024, Woodside emailed RRKAC an invitation to share stories and receives updates from Woodside at its Monthly Community Luncheon for Traditional Owners to be held in Roebourne on 23 October 2024 (SI Report, reference 32.2).
- On 21 October 2024, Woodside emailed RRKAC a reminder about the proposed activity (SI Report, reference 32.3). The email included:
  - A reference to the original consultation email for this EP sent to RRKAC on 27 September 2024, which included Summary and Consultation Information Sheets.
  - A reminder that consultation for the preparation of this EP closes on 30 October 2024.
  - An update on the activity's well location co-ordinates and water depths.
  - A request for information on how RRKAC would like 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, and working with RRKAC to understand how it would like information to be managed.
  - 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.
  - A request for RRKAC to provide information about the proposed activity to other individuals, as required.

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
No feedback, objection or claim 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 7.7.1 of this 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 with RRKAC for the purpose of Regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.5 of the EP. Specifically:

Sufficient Information

Sufficient information has been provided because:

- On 27 September 2024, Woodside made the Consultation Information Sheet available on the Woodside website.
- Woodside provided information to RRKAC on 27 September 2024 when consultation commenced. Woodside provided:
  - A Summary Information Sheet developed specifically for First Nations groups and reviewed by a member of the First Nations Engagement team. This sheet included an overview of the proposed activity, the location of the activity, the timing of the activity, the potential risks and impacts of the activity, diagrams and details about how to provide feedback.
  - Confirmation of the purpose of consultation, what was being sought by Woodside through consultation including understanding the nature of RRKAC's 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 this EP has been provided because:

- Woodside commenced consultation on this EP with RRKAC on 27 September 2024 and requested RRKAC provide feedback by 30 October 2024 for the purposes of preparation of this EP in line with Woodside's methodology of a 30-day period for consultation.
- Woodside has addressed and responded to RRKAC for 4 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 RRKAC's preferred method of consultation and has consulted in a way that Woodside understands is appropriate for First Nations groups.
- Woodside has made information on this EP publicly available for 4 months. This has included publishing advertisements in national, state and local newspapers including Indigenous newspapers, the Koori Mail (2 October 2024) and National Indigenous Times (24 September 2024) advising of the proposed activities and requesting comments or feedback.
- Woodside's initial email about this EP on 27 September 2024:
  - 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 First Nations Engagement team. Woodside also provided contact details for NOPSEMA.
  - Offered for Woodside to speak with RRKAC members as well as the RRKAC Board.
  - Asked RRKAC to advise how it would like Woodside to engage and whether RRKAC required further information.
- Woodside offered to meet with RRKAC on a number of occasions.

- Throughout the consultation period, Woodside and RRKAC have had direct contact lines to each other during the period.

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 4 months RRKAC has provided feedback, but has not raised objections or claims about the adverse impact of each 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 7.7.1 of this EP).

4.9.13 Wanparta Aboriginal Corporation (Wanparta)

Wanparta is established under the Native Title Act 1993 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.

Historical engagement:

- On 26 July 2023, Woodside emailed Wanparta Woodside's planned *Program of Ongoing Engagement with Traditional Custodians*.

Please see Scarborough Seabed Intervention and Trunkline Installation EP (Appendix F and SI Report) for further details of this correspondence.

Summary of information provided and record of consultation for this EP:

- On 30 September 2024, Woodside emailed Wanparta advising of the proposed activity (Record of Consultation, reference 6.1.44), which included the activity's Summary Information Sheet and Consultation Information Sheet. The email included:
  - 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.
  - Information on the interests that Wanparta and its members may have within the EMBA.
  - **(1)** Details of Wanparta's cultural values previously provided by Wanparta to Woodside during consultation for other activities that may be relevant to the proposed activity. These cultural values include:
    - That Ngarla people have a deep spiritual connection to Sea Country and a responsibility to look after and protect it.
    - The significance of Wanparta's totem species including the octopus, stingray, spiny bream fish and kestrel.
  - **(1)** Woodside request Wanparta to confirm if there were any changes or additional information regarding cultural values that Woodside should consider in the preparation for the EP.
  - A request for feedback by 30 October 2024.
  - Information on how Wanparta would like 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, and working with Wanparta to understand how it would like information to be managed.
- 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.
- A request for Wanparta to provide information about the proposed activity to other individuals, as required.

- **(2)** On 11 October 2024, Wanparta emailed Woodside stating that there was no further information for consideration regarding the cultural values previously provided by Wanparta to Woodside, and that Woodside was not required to consult with Wanparta on the proposed activity (SI Report, reference 33.1). **(2)** Woodside noted Wanparta's feedback regarding the proposed activity and cultural values previously provided to Woodside, which would be reflected in the EP.

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
(1) Wanparta stated that water and the ocean were extremely important to them, and they had a responsibility to look after ocean and lore. They noted the bream, octopus, stingray and kestrel as totemic species.	**(1)** **Woodside assessment:** Woodside assessed Wanparta's interest in water and the species described to represent potential cultural values. **Woodside response:** Wanparta's interests and potential cultural values have been recorded in the EP, the potential impact on the interests and values, including controls, have been assessed.	**(1)** Woodside updated Section 4.9.1: Cultural values and heritage, to record Wanparta's interests and potential cultural values and assessed potential impact on these, including controls, in Section 6: Environmental impact and risk assessment, performance outcomes, standards and measurements criteria.
(2) Wanparta informed Woodside that it had no further information for consideration regarding the cultural values previously provided by Wanparta to Woodside, and that Woodside was not required to consult with Wanparta on the proposed activity.	**(2)** **Woodside assessment**: Woodside acknowledges that Wanparta had no further information to share with Woodside, and it was not required to consult with Wanparta regarding the activity. **Woodside response**: Woodside accepts that Wanparta has no further feedback, claims or objections to the activity. Should feedback be received after the EP has been accepted (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 7.7.1 of the EP).	**(2)** No action required.

Woodside has addressed objections and claims as noted above.	Woodside has assessed the merits of any 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 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 7.7.1 of this 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 with Wanparta for the purpose of Regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.5 of the EP. Specifically:

Sufficient Information

Sufficient information has been provided because:

- On 27 September 2024, Woodside made the Consultation Information Sheet available on the Woodside website.
- Woodside provided information to Wanparta on 30 September 2024 when consultation commenced. Woodside provided:
  - A Summary Information Sheet developed specifically for First Nations groups and reviewed by a member of the First Nations Engagement team. This sheet included an overview of the proposed activity, the location of the activity, the timing of the activity, the potential risks and impacts of the activity, diagrams and details about how to provide feedback.
  - Confirmation of the purpose of consultation, what was being sought by Woodside through consultation including understanding the nature of Wanparta's 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 this EP has been provided because:

- Woodside commenced consultation on this EP with Wanparta on 30 September 2024 and requested Wanparta provide feedback by 30 October 2024 for the purposes of preparation of this EP in line with Woodside's methodology of a 30-day period for consultation.
- Woodside has addressed and responded to Wanparta for 4 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 Wanparta's preferred method of consultation and has consulted in a way that Woodside understands is appropriate for First Nations groups.
- Woodside has made information on this EP publicly available for 4 months. This has included publishing advertisements in national, state and local newspapers including Indigenous newspapers, the Koori Mail (2 October 2024) and National Indigenous Times (24 September 2024) advising of the proposed activities and requesting comments or feedback.
- Woodside's initial email about this EP on 30 September 2024:
  - 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 First Nations Engagement team. Woodside also provided contact details for NOPSEMA.
  - Offered for Woodside to speak with Wanparta members as well as the Wanparta Board.
  - Asked Wanparta to advise how it would like Woodside to engage and whether Wanparta required further information.
- Woodside offered to meet with Wanparta on a number of occasions.
- Throughout the consultation period, Woodside and Wanparta have had direct contact lines to each other during the period.

Outcomes of Consultation

The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- Wanparta advised Woodside that it has a cultural obligation to care for the environmental values of Sea Country.
- Woodside has assessed Wanparta's interests and potential cultural values and assessed potential impact in Section 4.9.1: Cultural values and heritage, including controls, in Section 6: Environmental impact and risk assessment, performance outcomes, standards and measurements criteria.
- During the past 4 months, Wanparta has not raised objections or claims about the adverse impact of each 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 7.7.1 of this EP).

4.9.14 Wirrawandi Aboriginal Corporation (WAC)

WAC is established under the Native Title Act 1993 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.

Historical engagement:

- On 26 July 2023, Woodside emailed WAC Woodside's planned *Program of Ongoing Engagement with Traditional Custodians*.

Please see Scarborough Seabed Intervention and Trunkline Installation EP (Appendix F and SI Report) for further details of this correspondence.

Summary of information provided and record of consultation for this EP:

- On 27 September 2024, Woodside emailed WAC advising of the proposed activity (Record of Consultation, reference 6.1.45), which included the activity's Summary Information Sheet and Consultation Information Sheet. The email included:
  - 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.
  - Information on the interests that WAC and its members may have within the EMBA.
  - A request for feedback by 30 October 2024.
  - Information on how WAC would like 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, and working with WAC to understand how it would like information to be managed.
  - 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.
  - A request for WAC to provide information about the proposed activity to other individuals, as required.
- On 30 September 2024, Woodside met with WAC (SI Report, reference 34.1) At the meeting:
  - WAC discussed administrative matters relating to resourcing plans and has prioritised appointing a new Board at its Annual General Meeting in November.
  - WAC noted it has recently appointed a new Trustee and is negotiating its annual budget.
  - Woodside reported at the meeting that throughout September 2024, it has undertaken a number of discussions face to face and via telephone calls with WAC members and Elders about EP consultation and reasons why Woodside consults with relevant groups.
- On 1 October 2024, WAC emailed Woodside suggesting that Woodside provide an overview of activities due to a number of EPs open for consultation, at the next meeting of the WAC Board. WAC would prepare a quote for costs and advise of the next meeting date (SI report, reference 34.2).
- On 1 October 2024, Woodside emailed WAC confirming it was available to consult on EPs, reminding WAC that feedback closed on 1 November 2024, and suggesting that the meeting with the WAC Board occur before the closing date – with Woodside discussing next steps once the quote had been submitted (SI Report, reference 34.3).
- On 3 October 2024, Woodside emailed WAC an invitation to share stories and receives updates from Woodside at its Monthly Community Luncheon for Traditional Owners to be held in Roebourne on 23 October 2024 (SI Report, reference 34.4).
- On 10 October 2024, WAC attended Woodside's Quarter 3 Heritage Meeting in Roebourne where Woodside presented to Traditional Owners (SI Report, reference 34.5). Matters relevant to this EP included:
  - Consultation outcomes for Woodside EPs.
  - An explanation of State and Commonwealth regulatory requirements.
  - An explanation of EMBAs
  - The process Woodside undertakes to identify Traditional Owners groups.
  - How Traditional Owners can provide information to Woodside about cultural values, interests and activities.
  - If there are any other First Nations groups who should be consulted.

- On 14 October 2024, Woodside was notified that the cultural protocols associated with Sorry Business were in place, and that industry and government stakeholders had been asked to minimise contact with Traditional Owner groups including WAC as a sign of respect (SI Report, reference 34.6).
- On 18 October 2024, Woodside emailed WAC confirming Woodside representative at the WAC Board meeting on 28 October 2024, and requesting a quote for costs (SI Report, reference 34.7).
- On 21 October 2024, Woodside emailed WAC a reminder about the proposed activity (SI Report, reference 34.8). The email included:
  - A reference to the original consultation email for this EP sent to WAC on 27 September 2024, which included Summary and Consultation Information Sheets.
  - A reminder that consultation for the preparation of this EP closes on 30 October 2024.
  - An update on the activity's well location co-ordinates and water depths.
  - A request for information on how WAC would like 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, and working with WAC to understand how it would like information to be managed.
  - 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.
  - A request for WAC to provide information about the proposed activity to other individuals, as required.
- On 24 October 2024, WAC emailed Woodside informing that WAC preferred 2 hours for presentation of EP, providing a quote for costs based on previous communication with Woodside in 2023, and requesting if the rates were acceptable to Woodside (SI Report, reference 34.9).
- On 28 October 2024, Woodside met with the WAC Board and Elders in Karratha to provide an overview of Woodside's consultation process and the proposed activity (SI Report, reference 34.10). The presentation included the following information:
  - An overview of Woodside assets and activities in Western Australia.
  - Woodside's commitment to working with First Nations communities, the process for consultation, and the importance of its relationships with, Traditional Owners.
  - Reinforced that Woodside wants to hear from Elders and members about activities, their concerns, what we should do about them, what we need to consider regarding EPs.
  - Information about the Commonwealth regulator, NOPSEMA.
  - EPs and decommissioning activities including:
    - Information about the proposed activity and EP including an overview, planned activities, the EMBA and Operational Area, and potential impacts and controls.
    - Questions to consider when consulting on EPs.
    - Opportunities for questions and further discussions, action items and feedback on consultation.
    - Reminded attendees that consultation remains open after Woodside submits the EP – and for the life of the EP.
    - Requested if there are any other people/groups Woodside should talk to about the decommissioning activities.

  The Board asked:

  - What type of feedback is Woodside seeking from WAC to submit to NOPSEMA. Woodside advised that EP outlines how Woodside undertakes its activities and the environment that may be impacted by an activity such as marine life, the ocean, ocean floor and offshore. Woodside consults with Traditional Owners about cultural and environmental values these are included in the EP and submitted to NOPSEMA.
  - The management and reporting of spills, and the likelihood during a decommissioning activity. Woodside stated that is required to report spills within 12 hours. Woodside includes an Oil Spill Management Plan in the EP and stated it is unlikely spills occur during decommissioning activities however outlined the processes if a spill was to occur.

  Discussions relating to the proposed activity included:

  - The decommissioning Operational Area and EMBA, including the distance and depth of the activity.
  - Potential risk for loss of containment to fix TPA03. Woodside stated it had undertaken spill modelling and it had been determined that there was an unlikely risk. Woodside also reiterated that it monitors wells.
  - Woodside discussed the planned impacts and risks, such as sound/noise impacts, as well as unplanned impacts and risk such as a spill and emergency response arrangements, vessel speeds, and impact on marine life.
  - Woodside requested if WAC had any further questions, and none were asked.
- **(1)** On 29 October 2024, WAC emailed Woodside thanking it for the presentation in-person to the WAC Board and acknowledging Woodside's professionalism. WAC confirm that is did not have any further feedback or objections at the time to the proposed activity, however reserved the right to provide comment at a later date if any perceived environmental or cultural issues became evident. WAC stated it was satisfied that consultation had occurred (SI Report, reference 34.11). **(1)** Woodside noted that WAC had no further feedback or objections to the proposed activity, which would be reflected in the EP.
- On 2 November 2024, a Woodside First Nations team member spoke with relevant persons from WAC and Elders at the Dampier Beachside Markets (SI Report, reference 34.12). The conversations included:
  - Information about Woodside's activities and related EPs including the proposed activity.
  - An offer to further consult and meet face to face with WAC and Elders.
  - Reference to printed Summary Information Sheets for a number of Woodside activities.
  - Elders noted they had no feedback, objections or claims relating to the proposed activity, and were comfortable with the information being sent via WAC. Woodside notes and respects the feedback from Elders.
  - WAC noted that upcoming AGMs, Sorry Business and Lore will impact its availability to consult over the next few months.
- On 15 November 2024, Woodside emailed NAC to invite it to Woodside's Quarterly Heritage Meeting on 5 December 2024, as an opportunity for Woodside to provide updates on Woodside's activities to Traditional Owner groups and to receive feedback from the community. Woodside also requested a list attendees and attendance fees (SI Report, reference 34.13).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
(1)	**(1)**	**(1)** No action required.

WAC confirmed it had no issues or concerns relating to this EP.	**Woodside assessment**: Woodside acknowledges that WAC had no issues or concerns, including no objections or claims, regarding this EP. **Woodside response**: Should feedback be received after the EP has been accepted (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 7.7.1 of this EP).	
While feedback has been received, there were no objections or claims.	Woodside has assessed the merits of any 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 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 7.7.1 of this 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 with WAC for the purpose of Regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.5 of the EP. Specifically:

Sufficient Information

Sufficient information has been provided because:

- On 27 September 2024, Woodside made the Consultation Information Sheet available on the Woodside website.
- Woodside provided information to WAC on 27 September 2024 when consultation commenced. Woodside provided:
  - A Summary Information Sheet developed specifically for First Nations groups and reviewed by a member of the First Nations Engagement team. This sheet included an overview of the proposed activity, the location of the activity, the timing of the activity, the potential risks and impacts of the activity, diagrams and details about how to provide feedback.
  - Confirmation of the purpose of consultation, what was being sought by Woodside through consultation including understanding the nature of WAC's 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 this EP has been provided because:

- Woodside commenced consultation on this EP with WAC on 27 September 2024 and requested WAC provide feedback by 30 October 2024 for the purposes of preparation of this EP in line with Woodside's methodology of a 30-day period for consultation.
- Woodside has addressed and responded to WAC 4 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 WAC's preferred method of consultation and has consulted in a way that Woodside understands is appropriate for First Nations groups.
- Woodside has made information on this EP publicly available 4 months. This has included publishing advertisements in national, state and local newspapers including Indigenous newspapers, the Koori Mail (2 October 2024) and National Indigenous Times (24 September 2024) advising of the proposed activities and requesting comments or feedback.
- Woodside's initial email about this EP on 27 September 2024:
  - 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 First Nations Engagement team. Woodside also provided contact details for NOPSEMA.
  - Offered for Woodside to speak with WAC members as well as the WAC Board.
  - Asked WAC to advise how it would like Woodside to engage and whether WAC required further information.
- Woodside offered to meet with WAC on a number of occasions.
- Throughout the consultation period, Woodside and WAC have exchanged multiple emails, met on two occasions and have otherwise had direct contact lines to each other during the period.
- Woodside invites WAC to Quarterly Heritage Meetings and Monthly Community Luncheons.

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 4 months, WAC has provided feedback, but has not raised objections or claims about the adverse impact of each 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 7.7.1 of this EP).

4.9.15 Yawuru Native Title Holders Aboriginal Corporation (Yawuru)

Yawuru is established under the Native Title Act 1993 by the Yawuru people to represent the Yawuru 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 30 September 2024, Woodside emailed Yawuru advising of the proposed activity (Record of Consultation, reference 6.1.46), which included the activity's Summary Information Sheet and Consultation Information Sheet. The email included:
  - 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.
  - Information on the interests that Yawuru and its members may have within the EMBA.
  - A request for feedback by 30 October 2024.
  - Information on how Yawuru would like 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, and working with Yawuru to understand how it would like information to be managed.
  - 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.
  - A request for Yawuru to provide information about the proposed activity to other individuals, as required.
- On 21 October 2024, Woodside emailed Yawuru a reminder about the proposed activity (SI Report, reference 35.1). The email included:
  - A reference to the original consultation email for this EP sent to Yawuru on 30 September 2024, which included Summary and Consultation Information Sheets.
  - A reminder that consultation for the preparation of this EP closes on 30 October 2024.
  - An update on the activity's well location co-ordinates and water depths.
  - A request for information on how Yawuru would like 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, and working with Yawuru to understand how it would like information to be managed.
  - 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.
  - A request for Yawuru to provide information about the proposed activity to other individuals, as required.

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
No feedback, objection or claim 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 7.7.1 of this 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 with Yawuru for the purpose of Regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.5 of the EP. Specifically: **Sufficient Information** Sufficient information has been provided because: • On 27 September 2024, Woodside made the Consultation Information Sheet available on the Woodside website. • Woodside provided information to Yawuru on 30 September 2024 when consultation commenced. Woodside provided: – A Summary Information Sheet developed specifically for First Nations groups and reviewed by a member of the First Nations Engagement team. This sheet included an overview of the proposed activity, the location of the activity, the timing of the activity, the potential risks and impacts of the activity, diagrams and details about how to provide feedback. – Confirmation of the purpose of consultation, what was being sought by Woodside through consultation including understanding the nature of Yawuru's 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 this EP has been provided because: • Woodside commenced consultation on this EP with Yawuru on 30 September 2024 and requested Yawuru provide feedback by 30 October 2024 for the purposes of preparation of this EP in line with Woodside's methodology of a 30-day period for consultation. • Woodside has addressed and responded to Yawuru for 4 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 Yawuru's preferred method of consultation and has consulted in a way that Woodside understands is appropriate for First Nations groups. • Woodside has made information on this EP publicly available for 4 months. This has included publishing advertisements in national, state and local newspapers including Indigenous newspapers, the Koori Mail (2 October 2024) and National Indigenous Times (24 September 2024) advising of the proposed activities and requesting comments or feedback. • Woodside's initial email about this EP on 30 September 2024: – 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 First Nations Engagement team. Woodside also provided contact details for NOPSEMA. – Offered for Woodside to speak with Yawuru members as well as the Yawuru Board. – Asked Yawuru to advise how it would like Woodside to engage and whether Yawuru required further information.

- Woodside offered to meet with Yawuru on a number of occasions.
- Throughout the consultation period, Woodside and Yawuru have had direct contact lines to each other during the period.

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 4 months, Yawuru has not raised objections or claims about the adverse impact of each 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 7.7.1 of this EP).

4.9.16 Yindjibarndi Aboriginal Corporation (Yindjibarndi)

Yindjibarndi AC is established under the Native Title Act 1993 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.

Historical engagement:

- On 26 July 2023, Woodside emailed Yindjibarndi (via the Ngarluma Yindjibarndi Foundation Ltd, or NYFL) Woodside's planned *Program of Ongoing Engagement with Traditional Custodians*.
- **(1)** On 1 August 2023, Yindjibarndi formally notified Woodside that Oil and Gas matters relating to Yindjibarndi be directed to NYFL. **(1)** Woodside acknowledged this and adjusted its consultation accordingly.

Please see Scarborough Seabed Intervention and Trunkline Installation EP (Appendix F and SI Report) for further details of this correspondence.

Summary of information provided and record of consultation for this EP:

- On 27 September 2024, Woodside emailed Yindjibarndi advising of the proposed activity (Record of Consultation, reference 6.1.47), which included the activity's Summary Information Sheet and Consultation Information Sheet. The email included:
  - 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.
  - Information on the interests that Yindjibarndi and its members may have within the EMBA.
  - A request for feedback by 30 October 2024.
  - Information on how Yindjibarndi would like 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, and working with Yindjibarndi to understand how it would like information to be managed.
  - 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.
  - A request for Yindjibarndi to provide information about the proposed activity to other individuals, as required.
- On 3 October 2024, Woodside emailed Yindjibarndi an invitation to share stories and receives updates from Woodside at its Monthly Community Luncheon for Traditional Owners to be held in Roebourne on 23 October 2024 (SI Report, reference 36.1).
- On 14 October 2024, Woodside was notified that the cultural protocols associated with Sorry Business were in place, and that industry and government stakeholders had been asked to minimise contact with Traditional Owner groups including Yindjibarndi as a sign of respect (SI Report, reference 36.2).
- On 21 October 2024, Woodside emailed Yindjibarndi (via NYFL) a reminder about the proposed activity (SI Report, reference 36.3). The email included:
  - A reference to the original consultation email for this EP sent to Yindjibarndi on 27 September 2024, which included Summary and Consultation Information Sheets.
  - A reminder that consultation for the preparation of this EP closes on 30 October 2024.
  - An update on the activity's well location co-ordinates and water depths.
  - A request for information on how Yindjibarndi would like 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, and working with Yindjibarndi to understand how it would like information to be managed.
  - 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.
  - A request for Yindjibarndi to provide information about the proposed activity to other individuals, as required.
- **(2)** On 21 October 2024, Yindjibarndi (via NYFL) emailed Woodside asserting (SI Report, reference 36.3):
  - No formal consultation had taken place between NYFL, in its capacity as the delegated representative for Yindjibarndi, and Woodside on this EP and others.
  - Woodside's emails did not meet the standard of meaningful consultation.
  - Woodside has provided NYFL with a draft consultation agreement but had declined to agree with NYFL's estimated costs to proceed with the agreement.
  - NYFL would progress consultation on this EP and others once the consultation agreement had been formalised.
  - Woodside note in any record provided to NOPSEMA that NYFL had not been consulted on this EP and others.
- On 2 November 2024, Woodside's First Nations spoke with relevant persons from Yindjibarndi and Elders at the Dampier Beachside Markets (SI Report, reference 36.4). The conversations included:

– Information about Woodside's activities and related EPs including the proposed activity.
– An offer to further consult and meet face to face with Yindjibarndi and Elders.
– Reference to printed Summary Information Sheets for a number of Woodside activities.
– Elders noted they had no feedback, objections or claims relating to the proposed activity, and were comfortable with the information being sent via Yindjibarndi. Woodside notes and respects the feedback from Elders.
– Yindjibarndi noted that upcoming AGMs, Sorry Business and Lore will impact its availability to consult over the next few months.

(2, 2) *Between 8 – 20 November 2024, emails were exchanged between NYFL (as the delegated representative for Yindjibarndi) and Woodside regarding the 4 November 2024 email and requests to meet regarding the draft consultation agreement. Please refer to NYFL Appendix F, reference 4.11.1 and SI Report, reference 21.0 for further information.*

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
(1) Yindjibarndi has instructed Woodside that it will be represented by NYFL in ongoing discussion about EPs.	**(1)** **Woodside assessment**: Woodside accepts Yindjibarndi's right to be represented by NYFL. **Woodside response**: Woodside will engage with NYFL on behalf of Yindjibarndi for ongoing consultation related to this activity.	**(1)** Ongoing consultation will be undertaken as set out in Management of Change and Revision process, Section 7.7.1 of the EP.
(2) NYFL has stated that no formal consultation had taken place between NYFL, in its capacity as the delegated representative for Yindjibarndi, and Woodside on this EP. NYFL would progress consultation on this EP once the draft consultation agreement was finalised.	**(2)** **Woodside assessment:** Woodside rejects NYFL's assertion that has not been consulted on this EP. Woodside began consulting Yindjibarndi (via NYFL) on 8 July 2024 and has provided sufficient information, a reasonable period of time, and reasonable opportunity for NYFL to provide feedback. Woodside has clearly communicated to NYFL that consultation for this EP and others has occurred in parallel to negotiations about the draft consultation agreement. Woodside notes that the consultation agreement is not required to undertake and/or consult with NYFL on EPs. **Woodside response:** The information provided by Woodside meets the requirements of Regulation 25 of	**(2)** Not required.

	the Environment Regulations for the reasons set out above.	
While feedback has been received, there were no objections or claims.	Woodside has assessed the merits of any 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 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 7.7.1 of this 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 with Yindjibarndi (via NYFL) for the purpose of Regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.5 of the EP. Specifically:

Sufficient Information

Sufficient information has been provided because:

- On 27 September 2024, Woodside made the Consultation Information Sheet available on the Woodside website.
- Woodside provided information to Yindjibarndi (via NYFL) on 27 September 2024 when consultation commenced. Woodside provided:
  - A Summary Information Sheet developed specifically for First Nations groups and reviewed by a member of the First Nations Engagement team. This sheet included an overview of the proposed activity, the location of the activity, the timing of the activity, the potential risks and impacts of the activity, diagrams and details about how to provide feedback.
  - Confirmation of the purpose of consultation, what was being sought by Woodside through consultation including understanding the nature of Yindjibarndi's 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 this EP has been provided because:

- Woodside commenced consultation on this EP with Yindjibarndi (via NYFL) on 27 September 2024 and requested Yindjibarndi (via NYFL) provide feedback by 30 October 2024 for the purposes of preparation of this EP in line with Woodside's methodology of a 30-day period for consultation.
- Woodside has addressed and responded to Yindjibarndi (via NYFL) for 4 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 Yindjibarndi's preferred method of consultation and has consulted in a way that Woodside understands is appropriate for First Nations groups.
- Woodside has made information on this EP publicly available for 5 months. This has included publishing advertisements in national, state and local newspapers including Indigenous newspapers, the Koori Mail (2 October 2024) and National Indigenous Times (24 September 2024) advising of the proposed activities and requesting comments or feedback.
- Woodside's initial email about this EP on 27 September 2024:
  - 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 First Nations Engagement team. Woodside also provided contact details for NOPSEMA.
  - Offered for Woodside to speak with Yindjibarndi's members as well as the Yindjibarndi Board.
  - Asked Yindjibarndi (via NYFL) to advise how it would like Woodside to engage and whether Yindjibarndi required further information.
- Woodside offered to meet with Yindjibarndi (via NYFL) on a number of occasions.
- Throughout the consultation period, Woodside and Yindjibarndi (via NYFL) have exchanged emails and have had direct contact lines to each other during the period.

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 4 months, Yindjibarndi (via NYFL) has not raised objections or claims about the adverse impact of each 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 7.7.1 of this EP).

4.9.17 Yinggarda Aboriginal Corporation (YAC)

YAC is established under the Native Title Act 1993 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.

Historical engagement:

- On 26 July 2023, Woodside emailed YAC via GAC Woodside's planned *Program of Ongoing Engagement with Traditional Custodians*.

Please see Scarborough Seabed Intervention and Trunkline Installation EP (Appendix F and SI Report) for further details of this correspondence.

Summary of information provided and record of consultation for this EP:

- On 30 September 2024, Woodside emailed YAC advising of the proposed activity (Record of Consultation, reference 6.1.48), which included the activity's Summary Information Sheet and Consultation Information Sheet. The email included:
  - 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.
  - Information on the interests that YAC and its members may have within the EMBA.
  - Details of YAC's cultural values previously provided by YAC to Woodside during consultation for other activities that may be relevant to the proposed activity. These include:
    - **(1)** That plants, animals and the environment are inexorably linked to its culture.
    - **(2)** Concerns about potential impacts to patterns of whales and potential collisions.
    - **(3)** Advised that seagrass, mullet and dugong in Shark Bay are important resources.
  - **(1, 2, 3)** A request from Woodside that YAC 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 feedback by 30 October 2024.
  - Information on how YAC would like 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, and working with YAC to understand how it would like information to be managed.
  - 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.
  - A request for YAC to provide information about the proposed activity to other individuals, as required.
  - Acknowledgement that discussions relating to Woodside's framework agreement has been ongoing and that these discussions will progress in parallel with consultation for the proposed activity's EP.
- On 21 October 2024, Woodside emailed YAC a reminder about the proposed activity (SI Report, reference 37.1). The email included:
  - A reference to the original consultation email for this EP sent to YAC on 30 September 2024, which included Summary and Consultation Information Sheets and listed cultural values previously provided by YAC to Woodside.
  - A reminder that consultation for the preparation of this EP closes on 30 October 2024.
  - An update on the activity's well location co-ordinates and water depths.
  - A request for information on how YAC would like 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, and working with YAC to understand how it would like information to be managed.
  - 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.
  - A request for YAC to provide information about the proposed activity to other individuals, as required.

- On 2 November 2024, Woodside's First Nations spoke with relevant persons from YAC and Elders at the Dampier Beachside Markets (SI Report, reference 37.2). The conversations included:
  - Information about Woodside's activities and related EPs including the proposed activity.
  - An offer to further consult and meet face to face with YAC and Elders.
  - Reference to printed Summary Information Sheets for a number of Woodside activities.
  - Elders noted they had no feedback, objections or claims relating to the proposed activity, and were comfortable with the information being sent via Yindjibarndi. Woodside notes and respects the feedback from Elders that they had no objections or claims relating to the proposed activity.
  - YAC noted that upcoming AGMs, Sorry Business and Lore will impact its availability to consult over the next few months.

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
(1) YAC stated that plants, animals and the environment are inexorably linked to its culture and asked whether Woodside had undertaken environmental studies, whether these studies were ongoing and what environmental monitoring occurred after EPs were approved.	**(1)** **Woodside assessment:** Woodside acknowledges YAC's feedback that plants, animals and the environment are inexorably linked to its culture. Woodside has undertaken numerous environmental studies, has an ongoing commitment to research and conducts environmental monitoring after EPs are accepted. **Woodside response:** Woodside has advised YAC that it has undertaken numerous environmental studies, has an ongoing commitment to research and conducts environmental monitoring after EPs are accepted. Woodside has also advised YAC that it continues to take feedback for the life on an EP and will inform YAC of any new information in relation to risks.	**(1)** Woodside has updated record YAC's interests and potential cultural values in in Section 4.9.1: Cultural values and heritage. Potential impact including controls are detailed in Section 6: Environmental impact and risk assessment, performance outcomes, standards and measurements criteria.
(2) YAC expressed concern about potential impacts to patterns of whales and potential collisions.	**(2)** **Woodside assessment:** Woodside has noted YAC's interest in whales and has controls in place to minimise impacts and risks to whales. **Woodside response**: Woodside has advised YAC that controls are put in place to minimise impacts and risks to whales.	**(2)** Woodside has updated Section 4.9.1: Cultural values and heritage, to record YAC's interests and potential cultural values. Potential impact on these, including controls are detailed in Section 6: Environmental impact and risk assessment, performance outcomes, standards and measurements criteria.

(3) YAC advised that seagrass, mullet and dugong in Shark Bay are important resources.	**(3)** **Woodside assessment:** Woodside has noted YAC's interest in seagrass, mullet and dugong in Shark Bay. **Woodside response:** Woodside has advised YAC that controls are in place to mitigate risk to seagrass, mullet and dugong in the unlikely case of an environmental incident.	**(3)** Woodside has updated Section 4.9.1: Cultural values and heritage, to record YAC's interests and potential cultural values. Potential impact on these, including controls are detailed in Section 6: Environmental impact and risk assessment, performance outcomes, standards and measurements criteria.
Woodside has addressed objections and claims as noted above.	Woodside has assessed the merits of any 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 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 7.7.1 of this 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 with YAC for the purpose of Regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.5 of the EP. Specifically:

Sufficient Information

Sufficient information has been provided because:

- On 27 September 2024, Woodside made the Consultation Information Sheet available on the Woodside website.
- Woodside provided information to YAC on 30 September 2024 when consultation commenced. Woodside provided:
  - A Summary Information Sheet developed specifically for First Nations groups and reviewed by a member of the First Nations Engagement team. This sheet included an overview of the proposed activity, the location of the activity, the timing of the activity, the potential risks and impacts of the activity, diagrams and details about how to provide feedback.
  - Confirmation of the purpose of consultation, what was being sought by Woodside through consultation including understanding the nature of YAC's 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 this EP has been provided because:

- Woodside commenced consultation on this EP with YAC on 30 September 2024 and requested YAC provide feedback by 30 October 2024 for the purposes of preparation of this EP in line with Woodside's methodology of a 30-day period for consultation.
- Woodside has addressed and responded to YAC for 4 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 YAC's preferred method of consultation and has consulted in a way that Woodside understands is appropriate for First Nations groups.
- Woodside has made information on this EP publicly available for 4 months. This has included publishing advertisements in national, state and local newspapers including Indigenous newspapers, the Koori Mail (2 October 2024) and National Indigenous Times (24 September 2024) advising of the proposed activities and requesting comments or feedback.
- Woodside's initial email about this EP on 30 September 2024:
  - 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 First Nations Engagement team. Woodside also provided contact details for NOPSEMA.
  - Offered for Woodside to speak with YAC members as well as the YAC Board.
  - Asked YAC to advise how it would like Woodside to engage and whether YAC required further information.
- Woodside offered to meet with YAC on a number of occasions.
- Throughout the consultation period, Woodside and YAC have had direct contact lines to each other during the period.

Outcomes of Consultation

The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- YAC has advised Woodside:
  - The potential impacts to the environment, and plants, animals and the environment are inexorably linked to its culture (including whales), and the environment generally, are inexorably linked to their culture and advised that seagrass, mullet and dugong in Shark Bay are important resources.
  - A concern about potential impacts to patterns of whales and potential collisions.
  - Woodside has updated Section 4.9.1: Cultural values and heritage, to record YAC's interests and potential cultural values. Potential impact on these, including controls are detailed in Section 6: Environmental impact and risk assessment, performance outcomes, standards and measurements criteria.
- During the past 4 months, YAC has not raised objections or claims about the adverse impact of each 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 7.7.1 of this EP).

4.10 Native Title representative bodies

4.10.1 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.

Summary of information provided and record of consultation for this EP:

- On 30 September 2024, Woodside emailed KLC advising of the proposed activity (Record of Consultation, reference 6.1.49), which included the activity's Summary Information Sheet and Consultation Information Sheet. The email content included:
  - 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.
  - Information on the interests that KLC and its members may have within the EMBA.
  - A request for feedback by 30 October 2024.
  - Information on how KLC would like 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, and working with KLC to understand how it would like information to be managed.
  - 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.
  - A request for KLC to provide information about the proposed activity to other individuals, as required.
- On 21 October 2024, Woodside emailed KLC a reminder about the proposed activity (SI Report, reference 38.1). The email included:
  - A reference to the original consultation email for this EP sent to KLC on 30 September 2024, which included Summary and Consultation Information Sheets.
  - A reminder that consultation for the preparation of this EP closes on 30 October 2024.
  - An update on the activity's well location co-ordinates and water depths.
  - A request for information on how KLC would like 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, and working with KLC to understand how it would like information to be managed.
  - 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.
  - A request for KLC to provide information about the proposed activity to other individuals, as required.

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan

No feedback, objection or claim 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 7.7.1 of this 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 with KLC for the purpose of Regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.5 of the EP. Specifically:

Sufficient Information

Sufficient information has been provided because:

- On 27 September 2024, Woodside made the Consultation Information Sheet available on the Woodside website.
- Woodside provided information to KLC on 30 September 2024 when consultation commenced. Woodside provided:
  - A Summary Information Sheet developed specifically for First Nations groups and reviewed by a member of the First Nations Engagement team. This sheet included an overview of the proposed activity, the location of the activity, the timing of the activity, the potential risks and impacts of the activity, diagrams and details about how to provide feedback.
  - Confirmation of the purpose of consultation, what was being sought by Woodside through consultation including understanding the nature of KLC's 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 this EP has been provided because:

- Woodside commenced consultation on this EP with KLC on 30 September 2024 and requested KLC provide feedback by 30 October 2024 for the purposes of preparation of this EP in line with Woodside's methodology of a 30-day period for consultation.
- Woodside has addressed and responded to KLC 4 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 KLC's preferred method of consultation and has consulted in a way that Woodside understands is appropriate for First Nations groups.

- Woodside has made information on this EP publicly available for 4 months. This has included publishing advertisements in national, state and local newspapers including Indigenous newspapers, the Koori Mail (2 October 2024) and National Indigenous Times (24 September 2024) advising of the proposed activities and requesting comments or feedback.
- Woodside's initial email about this EP on 30 September 2024:
  - 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 First Nations Engagement team. Woodside also provided contact details for NOPSEMA.
  - Offered for Woodside to speak with KLC's members as well as the KLC Board.
  - Asked KLC to advise how it would like Woodside to engage and whether KLC required further information.
- Woodside offered to meet with KLC on a number of occasions.
- Throughout the consultation period, Woodside and KLC have had direct contact lines to each other during the period.

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 4 months, KLC has not raised objections or claims about the adverse impact of each 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 7.7.1 of this EP).

4.10.2 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.

Historical engagement:

- On 25 July 2023, Woodside emailed YMAC Woodside's planned *Program of Ongoing Engagement with Traditional Custodians*.

Please see Scarborough Seabed Intervention and Trunkline Installation EP (Appendix F and SI Report) for further details of this correspondence.

Summary of information provided and record of consultation for this EP:

- On 27 September 2024, Woodside emailed YMAC advising of the proposed activity (Record of Consultation, reference 6.1.50), which included the activity's Summary Information Sheet and Consultation Information Sheet. The email included:
  - 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.
  - Information on the interests that YMAC and its members may have within the EMBA.
  - A request for feedback by 30 October 2024.

- Information on how YMAC would like 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, and working with YMAC to understand how it would like information to be managed.
- 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.
- A request for YMAC to provide information about the proposed activity to other individuals, as required.

- On 2 October 2024, YMAC and Woodside exchanged emails clarifying and confirming the correct contact details when emailing EP consultation information and materials (SI Report, reference 39.1 – 39.3).
- On 3 October 2024, Woodside emailed YMAC an invitation to share stories and receives updates from Woodside at its Monthly Community Luncheon for Traditional Owners to be held in Roebourne on 23 October 2024 (SI Report, reference 39.4).
- On 21 October 2024, Woodside emailed YMAC a reminder about the proposed activity (SI Report, reference 39.5). The email included:
  - A reference to the original consultation email for this EP sent to YMAC on 27 September 2024, which included Summary and Consultation Information Sheets and listed cultural values previously provided by YMAC to Woodside.
  - A reminder that consultation for the preparation of this EP closes on 30 October 2024.
  - An update on the activity's well location co-ordinates and water depths.
  - A request for information on how YMAC would like 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, and working with YMAC to understand how it would like information to be managed.
  - 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.
  - A request for YMAC to provide information about the proposed activity to other individuals, as required.

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
No feedback, objection or claim 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 7.7.1 of this 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 with YMAC for the purpose of Regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.5 of the EP. Specifically:

Sufficient Information

Sufficient information has been provided because:

- On 27 September 2024, Woodside made the Consultation Information Sheet available on the Woodside website.
- Woodside provided information to YMAC on 27 September 2024 when consultation commenced. Woodside provided:
  - A Summary Information Sheet developed specifically for First Nations groups and reviewed by a member of the First Nations Engagement team. This sheet included an overview of the proposed activity, the location of the activity, the timing of the activity, the potential risks and impacts of the activity, diagrams and details about how to provide feedback.
  - Confirmation of the purpose of consultation, what was being sought by Woodside through consultation including understanding the nature of YMAC's 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 this EP has been provided because:

- Woodside commenced consultation on this EP with YMAC on 27 September 2024 and requested YMAC provide feedback by 30 October 2024 for the purposes of preparation of this EP in line with Woodside's methodology of a 30-day period for consultation.
- Woodside has addressed and responded to YMAC 4 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 YMAC's preferred method of consultation and has consulted in a way that Woodside understands is appropriate for First Nations groups.
- Woodside has made information on this EP publicly available for 4 months. This has included publishing advertisements in national, state and local newspapers including Indigenous newspapers, the Koori Mail (2 October 2024) and National Indigenous Times (24 September 2024) advising of the proposed activities and requesting comments or feedback.
- Woodside's initial email about this EP on 27 September 2024:
  - 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 First Nations Engagement team. Woodside also provided contact details for NOPSEMA.
  - Offered for Woodside to speak with YMAC's members as well as the YMAC Board.
  - Asked YMAC to advise how it would like Woodside to engage and whether YMAC required further information.
- Woodside offered to meet with YMAC on a number of occasions.
- Throughout the consultation period, Woodside and YMAC have had direct contact lines to each other during the period.
- Woodside invites YMAC to Monthly Community Luncheons.

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 4 months, YMAC has not raised objections or claims about the adverse impact of each 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 7.7.1 of this EP).

4.11 Self-identified First Nations groups

4.11.1 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.

Historical engagement:

- On 26 July 2023, Woodside emailed NYFL Woodside's planned *Program of Ongoing Engagement with Traditional Custodians*.

Please refer to Scarborough Seabed Intervention and Trunkline Installation EP *(Appendix F and SI document) for further details of this correspondence.*

Summary of information provided and record of consultation for this EP:

- On 27 September 2024, Woodside emailed NYFL advising of the proposed activity (Record of Consultation, reference 6.1.51), which included the activity's Summary Information Sheet and Consultation Information Sheet. The email included:
  - 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.
  - Information on the interests that NYFL and its members may have within the EMBA.
  - A request for feedback by 30 October 2024.
  - Information on how NYFL would like 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, and working with NYFL to understand how it would like information to be managed.

  - 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.
  - A request for NYFL to provide information about the proposed activity to other individuals, as required.
  - Acknowledgement that discussions relating to Woodside's framework agreement has been ongoing and that these discussions will progress in parallel with consultation for the proposed activity's EP.
- On 3 October 2024, Woodside emailed NYFL an invitation to share stories and receives updates from Woodside at its Monthly Community Luncheon for Traditional Owners to be held in Roebourne on 23 October 2024 (SI Report, reference 40.1).
- On 21 October 2024, Woodside emailed NYFL a reminder about the proposed activity (SI Report, reference 40.2). The email included:
  - A reference to the original consultation email for this EP sent to NYFL on 27 September 2024, which included Summary and Consultation Information Sheets.
  - A reminder that consultation for the preparation of this EP closes on 30 October 2024.
  - An update on the activity's well location co-ordinates and water depths.
  - A request for information on how NYFL would like 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, and working with NYFL to understand how it would like information to be managed.
  - 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.
  - A request for NYFL to provide information about the proposed activity to other individuals, as required.
- On 21 October 2024, NYFL emailed Woodside (SI Report, reference 40.3). In the email NYFL stated:
  - **(1)** No formal consultation had taken place between NYFL and Woodside on this EP and others.
  - **(1)** Woodside's emails did not meet the standard of meaningful consultation.
  - **(2)** Woodside has provided NYFL with a draft consultation agreement but had declined to agree with NYFL's estimated costs to proceed with the agreement.
  - **(2)** NYFL would progress consultation on this EP and others once the consultation agreement had been formalised.
  - **(1)** A request for Woodside to note in any record provided to NOPSEMA that NYFL had not been consulted on this EP and others.
- On 23 October 2024, Traditional Owner members from NYFL attended Woodside's Monthly Community Luncheon for Traditional Owners held in Roebourne. During the lunch Woodside requested feedback from all attendees about EPs and provided information about the consultation process (SI Report, reference 40.4)
- On 4 November 2024, Woodside emailed NYFL in response to statements and claims made in NYFL's email on 21 October 2024 (SI Report, reference 40.5). The email included the following:
  - **(2)** Woodside's continued view that NYFL's cost estimates and rates are excessive, and the rates quoted by NYFL related to the North West Shelf agreements and were not consistent with reasonable rates for enabling and supporting consultation on this EP. Woodside also noted that the rates quoted by NYFL were for an initial review of a 7-page agreement.
  - **(1)** Woodside offered to meet and discuss the issue further and would be available to meet in-person in Leramugadu, the week of 18 November 2024.

  - **(1)** Woodside confirmed that its use of email as one of the methods to engage in consultation correspondence mirrored what appears to be NYFL's primary approach of emailing consultation correspondence, and that. Woodside is happy to discuss this EP and the various other EPs NYFL has listed in its recent correspondence.
  - **(1)** Woodside reiterated that the ongoing negotiation of a consultation framework agreement can occur in parallel to consultation for EPs.
  - **(1)** Woodside included a table identifying the status of each of the EPs referenced by NYFL.
- On 8 November 2024, NYFL emailed Woodside requesting to meet on the 20 November 2024 and suggested Woodside approve an interim solution for external (legal) and internal cost estimates, until such a time a Board review is required and cost estimates can be determined (SI Report, reference 40.6).
- On 15 November 2024, Woodside emailed NYFL confirming the invitation to meet on 20 November 2024 and requested NYFL confirm with its legal provider that the cost estimates remain current for the consultation agreement. Woodside stated it would separately email NYFL about remaining EPs outline in the 21 October correspondence (SI Report, reference 40.7).
- On 15 November 2024, NYFL emailed Woodside confirming NYFL's legal provider had advised the previous cost estimate remains current (SI Report, reference 40.8).
- On 20 November 2024, Woodside emailed NYFL thanking for the meeting. **(2)** Woodside agreed to the amount for legal fees, as set out in its original estimate provided to Woodside by email on 19 March 2024, with the qualification that that amount is for the finalisation of the draft consultation agreement to be agreed between Woodside and NYFL executive staff for presentation to the NYFL Board for its consideration (SI Report, reference 40.9).
- On 21 November 2024, NYFL advised Woodside about the passing of a Senior Yindjibarndi Elder and founding member of NYFL. The NYFL Board advised that grieving protocols were underway, and the community was commencing a period of mourning (SI Report, reference 40.10). As a sign of respect, Woodside would be limiting communication with NYFL and Yindjibarndi Aboriginal Corporation until further notice.
- **(1)** On 5 December 2024, Woodside emailed NYFL in response to its correspondence of 21 October 2024 (SI report, reference 40.11). Matters relevant to this EP included:
  - Woodside had met with NYFL on 20 November 2024 to discuss progressing the Consultation Framework Agreement and had agreed a way forward.
  - Woodside did not agree with NYFL's assertion that consultation for this EP and others had not commenced.
  - Woodside confirmed that consultation for this EP was complete and was now closed.
  - Woodside had continued to consult and engage with NYFL via email as this appeared to be NYFL's preferred and primary method of consulting with Woodside on EPs
  - Woodside was open to meet as part of its ongoing consultation with NYFL.
  - Woodside reiterated that ongoing negotiation of a consultation framework agreement could and continued to occur in parallel to consultation for EPs, including this EP, and that a consultation framework agreement was not a prerequisite to consultation.
  - Woodside attached a summary of the consultation that had occurred for the EP.
- Between 6 – 16 December 2024, Woodside and NYFL exchanged emails regarding matters relating to EP consultation, with NYFL stating it would progress consultation matters in due course (SI Report, reference 40.12 – 40.14).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
(1)	**(1)**	**(1)**

NYFL has stated no formal consultation had taken place between NYFL and Woodside on this EP. NYFL would progress consultation on this EP once the draft consultation agreement was finalised.	**Woodside assessment:** Woodside rejects NYFL's assertion that has not been consulted on this EP. Woodside began consulting NYFL on 8 July 2024 and has provided sufficient information, a reasonable period of time, and reasonable opportunity for NYFL to provide feedback. Woodside has clearly communicated to NYFL that consultation for this EP and others has occurred in parallel to negotiations about the draft consultation agreement. Woodside notes that the consultation agreement is not required to undertake and/or consult with NYFL on EPs. **Woodside response:** The information provided by Woodside meets the requirements of regulation 25 of the Environment Regulations for the reasons set out above.	Not required.
(2) NYFL has acknowledged it supports an agreement to enable a process of consultation.	**(2)** **Woodside assessment:** Separate from consultation under Regulation 25 of the Environment Regulations, Woodside is open to engaging with a joint First Nations framework for consultation, however, notes that this is not required to undertake and/or complete consultation in the course of preparing this EP. Sufficient information to allow informed assessment has already been provided by other means. Woodside has an existing engagement framework in place with NYFL which enables regular (quarterly) communication about Woodside activities. Feedback from NYFL on 27 October 2023 requested Woodside develop a draft consultation framework. **Woodside response:** Woodside sent a 7-page draft consultation framework to NYFL in March 2024 for its consideration.	**(2)** Woodside is implementing a program to actively support Traditional Custodians' capacity for ongoing engagement and consultation on environment plans. This is described further in the Program of Ongoing Engagement with Traditional Custodians, (Appendix I). This includes continued engagement regarding the proposed Framework Agreement which would be applied to ongoing consultation for this activity. Woodside will continue to consult following acceptance of the EP, as set out in Section 5.7 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.	Based on the engagement to date, no additional measures or controls are required.

	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 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 7.7.1 of this EP).	

Summary Report: Consultation Complete

Woodside has discharged its obligations for consultation under Regulation 25 of the Environmental Regulations and consultation with Yindjibarndi (via NYFL) for the purpose of Regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.5 of the EP. Specifically:

Sufficient Information

Sufficient information has been provided because:

- On 27 September 2024, Woodside made the Consultation Information Sheet available on the Woodside website.
- Woodside provided information to NYFL on 27 September 2024 when consultation commenced. Woodside provided:
  - A Summary Information Sheet developed specifically for First Nations groups and reviewed by a member of the First Nations Engagement team. This sheet included an overview of the proposed activity, the location of the activity, the timing of the activity, the potential risks and impacts of the activity, diagrams and details about how to provide feedback.
  - Confirmation of the purpose of consultation, what was being sought by Woodside through consultation including understanding the nature of NYFL's 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 this EP has been provided because:

- Woodside commenced consultation on this EP with NYFL on 27 September 2024 and requested NYFL provide feedback by 30 October 2024 for the purposes of preparation of this EP in line with Woodside's methodology of a 30-day period for consultation.
- Woodside has addressed and responded to NYFL for 4 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 Yindjibarndi's preferred method of consultation and has consulted in a way that Woodside understands is appropriate for First Nations groups.

- Woodside has made information on this EP publicly available for over 4 months. This has included publishing advertisements in national, state and local newspapers including Indigenous newspapers, the Koori Mail (2 October 2024) and National Indigenous Times (24 September 2024) advising of the proposed activities and requesting comments or feedback.
- Woodside's initial email about this EP on 27 September 2024:
  - 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 First Nations Engagement team. Woodside also provided contact details for NOPSEMA.
  - Offered for Woodside to speak with NYFL's members as well as the NYFL Board.
  - Asked NYFL to advise how it would like Woodside to engage and whether Yindjibarndi required further information.
- Woodside offered to meet with NYFL on a number of occasions.
- Throughout the consultation period, Woodside and NYFL have exchanged emails and have otherwise had direct contact lines to each other during the period.
- Woodside invites NYFL to Monthly Community Luncheons.

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 4 months, NYFL has not raised objections or claims about the adverse impact of each 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 7.7.1 of this EP).

4.12 Other First Nations groups

4.12.1 Save Our Songlines (SOS)

Summary of information provided and record of consultation for this EP:

- On 27 September 2024, Woodside emailed SOS (via [Individual 3]) advising of the proposed activity (Record of Consultation, reference 6.1.52), which included the activity's Summary Information Sheet and Consultation Information Sheet. The email included:
  - 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.
  - Information on the interests that SOS and its members may have within the EMBA.
  - Details of cultural values previously provided by SOS and/or [Individual 2] to Woodside during consultation for other activities that may be relevant to the proposed activity. These cultural and environmental values include cultural features associated with:
    - **(1)** Whales, as well as marine mammals, seagrass distribution, and the meeting of freshwater and saltwater was demonstrated.
    - **(2)** Songlines, dreaming and energy lines.

  - **(1, 2)** A request that SOS and/or [Individual 2] 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 feedback by 30 October 2024.
  - Information on how SOS would like 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, and working with SOS to understand how it would like information to be managed.
  - That feedback can continue to be provided to Woodside during the life of an EP, including after EP consultation has closed, during EP assessment, and after an EP has been accepted by NOPSEMA.
  - A request for SOS to provide information about the proposed activity to other individuals, as required.
- On 7 October 2024, [Individual 3] emailed Woodside clarifying that correspondence regarding the Scarborough EPs are to be emailed directly to the EDO, with all other matters and EP correspondence emailed directly to [Individual 2] (SI Report, reference 41.1).
- On 21 October 2024, Woodside emailed SOS a reminder about the proposed activity (SI Report, reference 41.2). The email included:
  - A reference to the original consultation email for this EP sent to SOS on 27 September 2024, which included Summary and Consultation Information Sheets and Attachment A which listed cultural values previously provided by SOS to Woodside.
  - A reminder that consultation for the preparation of this EP closes on 30 October 2024.
  - An update on the activity's well location co-ordinates and water depths.
  - A request for information on how SOS would like 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, and working with SOS to understand how it would like information to be managed.
  - 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.
  - A request for SOS to provide information about the proposed activity to other individuals, as required.
- On 30 October 2024, [Individual 3] emailed Woodside informing that SOS and/or [Individual 2] had requested consultation feedback (in an attached letter) be provided to Woodside (SI Report, reference 41.3). In the letter, SOS and/or [Individual 2], stated the comments related to the proposed activity were based on the information Woodside had provided in the Consultation Information Sheet, Summary Information Sheet and Attachment A, which were sent on 27 September 2024. The letter included the following feedback, claims or objections:
  - **(3)** SOS and/or [individual 2] was a Mardathoonera Lore woman, Elder and Traditional Custodian of Murujuga, and their connection to Murujuga had been stated in previous comments and in evidence before Federal Court and that their cultural responsibilities had been provided previously, however some were culturally sensitive and could not be shared publicly.
  - **(4)** That Woodside was aware that SOS and/or [Individual 2] opposed the existence and operation of industry on Murujuga.
  - **(5)** That SOS and/or [Individual 2] holds information that is critical for Woodside to understand the impacts of its activities and may have feedback on proposed mitigation measures.

  - **(6)** That potential impacts on cultural values were not identified or mentioned in the Consultation Information Sheet, and specifically, questioning if the cultural values outlined in Attachment A had been properly considered and mitigated in the draft EP including potential impacts on:
    - **(1)** whales, as well as marine mammals, seagrass, and the meeting of freshwater and saltwater; and
    - **(2)** Songlines, Dreaming and energy lines.
  - **(7)** Concerns that well infrastructure could remain on the seabed for a prolonged and indefinite period, which would continue to impact cultural and environmental values.
  - **(8)** Concerns about the impacts of noise and pollution from the activities in the EP on marine life.
  - **(9)** Request that the EP identify potential risks of atmospheric and greenhouse gas emissions, and appropriate measures to mitigate and manage these risks, including the resumption of the TPA03 well in the Tidepole field, be implemented.
  - **(2)** That cultural and environmental values are one, and that the Dreaming stories and Songlines can be, and are being, disrupted.
  - **(10)** That Woodside had declined to meet the costs for consultation with [Individual 1] despite their requests that Woodside pay for their attendance for in-person consultation.
- On 20 December 2024, Woodside emailed SOS and/or [Individual 2] responding to its 30 October 2024 correspondence (SI Report, reference 40.4). Woodside advised SOS and/or [Individual 2] that:
  - Consultation for this EP closed on 30 October 2024, following a consultation period that was clearly communicated and confirmed on 27 September 2024, when Woodside emailed SOS and/or [Individual 2] to seek feedback on the EP. This included the provision of the Consultation Information Sheet about the EP, a Summary Information Sheet about the EP, and an attachment outlining the information and topics [Individual 2] had provided in relation to SOS's cultural values relevant to this activity.
  - Feedback could continue to be provided during the life of an EP, including after consultation for the purposes of preparation of the EP had closed, during EP assessment, and after an EP has been accepted by NOPSEMA.
  - Woodside continues to receive, assess and respond to feedback and comments from relevant persons throughout the life of the EP. Should feedback be received following the acceptance of an EP, that Woodside will apply its Management of Change and Review process as appropriate.
  - **(3)** Woodside acknowledged that [Individual 2] had traditional connections to Murujuga and that Woodside maintained, as confirmed in previous correspondence with [Individual 2], that Woodside had observed consultation protocols relating to confidentiality of culturally sensitive information shared by [Individual 2], and that:
    - [Individual 2] was deciding not to share culturally sensitive information and was withholding it from consultation on this EP, and as previously advised the result may be that Woodside may not have complete information about how their functions, interests and activities may be affected.
    - That Woodside had previously raised this during consultation with [Individual 2] and confirmed it was an issue with implications addressed in Munkara, including that:
      - In Munkara, the Judge considered the word "new" as it relates to new information or risks arising in relation to an environment plan. Her Honour held that this word should not be construed to include "a risk that was known by the relevant person to exist at the time of the reg 11A [now section 25] consultative process, and peculiarly within the relevant person's knowledge, and yet not previously disclosed at the time of those processes by that person when afforded the opportunity…" (paragraph 228).
      - Her Honour also contemplated the mischief that could occur in instances where a "relevant person, in fact consulted, has withheld disclosure of critical information about a risk, only to disclose it after the detailed, lengthy and resource intensive processes" (paragraph 229).

  - If [Individual 2] did not feel comfortable sharing information with Woodside, alternatives were available including the provision of information direct to NOSPEMA and providing a link to NOPSEMA's policy, 'Managing gender-restricted information'.
- **(4)** Woodside noted [Individual 2]'s opposition to the existence and operation of industry on Murujuga. Woodside confirmed it had previously consulted with [Individual 2] over a number of years regarding Woodside's EPs, as well as ensuring that [Individual 2]'s feedback raised in consultation for a number of activities had been assessed and incorporated in EPs, where relevant or appropriate.
- **(5)** Woodside noted that [Individual 2] may have feedback on proposed mitigation measures and confirmed that [Individual 2]'s participation in consultation was voluntary and there was no obligation on [Individual 2] to provide the information to Woodside, however Woodside maintained its position as outlined above in relation to withholding information known by a relevant person.
- **(6)** Woodside acknowledged it had previously consulted extensively with [Individual 2] and used feedback to inform EPs, including this one, confirming [Individual 2] had raised:
  - **(1, 2)** Cultural features associated with whales, as well as marine mammals, seagrass, Songlines, dreaming and energy lines.
  - **(1)** The meeting of freshwater and saltwater was demonstrated.
- **(7)** Woodside noted [Individual 2]'s feedback, claims and objections relating to:
  - Impacts to the Earth's core. Woodside advised it considers that there will be no impacts to the Earth's core or disruption to geographical formations, as no drilling activities are contemplated in this EP.
  - Underwater Cultural Heritage (UCH), confirming that Woodside applied the *Assessing and Managing Impacts to Underwater Cultural Heritage in Australian Waters – Guidelines on the application of the Underwater Cultural Heritage Act 2018* (DCCEEW, 2024) including engaging specialists to complete archaeological assessments prior to seabed disturbance, providing UCH inductions to relevant offshore crew, and implementing an UCH Unexpected Finds Procedure.
  - Seabed disturbance, confirming Woodside would assess the potential impact or risks in Section 6 of the EP and had conducted a thorough assessment of impacts to seabed disturbance and benthic habitat. Woodside advised it had also adopted appropriate controls to mitigate risks and considered the proposed controls in this EP were appropriate to reduce environmental impact and risk to as low as reasonably practicable (ALARP) and acceptable.
- **(5)** Woodside had complied with its decommissioning obligations under the *Offshore Petroleum and Greenhouse Gas Storage Act 2006* (OPGGS Act) through the development of this progressive decommissioning EP and would assess the potential impact or risk from the continued presence of well infrastructure in this EP.
- **(8)** Woodside had conducted a thorough assessment of impacts from the activities on marine life, in accordance with the requirements of the OPPGS regime, and referred to SOS and/or [Individual 2]'s previous feedback on other EPs, as well as feedback on this EP, to assess risks and mitigations to reduce impacts to cultural and environmental values. Woodside would assess and record those cultural and environmental values in this EP.
- **(9)** Woodside has conducted assessments of impacts from routine and non-routine atmospheric emissions, in accordance with the requirements of the OPPGS regime. Woodside would include in this EP an environment performance objective (EPO) and controls to ensure atmospheric emissions were limited to those necessary to maintain well integrity and complete the Petroleum Activities Program. Woodside confirmed the impact assessment for this EP had also determined that the potential risk of atmospheric and GHG emissions was a localised, short-term decrease in air quality and that emissions had been assessed in already approved EPs.
- **(2)** Woodside acknowledged and confirmed that culture and environment are one, and there was no separating the concepts, and confirmed that it had previously consulted with SOS and/or [Individual 2] on environmental matters relating to other EPs.

– **(2)** Woodside confirmed it had assessed and considered the information raised by SOS and/or [Individual 2] regarding Songlines and disruption to Songlines, which had been assessed in this EP and included where relevant. Woodside confirmed that risks or impacts to Songlines from this activity were anticipated to be negligible. – **(10)** Woodside noted SOS and/or [Individual 2]'s position regarding attendance fees and confirmed Woodside's position that attendance fees would not be provided.		
Summary of Feedback, Objection or Claim	**Assessment of Merits of Feedback, Objection or Claim and Woodside's Response**	**Inclusion in Environment Plan**
(1) SOS and/or [Individual 2] has an interest in marine mammals, including the migratory patterns of whales, dugongs and turtles, seagrass distribution, and the meeting of freshwater and saltwater was demonstrated.	**(1)** **Woodside assessment**: Woodside notes that some marine species hold spiritual and cultural importance to SOS and/or [Individual 2]. Woodside has considered SOS's and/or [Individual 2] topics of interest and shared relevant information in relation to a previous EP, with SoS and/or [Individual 2] relating to these interests, including controls put in place to manage risks and impacts to them. **Woodside response**: During consultation on a previous EP, Woodside discussed controls put in place to manage impacts and risks relating to their spiritual and cultural connection to the environment. Woodside has implemented controls to reduce potential risks and impacts to ecological and cultural values to ALARP and to an acceptable level.	**(1)** Woodside has updated Section 4.9.1: Cultural values and heritage, to record these cultural interests. These are assessed in Section 6 with appropriate controls implemented. Assessment of potential impacts to cultural values are described in Section 6: Environmental impact and risk assessment, performance outcomes, standards and measurements criteria of the EP.
(2) SOS and/or [Individual 2] noted there were cultural features associated with Songlines, dreaming and energy lines; and that cultural and environmental values are one, and that the Dreaming stories and Songlines can be, and are being, disrupted.	**(2)** **Woodside assessment**: Woodside notes feedback from SOS and/or [Individual 2] about Songlines and energy lines. Woodside has consistently sought to understand the nature of these values to ensure impacts to these values can be minimised. SOS and/or [Individual 2] has declined to provide further information on these values. **Woodside response**: In any event, Woodside has sought to include controls that seek to reduce risks and impacts to ALARP and acceptable levels.	**(2)** Woodside has considered SOS's and/or [Individual 2] feedback and updated Section 4.9.1: Cultural values and heritage, to record topics of interest and cultural values, including Songlines and energy lines. These are assessed in Section 6: Environmental impact and risk assessment, performance outcomes, standards and measurements criteria, under Songlines with appropriate controls implemented. At this stage, Woodside has not been provided with specific information on these potential values to enable a more fulsome assessment.
(3)	**(3)**	**(3)**

SOS and/or [Individual 2] stated that as a Mardathoonera Lore woman, Elder and Traditional Custodian of Murujuga, their connection and cultural responsibilities to Murujuga has previously been provided, however some were culturally sensitive and could not be shared publicly.	**Woodside assessment**: Woodside notes SOS and/or [Individual 2]'s connection to Murujuga and concern about the sharing of culturally sensitive information. **Woodside response**: As has been confirmed in previous consultation correspondence and engagements, Woodside maintains that it has observed the consultation protocols between SOS and/or [Individual 2] and Woodside, relating to confidentiality of culturally sensitive information shared by SOS and/or [Individual 2]. Woodside reiterates that if SOS and/or [Individual 2] are not comfortable with sharing information with Woodside, alternatives are available via NOPSEMA.	Not required.
(4) SOS and/or [Individual 2] are opposed to the existence and operation of industry on Murujuga.	**(4)** **Woodside assessment**: Woodside notes SOS and/or [Individual 2]'s opposition to the existence and operation of industry on Murujuga. **Woodside response**: Woodside confirms it has previously consulted with SOS and/or [Individual 2] over a number of years regarding Woodside's EPs, as well as ensuring that SOS and/or [Individual 2]'s feedback raised in consultation for a number of activities had been assessed and incorporated in EPs, where relevant or appropriate.	**(4)** Not required.
(5) SOS and/or [Individual 2] holds information that is critical for Woodside to understand the impacts of its activities and may have feedback on proposed mitigation measures.	**(5)** **Woodside assessment**: Woodside confirms it has previously consulted extensively with SOS and/or [Individual 2] over a number of years on Woodside environment matters and EPs. **Woodside response**: The information and items SOS and/or [Individual 2] has previously raised during consultation have been assessed and incorporated into this EP, where relevant or appropriate. Woodside noted that [Individual 2] may have feedback on proposed mitigation measures and confirmed that [Individual 1]'s participation in consultation was voluntary and there	**(5)** Any known impacts to potential to Cultural Features and Heritage Values are assessed in Section 6: Environmental impact and risk assessment, performance outcomes, standards and measurements criteria of the EP with appropriate controls adopted including Management of Change and New Knowledge processes to capture new cultural values or information provided during consultation.

	was no obligation on [Individual 2] to provide the information to Woodside, however Woodside maintained its position as outlined in **(3)** in relation to withholding information known by a relevant person.	
(6) SOS and/or [Individual 2] stated that the potential impacts on cultural values were not identified or mentioned in the Consultation Information Sheet, and specifically, questioned if the cultural values outlined by Woodside had been properly considered and mitigated in the draft EP including potential impacts on: • **(1)** whales, as well as marine mammals, seagrass, and the meeting of freshwater and saltwater; and • **(2)** Songlines, dreaming and energy lines.	**(6)** **Woodside assessment:** Woodside disputes SOS and/or [Individual 2] assertion that it has not assessed potential impacts on marine species including whales, and Songlines. Woodside notes SOS and/or [Individual 2] have previously been consulted extensively with [Individual 2] and used feedback to inform EPs, including this one. **Woodside response**: Woodside has used previous feedback on other EPs, as well as feedback on this EP, to inform Woodside on the cultural features and heritage values of the environment, and to consider and assess risks and mitigations to cultural features and heritage values.	**(6)** Woodside has assessed and recorded cultural and environmental values in this EP in Section 4.9.1: Cultural values and heritage and Section 6: Environmental impact and risk assessment, performance outcomes, standards and measurements criteria.
(7) SOS and/or [Individual 2] are concerned that well infrastructure could remain on the seabed for a prolonged and indefinite period, which would continue to impact cultural and environmental values.	**(7)** **Woodside assessment**: Woodside notes SOS and/or [Individual 2]'s concerns regarding well infrastructure on the seabed for prolonged and indefinite periods, which could impact cultural and environmental values. **Woodside response**: In response to SOS and/or [Individual2] feedback, claims and objections: • Woodside is complying with its decommissioning obligations under the OPPGS Act, through the development of this progressive decommissioning EP. • Woodside advised it considers that there will be no impacts to the Earth's core or disruption to geographical formations, as no drilling activities are contemplated in this EP. • In regards to Underwater Cultural Heritage (UCH), Woodside has applied the Assessing	**(7)** Woodside has assessed the potential impact or risk from the continued presence of well infrastructure in Section 6: Environmental impact and risk assessment, performance outcomes, standards and measurements criteria, in the EP. This includes controls to manage physical presence and ongoing management and maintenance of infrastructure, to reduce impacts to cultural and environmental values.

	and *Managing Impacts to Underwater Cultural Heritage in Australian Waters – Guidelines on the application of the Underwater Cultural Heritage Act 2018 (DCCEEW, 2024*) including engaging specialists to complete archaeological assessments prior to seabed disturbance, providing UCH inductions to relevant offshore crew, and implementing an UCH Unexpected Finds Procedure. • Seabed disturbance, confirming Woodside has assessed the potential impact or risks to seabed disturbance in Section 6 of the EP and had conducted a thorough assessment of impacts to seabed disturbance and benthic habitat. Woodside advised it had also adopted appropriate controls to mitigate risks and considered the proposed controls in this EP were appropriate to reduce environmental impact and risk to as low as reasonably practicable (ALARP) and acceptable.	
(8) SOS and/or [Individual 2] are concerned about the impacts of noise and pollution from the activities in the EP on marine life.	**(8)** **Woodside assessment:** Woodside notes SOS and/or [Individual 2] concerns about noise and pollution on marine life and has addressed these concerns in the EP. **Woodside response**: Woodside had conducted a thorough assessment of impacts from the activities on marine life, in accordance with the requirements of the OPPGS regime and assessed risks and mitigations to reduce impacts to cultural and environmental values, which will be recorded in the EP.	**(8)** Woodside has assessed assess and recorded cultural and environmental values in this EP in Section 4.9.1: Cultural values and heritage, and Section 6: Environmental impact and risk assessment, performance outcomes, standards and measurements criteria
(9) SOS and/or [Individual 2] requested that the EP identify potential risks of atmospheric and greenhouse gas emissions, and appropriate measures to mitigate and	**(9)** **Woodside assessment**: Woodside acknowledges SOS and/or [Individual 2] request to identify the potential risks of atmospheric and greenhouse gas	**(9)** This EP will include an environment performance objective (EPO) and controls to ensure atmospheric emissions are limited to those necessary to maintain

manage these risks, including the resumption of the TPA03 well in the Tidepole field, be implemented.	emissions, and appropriate measures to mitigate and manage these risks. **Woodside response**: Woodside has conducted assessments of impacts from routine and non-routine atmospheric emissions, in accordance with the requirements of the OPPGS regime. Woodside has include in this EP an environment performance objective (EPO) and controls to ensure atmospheric emissions were limited to those necessary to maintain well integrity and complete the Petroleum Activities Program. Woodside confirmed the impact assessment for this EP had also determined that the potential risk of atmospheric and GHG emissions was a localised, short-term decrease in air quality and that emissions had been assessed in already approved EPs. Woodside notes that GHG emissions from the start-up and recommencement of production from TPA03 has been assessed in the following approved EPs: • TPA03 Well Intervention Environment Plan, Rev 3, accepted 28 November 2023. • Goodwyn Alpha (GWA) Facility Operations Environment Plan, Rev 12, accepted 3 March 2022.	well integrity and complete the Petroleum Activities Program. See Section 6.6.5 in this EP. This EP will also build on risk, impact and control information included in the publicly available TPA03 Well Intervention Environment Plan, Revision 3, accepted by NOPSEMA on the 28 November 2023. A review of technologies for reducing GHG emissions will be considered in the ALARP assessment in this EP.
(10) SOS and/or [Individual 2] claimed that Woodside had declined to meet the costs for consultation despite SOS and/or [Individual 2] requests that Woodside pay for their attendance for in-person consultation.	**(10)** **Woodside assessment**: Woodside provides reasonable funding allocation for consultation and notes SOS and/or [Individual 2]'s position regarding attendance fees. **Woodside response**: After assessing the claims and feedback from SOS and/or [Individual 2], Woodside confirmed its position that attendance fees would not be provided.	**(10)** Not required.
Woodside has addressed feedback, objections and claims as noted above.	Woodside has assessed the merits of any objection or claim (if any) about the adverse impact of the activity to which the EP relates as required under Regulation 24.	No additional measures or controls are required.

	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 7.7.1 of this EP).	

Summary Report: Consultation Complete

Woodside has discharged its obligations for consultation under Regulation 25 of the Environmental Regulations and consultation with SOS and/or [Individual 2] for the purpose of Regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.5 of the EP. Specifically:

Sufficient Information

Sufficient information has been provided because:

- On 27 September 2024, Woodside made the Consultation Information Sheet available on the Woodside website.
- Woodside provided information to SOS and/or [Individual 2] on 27 September 2024 when consultation commenced. Woodside provided:
  - A Summary Information Sheet developed specifically for First Nations groups and reviewed by a member of the First Nations Engagement team. This sheet included an overview of the proposed activity, the location of the activity, the timing of the activity, the potential risks and impacts of the activity, diagrams and details about how to provide feedback.
  - Confirmation of the purpose of consultation, what was being sought by Woodside through consultation including understanding the nature of SOS's and/or [Individual 2] 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 this EP has been provided because:

- Woodside commenced consultation on this EP with SOS and/or [Individual 2] on 27 September 2024 and requested SOS and/or [Individual 2] provide feedback by 30 October 2024 for the purposes of preparation of this EP in line with Woodside's methodology of a 30-day period for consultation.
- Woodside has addressed and responded to SOS and/or [Individual 2] for 4 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 SOS's and/or [Individual 2] preferred method of consultation and has consulted in a way that Woodside understands is appropriate for First Nations groups.

- Woodside has made information on this EP publicly available for 4 months. This has included publishing advertisements in national, state and local newspapers including Indigenous newspapers, the Koori Mail (2 October 2024) and National Indigenous Times (24 September 2024) advising of the proposed activities and requesting comments or feedback.
- Woodside's initial email about this EP on 27 September 2024:
  - 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 First Nations Engagement team. Woodside also provided contact details for NOPSEMA.
  - Offered for Woodside to speak with and/or [Individual 2] or SOS's members.
  - Asked SOS and/or [Individual 2] to advise how it would like Woodside to engage and whether SOS and/or [Individual 2] required further information.
  - Woodside offered to meet with SOS and/or [Individual 2].
  - Throughout the consultation period, Woodside and SOS and/or [Individual 2] have exchanged emails and had direct contact lines to each other during the period.

Outcomes of Consultation

The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- SOS and/or [Individual 2] has advised Woodside that:
  - They have an interest in marine mammals, including the migratory patterns of whales, dugongs and turtles, seagrass distribution, and the meeting of freshwater and saltwater was demonstrated. Woodside has updated Section 4.9.1: Cultural values and heritage, to record these cultural interests. These are assessed in Section 6 with appropriate controls implemented.
  - Assessment of potential impacts to cultural values are described in Section 6: Environmental impact and risk assessment, performance outcomes, standards and measurements criteria of the EP.
  - There were cultural features associated with Songlines, dreaming and energy lines. Woodside has updated Section 4.9.1: Cultural values and heritage, to record topics of interest and cultural values, including Songlines and energy lines. These are assessed in Section 6: Environmental impact and risk assessment, performance outcomes, standards and measurements criteria, under Songlines with appropriate controls implemented.
  - They are a Mardathoonera Lore woman, Elder and Traditional Custodian of Murujuga, their connection and cultural responsibilities to Murujuga has previously been provided, however some were culturally sensitive and could not be shared publicly. Woodside maintains that it has observed the consultation protocols between SOS and/or [Individual 2] and Woodside, relating to confidentiality of culturally sensitive information shared by SOS and/or [Individual 2].
  - They are opposed to the existence and operation of industry on Murujuga. Woodside confirms it has previously consulted with SOS and/or [Individual 2] over a number of years regarding Woodside's EPs, as well as ensuring that SOS and/or [Individual 2]'s feedback raised in consultation for a number of activities had been assessed and incorporated in EPs, where relevant or appropriate.
  - They hold information that is critical for Woodside to understand the impacts of its activities and may have feedback on proposed mitigation measures. Woodside has assessed and incorporated this feedback in Section 6: Environmental impact and risk assessment, performance outcomes, standards and measurements criteria of the EP.
  - The potential impacts on cultural values were not identified or mentioned in the Consultation Information Sheet. Woodside has assessed and recorded cultural and environmental values in this EP in Section 4.9.1: Cultural values and heritage and Section 6: Environmental impact and risk assessment, performance outcomes, standards and measurements criteria.

- Well infrastructure could remain on the seabed for a prolonged and indefinite period, which would continue to impact cultural and environmental values. Woodside maintained it is complying with its decommissioning activities under the legislation, advised there was no impact to the Earth's core, and had engaged specialists to complete archaeological assessments prior to seabed disturbance. Woodside has assessed the potential impact or risk from the continued presence of well infrastructure in Section 6: Environmental impact and risk assessment, performance outcomes, standards and measurements criteria.
- The EP identify potential risks of atmospheric and greenhouse gas emissions, and appropriate measures to mitigate and manage these risks. Woodside has included in the EP an environment performance objective (EPO) and controls to ensure atmospheric emissions are limited to those necessary to maintain well integrity and complete the Petroleum Activities Program. See Section 6.6.5 in this EP.

- During the past 4 months, SOS and/or [Individual 2] has raised objections or claims about the adverse impact of each 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 7.7.1 of this EP).

4.13 Local government and elected parliamentary representatives, community groups or organisations

4.13.1 Broome Chamber of Commerce and Industry, Carnarvon Chamber of Commerce and Industry, Exmouth Chamber of Commerce and Industry, Karratha and Districts Chamber of Commerce and Industry, Onslow Chamber of Commerce and Industry and Port Hedland Chamber of Commerce and Industry (CCI)

Summary of information provided and record of consultation for this EP:

- On 27 September 2024, Woodside emailed the CCIs 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 11 October 2024, Woodside emailed the CCIs an activity update regarding well location coordinates and included an updated Consultation Information Sheet (Record of Consultation, reference 6.2.1).
- On 22 October 2024, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.3.1).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
No feedback, objection or claim 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 7.7.1).	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 relevant CCIs 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 the CCIs sufficient information to allow the CCIs 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 September 2024. Woodside gave this information to the CCIs on 27 September 2024, 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 PAP, 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 the CCIs a reasonable period for consultation in the preparation of this EP because:

- A consultation period was stated in the initial correspondence to relevant CCIs 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 relevant CCIs 30 days for consultation.
- Consultation for this EP commenced 4 months ago.
- In this context, Woodside allowed the CCIs 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 relevant CCIs is appropriate and adapted to the nature of interests of the CCIs:

- Woodside published advertisements in 9 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 1 targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- From 12 October 2024, Woodside held, or hosted information stalls at 3 community events in Dampier and Exmouth 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 22 October 2024, reminding the CCIs 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 the CCIs 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 the CCIs' functions, interests or activities.

4.13.2 Exmouth Community Liaison Group (Exmouth CLG)

Summary of information provided and record of consultation for this EP:

- On 27 September 2024, 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 11 October 2024, Woodside emailed Exmouth CLG an activity update regarding well location coordinates and included an updated Consultation Information Sheet (Record of Consultation, reference 6.2.1).
- On 22 October 2024, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.3.1).
- On 12 November 2024, Woodside presented to the Exmouth CLG (SI report, reference 43.1) on Woodside activities, including this EP. Woodside presented a slide listing EPs on which the CLG members had recently been consulted and EPs currently under consultation.
  - No feedback was provided on this EP.
  - 13 individuals attended the meeting representing:
    - Shire of Exmouth
    - Gascoyne Development Commission
    - Exmouth Chamber of Commerce and Industry
    - Ningaloo Coast World Heritage Advisory Council / NOPSEMA Community and Environment Reference Group
    - West Australian Country Health Service
    - Bhagwan Marine
    - PHI Helicopters
    - Exmouth Volunteer Marine Rescue
    - CSIRO
    - Santos.
- On 2 December 2024, Woodside's presentation was emailed to the CLG members, regardless of their attendance at the meeting.

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
No feedback, objection or claim 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 7.7.1).	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 September 2024. Woodside gave this information to Exmouth CLG on 27 September 2024, 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 GHG Activities, and proposed mitigation and measurement 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 regulation 25(4) of the Environment Regulations).

Reasonable Period

Woodside allowed Exmouth CLG a reasonable period for consultation in the preparation of this 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.
- It has been 4 months since consultation commenced.
- In this context, Woodside allowed Exmouth CLG a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

Woodside allowed Exmouth CLG a reasonable opportunity for consultation in the preparation of this EP because:

- Woodside published advertisements in 9 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and of consultation.
- Woodside ran 1 targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and of consultation.
- From 12 October 2024, Woodside held, or hosted information stalls at 3 community events in Dampier and Exmouth 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 22 October 2024, reminding Exmouth 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 required 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.

4.13.3 Karratha Community Liaison Group (Karratha CLG)

Summary of information provided and record of consultation for this EP:

- On 20 September 2024, Woodside presented to the Karratha CLG on EP consultation requirements and provided an update on upcoming Woodside activities, including this EP (SI report, reference 44.1).
  - No feedback was provided on this EP.
  - Woodside also presented on how it consults relevant persons in the course of preparing EPs and provided information on relevant persons and EMBAs. The slides included a QR code and a URL to the Consultation Activities page of the Woodside website. Copies of the latest edition of *Let's Talk* were provided in hard copy and sent electronically with the minutes and pack.
  - 8 CLG members attended the meeting representing:
    - City of Karratha – staff representatives
    - Dampier Community Association
    - Pilbara Development Commission
    - Department of Education – staff representatives
    - Karratha and Districts Chamber of Commerce and Industry
    - Pilbara Ports Authority
- On 27 September 2024, 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 11 October 2024, Woodside emailed Karratha CLG an activity update regarding well location coordinates and included an updated Consultation Information Sheet (Record of Consultation, reference 6.2.1).
- On 13 October 2024 Woodside's September presentation to the CLG was emailed to the CLG regardless of their attendance at the meeting.
- On 22 October 2024, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.3.1).
- On 29 November 2024, Woodside presented to the Karratha CLG on EP consultation requirements (SI report, reference 44.2).
  - No feedback was provided on our consultation process.
  - Woodside also presented on how it consults relevant persons in the course of preparing EPs and provided information on relevant persons and EMBAs. The slides included a QR code and a URL to the Consultation Activities page of the Woodside website. Copies of the latest edition of *Let's Talk* were provided in hard copy and sent electronically with the minutes and pack.
  - 8 CLG members attended the meeting representing:
    - City of Karratha – staff representatives
    - Pilbara Development Commission
    - Murujuga Aboriginal Corporation
    - Regional Development Australia Pilbara
    - Horizon Power
- On 18 December 2024 Woodside's November presentation to the CLG was emailed to the CLG regardless of their attendance at the meeting.

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
No feedback, objection or claim 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 7.7.1).	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:

- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since September 2024. Woodside gave this information to Karratha CLG on 27 September 2024, 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 GHG Activities, and proposed mitigation and measurement 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 regulation 25(4) of the Environment Regulations).

Reasonable Period

Woodside allowed Karratha CLG a reasonable period for consultation in the preparation of this 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.
- It has been 4 months since consultation commenced.
- In this context, Woodside allowed Karratha CLG a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

Woodside allowed Karratha CLG a reasonable opportunity for consultation in the preparation of this EP because:

- Woodside published advertisements in 9 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and of consultation.
- Woodside ran 1 targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and of consultation.
- From 12 October 2024, Woodside held, or hosted information stalls at 3 community events in Dampier and Exmouth 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 22 October 2024, 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 required 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.

4.13.4 City of Karratha, Shire of Broome, Shire of Carnarvon and Shire of Exmouth

Summary of information provided and record of consultation for this EP:

- On 27 September 2024, Woodside emailed the City of Karratha and Shires of Broome, Carnarvon and 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 11 October 2024, Woodside emailed the City of Karratha and Shires of Broome, Carnarvon and Exmouth an activity update regarding well location coordinates and included an updated Consultation Information Sheet (Record of Consultation, reference 6.2.1).
- On 22 October 2024, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.3.1).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
No feedback, objection or claim 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 7.7.1).	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 City of Karratha and Shires of Broome, Carnarvon and 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:

Sufficient Information

Woodside has given the City of Karratha and Shires of Broome, Carnarvon and Exmouth sufficient information to allow the City of Karratha and Shires of Broome, Carnarvon and 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 September 2024. Woodside gave this information to the City of Karratha and Shires of Broome, Carnarvon and Exmouth on 27 September 2024, 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 PAP, 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 the City of Karratha and Shires of Broome, Carnarvon and Exmouth a reasonable period for consultation in the preparation of this EP because:

- A consultation period was stated in the initial correspondence to the Shires 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 the Shires 30 days for consultation.
- Consultation for this EP commenced 4 months ago.
- In this context, Woodside allowed the Shires 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 the City of Karratha and Shires of Broome, Carnarvon and Exmouth is appropriate and adapted to the nature of interests of the City of Karratha and Shires of Broome, Carnarvon and Exmouth:

- Woodside published advertisements in 9 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 1 targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- From 12 October 2024, Woodside held, or hosted information stalls at 3 community events in Dampier and Exmouth 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 22 October 2024, reminding the City of Karratha and Shires of Broome, Carnarvon and Exmouth 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 the City of Karratha and Shires of Broome, Carnarvon and Exmouth 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 the City of Karratha and Shires of Broome, Carnarvon and Exmouth's functions, interests or activities.

4.13.5 Shire of Ashburton

Summary of information provided and record of consultation for this EP:

- On 27 September 2024, Woodside emailed the Shires advising of the proposed activity (Record of Consultation, reference 6.1.28), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.*
- On 11 October 2024, Woodside emailed the Shires an activity update regarding well location coordinates and included an updated Consultation Information Sheet (Record of Consultation, reference 6.2.1).
- On 22 October 2024, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.3.12).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
No feedback, objection or claim 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 7.7.1).	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 Shires 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 the Shires sufficient information to allow the Shires 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 September 2024. Woodside gave this information to the Shires on 27 September 2024, 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 PAP, 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 the Shires a reasonable period for consultation in the preparation of this EP because:

- A consultation period was stated in the initial correspondence to the Shires 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 the Shires 30 days for consultation.
- Consultation for this EP commenced 4 months ago.
- In this context, Woodside allowed the Shires 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 the Shires is appropriate and adapted to the nature of interests of the Shires:

- Woodside published advertisements in 9 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 1 targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- From 12 October 2024, Woodside held, or hosted information stalls at 3 community events in Dampier and Exmouth 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 22 October 2024, reminding the Shires 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 the Shires 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 the Shires' functions, interests or activities.

4.13.6 Town of Port Hedland

Summary of information provided and record of consultation for this EP:

- On 15 November 2024, Woodside emailed the Town of Port Hedland advising of the proposed activity (Record of Consultation, reference 6.1.29), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.*
- On 2 December 2024, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.3.4).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
No feedback, objection or claim 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 7.7.1).	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 Town of Port Hedland 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 the Town of Port Hedland sufficient information to allow the Town of Port Hedland 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 September 2024. Woodside gave this information to the Town of Port Hedland on 27 September 2024, 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 PAP, 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 the Town of Port Hedland a reasonable period for consultation in the preparation of this EP because:

- A consultation period was stated in the initial correspondence to the Town of Port Hedland 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 the Town of Port Hedland 30 days for consultation.
- Consultation for this EP commenced 4 months ago.
- In this context, Woodside allowed the Town of Port Hedland 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 the Town of Port Hedland is appropriate and adapted to the nature of interests of the Town of Port Hedland:

- Woodside published advertisements in 9 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 1 targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- From 12 October 2024, Woodside held, or hosted information stalls at 3 community events in Dampier and Exmouth 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 2 December 2024, reminding the Town of Port Hedland 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 the Town of Port Hedland 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 the Town of Port Hedland's functions, interests or activities.

4.14 Other non-government groups or organisations (NGOs) or individuals

4.14.1 Friends of the Earth Australia (FOEA)

Summary of information provided and record of consultation for this EP:

- On 27 September 2024, Woodside emailed relevant FOEA 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 11 October 2024, Woodside emailed FOEA an activity update regarding well location coordinates and included an updated Consultation Information Sheet (Record of Consultation, reference 6.2.1).
- On 22 October 2024, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.3.1).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan

No feedback, objection or claim 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 7.7.1).	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 FOEA 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 FOEA sufficient information to allow FOEA 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 September 2024. Woodside gave this information to FOEA on 27 September 2024, 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 PAP, 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 FOEA a reasonable period for consultation in the preparation of this EP because:

- A consultation period was stated in the initial correspondence to FOEA 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 FOEA 30 days for consultation.
- Consultation for this EP commenced 4 months ago.
- In this context, Woodside allowed FOEA 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 FOEA is appropriate and adapted to the nature of interests of FOEA:

- Woodside published advertisements in 9 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 1 targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- From 12 October 2024, Woodside held, or hosted information stalls at 3 community events in Dampier and Exmouth 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 22 October 2024, reminding FOEA 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 FOEA 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 FOEA's functions, interests or activities.

4.14.2 The Wilderness Society

Summary of information provided and record of consultation for this EP:

- On 27 September 2024, 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 11 October 2024, Woodside emailed TWS an activity update regarding well location coordinates and included an updated Consultation Information Sheet (Record of Consultation, reference 6.2.1).
- On 22 October 2024, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.3.1).
- On 4 November 2024, TWS responded to Woodside (SI Report, reference 14.1) and advised:
  - **(1)** TWS was a relevant person
  - **(2)** TWS has a particular interest in ensuring structures are removed during decommissioning to protect the marine environment from the risk of contamination.
  - **(3)** TWS objected to the proposal to leave wellheads temporarily on the seabed for later recovery.
  - **(4)** The wellheads should be removed at the time of cutting as leaving them on the sea floor delays their removal, risking the possibility of being permanently abandoned and increases risk of contamination.
- On 20 November 2024, Woodside responded to TWS (SI Report, reference 14.2) and:
  - **(1)** Thanking TWS for consulting with Woodside as a relevant person.

- **(2)** Noted TWS' concerns that placing wellheads on the seabed risks the possibility that they may be permanently abandoned and increases risk of contamination.
- **(3)** Confirmed it planned to remove the well infrastructure from the title area.
- **(4)** Advised the method and timing for removal and recovery of well infrastructure will be dependent on technical considerations, vessel availability, opportunities for efficiencies with other decommissioning activities, suitable weather windows and health, safety and environmental considerations.
- **(4)** Confirmed the plan is for infrastructure to remain in situ temporarily following the first stage of the plug and abandonment (P&A) activities and noted:
  - Temporary placement will not affect future removal as this included as an activity in this EP.
  - There are no assessed new or increased impacts or risks to the environment including contamination from temporary placement on the seabed while the safe removal campaign is progressed.
  - Noted the risks and impacts associated with the activity have been reduced to ALARP and an acceptable level and this EP addresses the matters raised by TWS and contains appropriate measures.

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
(1) The Wilderness Society (TWS) is a relevant person.	**(1)** **Woodside assessment:** Woodside uses a methodology for identifying relevant persons in accordance with regulation 25 (1). TWS was identified as relevant when applying the methodology for this EP. **Woodside response:** Woodside confirmed with The Wilderness Society it was a relevant person for this EP.	**(1)** Not required.
(2) Advised of an interest in ensuring structures are removed during decommissioning to protect the marine environment from the risk of contamination.	**(2)** **Woodside assessment:** Woodside accepts TWS feedback that it has an interest in removing subsea structures due to the risk of contamination to the marine environment. **Woodside response:** Woodside noted TWS concerns that placing wellheads on the seabed risks the possibility that they may be permanently abandoned and increases risk of contamination.	**(2)** Section 3.12.4 of the EP describes the approach to removing infrastructure including the option to temporarily wet store well infrastructure. Removal will occur by the end of the decommissioning activities. Section 6.6.2 of the EP demonstrates no significant impacts on benthic habitats are expected.
(3) Objected to leaving the wellheads on the seabed for later recovery.	**(3)** **Woodside assessment:** Woodside will remove the wellheads after temporary placement on the seabed. The risk and impacts associated with this activity have been reduced to ALARP and an acceptable level. This	**(3)** Not required.

	EP addresses the matters raised by TWS and contains appropriate measures. **Woodside response:** Woodside advised TWS that it plans to remove the wellheads.	
(4) Wellheads should be removed at the time of cutting as leaving them on the sea floor delays their removal, risks the possibility of being permanently abandoned and increases risk of contamination.	**(4)** **Woodside assessment:** Woodside notes TWS feedback that wellheads should be removed at time of cutting, however, the method of removal and recovery is dependent on many factors before this decision can be made. The risks and impacts associated with the activity have been reduced to ALARP and an acceptable level. **Woodside response:** Woodside advised that method of removal and recovery is dependent on many factors and confirmed the plan is temporary placement only. There is no assessed new or increased impacts or risks to the environment from temporary placement while the safe removal campaign is progressed. The risks and impacts associated with the activity have been reduced to ALARP and an acceptable level.	**(4)** Section 3.12.4 of the EP describes the approach to removing infrastructure including the option to temporarily wet store well infrastructure. Removal will occur by the end of the decommissioning activities.
Woodside has addressed objections and claims 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 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 7.7.1).	Woodside considers the measures and controls in the EP are appropriate.
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 September 2024. Woodside gave this information to TWS on 27 September 2024, 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 PAP, 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.
- Woodside followed up to remind TWS of consultation on 22 October 2024.
- On 4 November 2024, TWS shared its feedback, claims or objections regarding this activity, indicating the information provided was sufficient to enable TWS to make an informed assessment of the possible consequences of the activity on its functions, interests or activities.
- Woodside provided additional information on 20 November 2024.

Reasonable Period

Woodside allowed TWS a reasonable period for consultation in the preparation of this 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 4 months ago.
- In this context, Woodside allowed TWS 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 TWS is appropriate and adapted to the nature of interests of TWS:

- Woodside published advertisements in 9 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 1 targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.

- Woodside considers a reasonable opportunity was provided to TWS as evidenced by its response on 4 November 2024.

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:

- TWS provided an objection to leaving infrastructure on the seabed for later recovery. In line with the intended outcome of consultation as set out in Section 5.2 and regulations 24 and 34(g), Woodside has:
  - Responded to the above objection and feedback from TWS and assessed the merits of the objection about the adverse impact of activities to which this EP relates.
  - Made no changes or inclusions to the EP as a result of consultation with TWS 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.

4.14.3 Telstra

Summary of information provided and record of consultation for this EP:

- On 27 September 2024, Woodside emailed Telstra 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.*
- **(1)** On 4 October 2024, Telstra responded to Woodside (SI Report, reference 12.1) requesting verification of the co-ordinates for the proposed activities for this EP.
- On 11 October 2024, Woodside emailed Telstra an activity update regarding well location coordinates and included an updated Consultation Information Sheet (Record of Consultation, reference 6.2.1).
- **(1)** On 11 October 2024, Woodside responded to Telstra (SI Report, reference 12.2). to advise an update had been sent earlier that day outlining changes to water depths and co-ordinates for this EP. The email also confirmed co-ordinates were offshore of the WA coast with the closest well to shore being approximately 125 km north of Dampier.

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
(1) Telstra requested verification of the co-ordinates for the proposed activities.	**(1)** **Woodside assessment:** Telstra alerted Woodside that the co-ordinates sent in Woodside's initial communication was incorrect. Woodside was required to provide an activity update with new co-ordinates and water depths.	**(1)** Not required.

	Woodside response: Woodside advised Telstra that an activity update had been issued with the correct co-ordinates and water depths.	
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 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 7.7.1).	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 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 September 2024. Woodside gave this information to Telstra on 27 September 2024, 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 PAP, 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 October 2024, Telstra shared its feedback, claims or objections regarding this activity, indicating the information provided was sufficient to enable Telstra to make an informed assessment of the possible consequences of the activity on its functions, interests or activities.
- Woodside provided additional information on 11 October 2024.

Reasonable Period

Woodside allowed Telstra a reasonable period for consultation in the preparation of this 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.
- Consultation for this EP commenced 4 months ago.
- In this context, Woodside allowed Telstra a reasonable period for consultation in preparation of the EP as evidenced by Telstra's response on 5 October 2024.

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 9 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 1 targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside considers a reasonable opportunity was provided to Telstra as evidenced by its response on 5 October 2024.

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:

- Telstra 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 and 34(g), Woodside has:
  - Responded to feedback from Telstra and assessed the merits of any objection or claim about the adverse impact of activities to which this EP relates.
  - Made no changes or inclusions to the EP as a result of consultation with Telstra 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.

4.14.4 Cape Conservation Group (CCG)

Summary of information provided and record of consultation for this EP:

- On 27 September 2024, Woodside emailed relevant 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 11 October 2024, Woodside emailed CCG an activity update regarding well location coordinates and included an updated Consultation Information Sheet (Record of Consultation, reference 6.2.1).

- On 22 October 2024, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.3.1).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
No feedback, objection or claim 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 7.7.1).	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 September 2024. Woodside gave this information to CCG on 27 September 2024, 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 PAP, 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 this 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.
- Consultation for this EP commenced 4 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 9 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 1 targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- From 12 October 2024, Woodside held, or hosted information stalls at 3 community events in Dampier and Exmouth 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 22 October 2024, 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.

4.14.5 Environs Kimberley

Summary of information provided and record of consultation for this EP:

- On 27 September 2024, Woodside emailed Environs Kimberley 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 11 October 2024, Woodside emailed Environs Kimberley an activity update regarding well location coordinates and included an updated Consultation Information Sheet (Record of Consultation, reference 6.2.1).
- On 22 October 2024, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.3.1).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
No feedback, objection or claim 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	No additional measures or controls are required.

	appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7.1).	

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with Environs Kimberley 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 Environs Kimberley sufficient information to allow Environs Kimberley 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 September 2024. Woodside gave this information to Environs Kimberley on 27 September 2024, 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 PAP, 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 Environs Kimberley a reasonable period for consultation in the preparation of this EP because:

- A consultation period was stated in the initial correspondence to Environs Kimberley 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 Environs Kimberley 30 days for consultation.
- Consultation for this EP commenced 4 months ago.
- In this context, Woodside allowed Environs Kimberley 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 Environs Kimberley is appropriate and adapted to the nature of interests of Environs Kimberley:

- Woodside published advertisements in 9 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 1 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 22 October 2024, reminding Environs Kimberley 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 Environs Kimberley 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 Environs Kimberley's functions, interests or activities.

4.15 Research institutes and local conservation groups or organisations

4.15.1 Australian Institute of Marine Science (AIMS)

Summary of information provided and record of consultation for this EP:

- On 27 September 2024, Woodside emailed AIMS 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 11 October 2024, Woodside emailed AIMS an activity update regarding well location coordinates and included an updated Consultation Information Sheet (Record of Consultation, reference 6.2.1)
- **(1)** On 21 October 2024, AIMS emailed Woodside (SI Report, reference 16.1) to confirm the 4000m exclusion zone that will be in place around the proposed activities will be sufficient to manage the risk of any AIMS vessel movement occurring in the vicinity.
- **(1)** On 28 October 2024, Woodside responded to AIMS (SI Report, reference 16.2) confirming the 4000m exclusion zone will apply during the proposed activities. Woodside advised that marine notices will be issued prior to activity commencement to alert vessels that may be operating nearby.

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
(1) Confirmed Woodside's 4000m exclusion zone around the proposed activities would be sufficient to manage the risk of any AIMS vessel movement in the vicinity.	**(1)** **Woodside assessment:** Woodside acknowledges that AIMS has the information it needs to maintain safe navigation. **Woodside response:** Woodside confirmed the exclusion zones will be communicated via marine notices prior to activity commencement.	**(1)** Not 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 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 7.7.1).	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 AIMS 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 AIMS sufficient information to allow AIMS 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 September 2024. Woodside gave this information to AIMS on 27 September 2024, 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 PAP, 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 October 2024, AIMS shared its feedback, claims or objections regarding this activity, indicating the information provided was sufficient to enable AIMS to make an informed assessment of the possible consequences of the activity on its functions, interests or activities.
- Woodside provided additional information on 28 October 2024.

Reasonable Period

Woodside allowed AIMS a reasonable period for consultation in the preparation of this EP because:

- A consultation period was stated in the initial correspondence to AIMS 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 AIMS 30 days for consultation.
- Consultation for this EP commenced 4 months ago.
- In this context, Woodside allowed AIMS a reasonable period for consultation in preparation of the EP as evidenced by AIMS' response on 21 October 2024.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with AIMS is appropriate and adapted to the nature of interests of AIMS:

- Woodside published advertisements in 9 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 1 targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside considers a reasonable opportunity was provided to AIMS as evidenced by its response on 21 October 2024.

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:

- AIMS 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 and 34(g), Woodside has:
  - Responded to feedback from AIMS and assessed the merits of any objection or claim about the adverse impact of activities to which this EP relates.
  - Made no changes or inclusions to the EP as a result of consultation with AIMS 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.

4.15.2 Protect Ningaloo

Summary of information provided and record of consultation for this EP:

- On 27 September 2024, 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 11 October 2024, Woodside emailed Protect Ningaloo an activity update regarding well location coordinates and included an updated Consultation Information Sheet (Record of Consultation, reference 6.2.1).
- On 22 October 2024, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.3.1).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
No feedback, objection or claim 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 7.7.1).	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 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 September 2024. Woodside gave this information to Protect Ningaloo on 27 September 2024, 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 PAP, 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 this 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 4 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 9 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 1 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 22 October 2024, 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.

4.15.3 Environs Kimberley

Summary of information provided and record of consultation for this EP:

- On 27 September 2024, Woodside emailed Environs Kimberley 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 11 October 2024, Woodside emailed Environs Kimberley an activity update regarding well location coordinates and included an updated Consultation Information Sheet (Record of Consultation, reference 6.2.1).
- On 22 October 2024, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.3.1).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
No feedback, objection or claim 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 7.7.1).	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 Environs Kimberley 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 Environs Kimberley sufficient information to allow Environs Kimberley 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 September 2024. Woodside gave this information to Environs Kimberley on 27 September 2024, 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 PAP, 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 Environs Kimberley a reasonable period for consultation in the preparation of this EP because:

- A consultation period was stated in the initial correspondence to Environs Kimberley 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 Environs Kimberley 30 days for consultation.
- Consultation for this EP commenced 4 months ago.
- In this context, Woodside allowed Environs Kimberley 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 Environs Kimberley is appropriate and adapted to the nature of interests of Environs Kimberley:

- Woodside published advertisements in 9 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 1 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 22 October 2024, reminding Environs Kimberley 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 Environs Kimberley 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 Environs Kimberley's functions, interests or activities.

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 stakeholder. The green numbering **(N)** in this section denotes Woodside's response to that item.

5.1 Other non-government groups or organisations (NGOs) or individuals

5.1.1 Australian Conservation Foundation (ACF)

Summary of information provided and record of consultation for this EP:

- On 27 September 2024, 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 11 October 2024, Woodside emailed ACF an activity update regarding well location coordinates and included an updated Consultation Information Sheet (Record of Consultation, reference 6.2.1).
- On 22 October 2024, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.3.1).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
No feedback, objection or claim 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 7.7.1 of the EP).	No additional measures or controls are required.

Outcomes of Consultation

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.

5.1.2 Australian Centre for Corporate Responsibility (ACCR)

Summary of information provided and record of consultation for this EP:

- On 27 September 2024, Woodside emailed ACCR 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 11 October 2024, Woodside emailed ACCR an activity update regarding well location coordinates and included an updated Consultation Information Sheet (Record of Consultation, reference 6.2.1).
- On 22 October 2024, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.3.1).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
No feedback, objection or claim 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 7.7.1 of the EP).	No additional measures or controls are required.

Outcomes of Consultation

While ACCR 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 ACCR to provide feedback during the consultation process.

5.1.3 Australian Marine Conservation Society (AMCS)

Summary of information provided and record of consultation for this EP:

- On 27 September 2024, 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 11 October 2024, Woodside emailed AMCS an activity update regarding well location coordinates and included an updated Consultation Information Sheet (Record of Consultation, reference 6.2.1).
- On 22 October 2024, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.3.1).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
No feedback, objection or claim 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 7.7.1 of the EP).	No additional measures or controls are required.

Outcomes of Consultation

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.

5.1.4 Conservation Council of Western Australia (CCWA)

Summary of information provided and record of consultation for this EP:

- On 27 September 2024, 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 11 October 2024, Woodside emailed CCWA an activity update regarding well location coordinates and included an updated Consultation Information Sheet (Record of Consultation, reference 6.2.1).
- On 22 October 2024, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.3.1).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
No feedback, objection or claim 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 7.7.1 of the EP).	No additional measures or controls are required.
Outcomes of Consultation		
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.		

5.1.5 Greenpeace Australia Pacific (GAP)

Summary of information provided and record of consultation for this EP:

- On 27 September 2024, Woodside emailed GAP 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 11 October 2024, Woodside emailed GAP an activity update regarding well location coordinates and included an updated Consultation Information Sheet (Record of Consultation, reference 6.2.1).
- On 22 October 2024, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.3.1).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan

No feedback, objection or claim 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 7.7.1 of the EP).	No additional measures or controls are required.
Outcomes of Consultation		
While GAP 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 GAP to provide feedback during the consultation process.		

5.1.6 Maritime Union of Australia (MUA)

Summary of information provided and record of consultation for this EP:

- On 27 September 2024, Woodside emailed the MUA advising of the proposed activity (Record of Consultation, reference 6.18), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.*
- On 11 October 2024, Woodside emailed the MUA an activity update regarding well location coordinates and included an updated Consultation Information Sheet (Record of Consultation, reference 6.2.1).
- On 22 October 2024, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.3.1).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
No feedback, objection or claim 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 7.7.1 of the EP).	No additional measures or controls are required.
Outcomes of Consultation		
While the MUA 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 the MUA to provide feedback during the consultation process.		

5.1.7 Market Forces

Summary of information provided and record of consultation for this EP:

- On 27 September 2024, Woodside emailed Market Forces advising of the proposed activity (Record of Consultation, reference 6.18), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.*
- On 11 October 2024, Woodside emailed Market Forces an activity update regarding well location coordinates and included an updated Consultation Information Sheet (Record of Consultation, reference 6.2.1).
- On 22 October 2024, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.3.1).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
No feedback, objection or claim 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 7.7.1 of the EP).	No additional measures or controls are required.

Outcomes of Consultation

While Market Forces 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 Market Forces to provide feedback during the consultation process.

5.2 Research institutes and local conservation groups or organisations

5.2.1 Commonwealth Scientific and Industrial Research Organisation (CSIRO)

Summary of information provided and record of consultation for this EP:

- On 27 September 2024, Woodside emailed CSIRO 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 11 October 2024, Woodside emailed CSIRO an activity update regarding well location coordinates and included an updated Consultation Information Sheet (Record of Consultation, reference 6.2.1).
- On 22 October 2024, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.3.3).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
No feedback, objection or claim 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.

	Woodside will apply its Management of Change and Revision process (see Section 7.7.1 of the EP).	
Outcomes of Consultation		
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.		

5.2.2 Western Australian Marine Science Institution (WAMSI)

Summary of information provided and record of consultation for this EP:

- On 27 September 2024, Woodside emailed WAMSI 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 11 October 2024, Woodside emailed WAMSI an activity update regarding well location coordinates and included an updated Consultation Information Sheet (Record of Consultation, reference 6.2.1).
- On 22 October 2024, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.3.3).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
No feedback, objection or claim 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 7.7.1 of the EP).	No additional measures or controls are required.
Outcomes of Consultation		
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.		

5.2.3 Curtin University

Summary of information provided and record of consultation for this EP:

- On 27 September 2024, Woodside emailed Curtin University 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 11 October 2024, Woodside emailed Curtin University an activity update regarding well location coordinates and included an updated Consultation Information Sheet (Record of Consultation, reference 6.2.1).

• On 22 October 2024, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.3.3).		
Summary of Feedback, Objection or Claim	**Assessment of Merits of Feedback, Objection or Claim and Woodside's Response**	**Inclusion in Environment Plan**
No feedback, objection or claim 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 7.7.1).	No additional measures or controls are required.
Outcomes of Consultation		
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.		

5.2.4 Edith Cowan University

Summary of information provided and record of consultation for this EP: • On 27 September 2024, Woodside emailed Edith Cowan University 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 11 October 2024, Woodside emailed Edith Cowan University an activity update regarding well location coordinates and included an updated Consultation Information Sheet (Record of Consultation, reference 6.2.1). • On 22 October 2024, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.3.3).		
Summary of Feedback, Objection or Claim	**Assessment of Merits of Feedback, Objection or Claim and Woodside's Response**	**Inclusion in Environment Plan**
No feedback, objection or claim 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 7.7.1).	No additional measures or controls are required.
Outcomes of Consultation		
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.		

5.2.5 Murdoch University

Summary of information provided and record of consultation for this EP:

- On 27 September 2024, Woodside emailed Murdoch University 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 11 October 2024, Woodside emailed Murdoch University an activity update regarding well location coordinates and included an updated Consultation Information Sheet (Record of Consultation, reference 6.2.1).
- On 22 October 2024, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.3.3).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
No feedback, objection or claim 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 7.7.1).	No additional measures or controls are required.

Outcomes of Consultation

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.

5.2.6 University of Western Australia (UWA)

Summary of information provided and record of consultation for this EP:

- On 27 September 2024, Woodside emailed UWA 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 11 October 2024, Woodside emailed UWA an activity update regarding well location coordinates and included an updated Consultation Information Sheet (Record of Consultation, reference 6.2.1).
- On 22 October 2024, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.3.3).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
No feedback, objection or claim 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	No additional measures or controls are required.

	appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7.1).	
Outcomes of Consultation		
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.		

6. RECORD OF CONSULTATION

6.1 Initial consultation

6.1.1 Consultation information sheet

Woodside Energy

CONSULTATION

INFORMATION SHEET

September 2024

NORTH WEST SHELF PHASE 1 WELL PLUG AND ABANDONMENT AND TPA03 WELL INTERVENTION ENVIRONMENT PLAN

CARNARVON BASIN, NORTH-WEST AUSTRALIA

Woodside consults relevant persons in the course of preparing an Environment Plan (EP) to notify them, obtain their input and to assist Woodside to confirm current measures or identify additional measures, if any, that could be taken to lessen or avoid potential adverse effects of the proposed activity on the environment. This is the intended outcome of consultation.

Woodside's aim is to ensure the proposed activity is carried out in a manner that is consistent with the principles of ecologically sustainable development (ESD), by which the environmental impacts and risks of the activity are reduced to as low as reasonably practicable (ALARP) and to an acceptable level. We want relevant persons whose functions, interests or activities that 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.

Overview

Woodside is submitting the North West Shelf (NWS) Phase 1 Well Plug and Abandonment (P&A) and TPA03 Well Intervention EP in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth)*.

The EP covers:

- Permanent plugging and abandonment of five NWS production wells
- Well intervention on the TPA03 production well.

The plugging and abandonment and well intervention will be undertaken using a moored or hybrid (mooring and Dynamic Positioning (DP) capability) semi-submersible mobile offshore drilling unit (MODU) and associated support vessels.

Woodside is decommissioning redundant equipment in its operating fields. Infrastructure that remains in the Angel and Perseus-over-Goodwyn (PoG) fields will continue to be managed under the Angel Operations and Goodwyn Alpha (GWA) Operations EP, respectively.

Location

All wells are in Commonwealth waters around Woodside's existing production facilities. The closest well to shore is approximately 125 km north of Dampier as shown in **Figure 1**. The wells are in water depths ranging from approximately 77 m to 128 m. The locations of the wells are in **Table 2**.

Proposed activity

Activities under this EP include:

- the plugging and abandonment of the AP 2, AP 3, and AP 4 wells in the Angel field. These wells tie back to the Angel platform. Production from these wells has ceased and the wells have been shut in. Well infrastructure (Christmas trees and wellheads) above the mudline will be removed following plugging of these wells.
- Wellheads may either be recovered during the plugging and abandonment activities or temporarily placed on the seabed for later recovery. If Angel wellheads aren't removed by the MODU, removal will be conducted under the proposed Angel Subsea Infrastructure Removal Environment Plan.
- The plugging and abandonment of the PER02 and PER04 wells in the PoG field. These wells tie back to the Goodwyn platform. Production from these wells has ceased and the wells have been shut in. The Christmas trees may be removed following plugging of these wells. The trees may either be removed during the plugging and abandonment activities or temporarily placed on the seabed for later recovery. Removal of the PoG wellheads above the mudline will be included in a separate future approval.
- Well intervention activities at the TPA03 well in the Tidepole field will remediate a down-hole valve and restore production from the lower reservoir. The well is currently shut it; well start-up and production following intervention activities will be managed under the Goodwyn Alpha (GWA) Operations EP.
- Preparation and support for the above activities is also included in the EP. Preparation and support may include inspections, cleaning, laying and recovery of moorings for the MODU, and support whilst the MODU is in the Operational Area.

Timing and duration

The activities are planned to be done as a single campaign. Indicative timings and approximate durations are:

NWS Plug and Abandonment

- Preparatory activities: approximately 7–10 days per well between around Q2 2025 and Q4 2025.
- Plug and abandonment: approximately 19–33 days per well between around Q4 2025 and Q3 2026.
- Removal of well infrastructure: approximately 1–5 days per well between around Q2 2026 and Q4 2026, if removed by the MODU under this EP.
- Recovery of ancillary equipment: approximately 1–2 days per well between around Q3 2026 and Q4 2026.

TPA03 Well Intervention

- Well intervention: approximately 5–14 days between Q4 2025 and Q3 2026.

The timing and duration of the activities are subject to vessel availability, weather, and other unforeseen circumstances.

Vessels

The plugging and abandonment and well intervention activities may be carried out using a moored or hybrid semi-submersible MODU. Preparation and support activities will be done by offshore support vessels.

Helicopters will be used to transfer crew and equipment between the MODU (and support vessels) and the shore.

Communications with mariners

The locations of all wells are marked on nautical charts. A 4000 m radius Operational Area will apply around each well. This includes a temporary 500 m radius exclusion zone around the MODU to manage vessel movements.

Marine notices will be issued prior to activity commencement to alert vessels which may be operating in waters nearby.

Joint Venture

Woodside operates the facilities in WA-1-L, WA-3-L, and WA-5-L on behalf of the North West Shelf Joint Venture. The participants in the North West Shelf Joint Venture are:

- Woodside Energy Ltd
- Woodside Energy (North West Shelf) Pty Ltd
- BP Developments Australia Pty Ltd
- Chevron Australia Pty Ltd
- Japan Australia LNG (MIMI) Pty Ltd
- CNOOC NWS Private Ltd
- Shell Australia Pty Ltd.

We welcome your feedback by 30 October 2024.

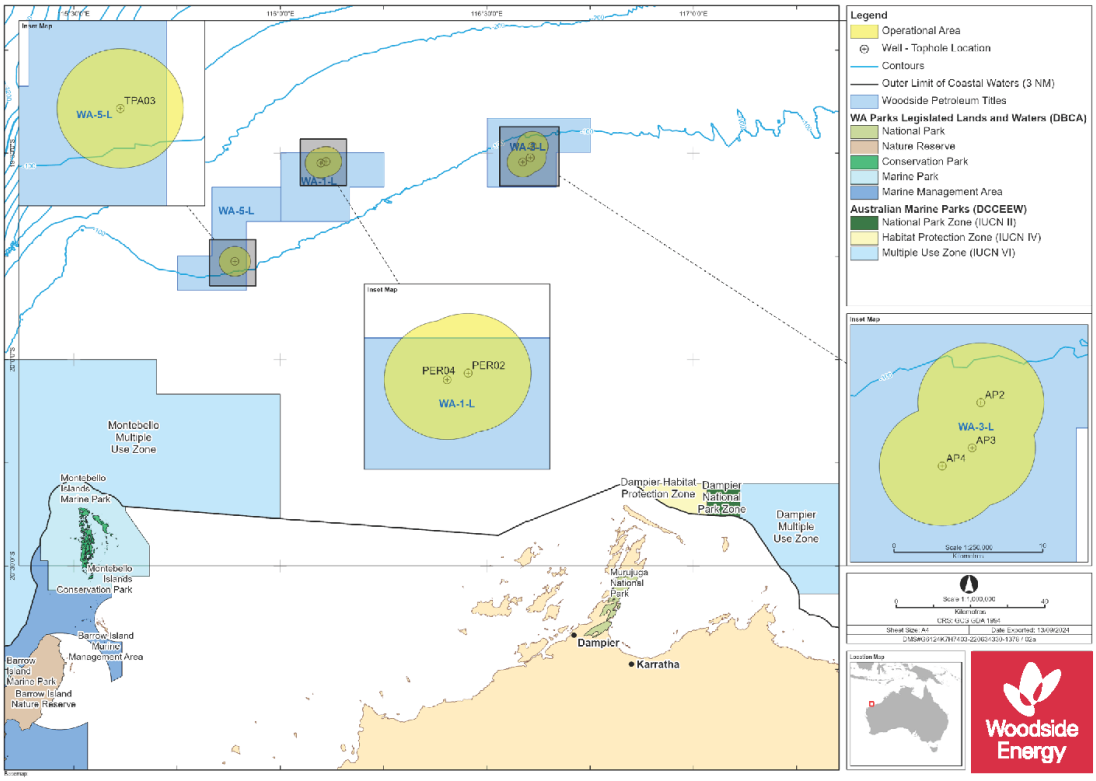


Figure 1: Wells and Operational Area for the NWS Phase 1 Well Plug and Abandonment and TPA03 Well Intervention EP

Table 1. Activity Summary

NWS Phase 1 Plug and Abandonment and TPA03 Well Intervention Environment Plan	
Location	• Production licenses WA-1-L, WA-3-L, and WA-5-L
Approximate water depth	• 77 m – 128 m
Activity summary	• Permanent plugging and abandonment of five NWS production wells • Removal of Christmas trees and wellheads, which may be recovered following removal or temporarily placed on the seabed for later recovery • Well intervention on the TPA03 production well to remediate down-hole valve • Preparation and support activities (e.g. inspections, cleaning, pre-laying of moorings, recovery of moorings)
Infrastructure	• AP 2, AP 3, and AP 4 production wells in the Angel field • PER02 and PER04 production wells in the PoG field • TPA03 production well in the Tidepole field
Commencement date	• Expected to commence around Q2 2025
Finish date	• Expected to be completed by around the end of Q4 2026
Estimated duration	**NWS Plug and Abandonment** • Preparatory activities: approximately 7–10 days per well • Plug and abandonment: approximately 19–33 days per well • Removal of well infrastructure: approximately 1–5 days per well • Recovery of ancillary equipment (e.g. mooring recovery): approximately 1–2 days **TPA03 Well Intervention** • Well intervention: approximately 5–14 days
Operational Area and exclusion zone	• Operational Area: 4000 m around each well • Temporary exclusion zone: 500 m around the MODU
Vessels	• MODU • Support vessels • Helicopters
Distance to nearest town	• Operational Area is approximately 125 km north of Dampier
Distance to nearest marine park / nature reserve	• Dampier Marine Park is approximately 90 km south of the Operational Area

Table 2. Approximate locations of wells

Wells	Approximate Water Depth (m)	Latitude	Longitude	Titles
AP 2	85	19° 29' 55" S	116° 35' 53" E	WA-3-L
AP 3	78	19° 29' 0" S	116° 36' 37" E	WA-3-L
AP 4	77	19° 30' 38" S	116° 36' 19" E	WA-3-L
PER02	127	19° 31' 12" S	116° 06' 39" E	WA-1-L
PER04	128	19° 31' 07" S	116° 05' 54" E	WA-1-L
TPA03	113	19° 45' 44" S	115° 53' 24" E	WA-5-L

Environment That May Be Affected (EMBA)

The EMBA is a mathematically modelled area of the largest possible spatial extent where the plug and abandonment and well intervention activities could potentially have an environmental consequence. The broadest extent of the model takes into consideration planned and unplanned activities. For the EP, the EMBA has been developed combining numerous modelling outputs based on scenarios involving a release of hydrocarbons to the environment. These scenarios are highly unlikely to occur. The most credible modelling scenarios that inform the EMBA are based on hydrocarbon release from a loss of well control from either the PER02, AP 3, or TPA03 wells. The EMBA is depicted in **Figure 2.**

The EMBA does not represent the extent of the predicted impact of a release of hydrocarbons. Rather, the EMBA represents the merged area of many possible paths that a hydrocarbon release could travel, depending on factors including the weather and ocean conditions at the time of the release. This means that in the highly unlikely event that a hydrocarbon release does occur, the whole EMBA will not be affected. Only a minimal, specific part of the EMBA will be affected and that portion will only be known at the time of the release.

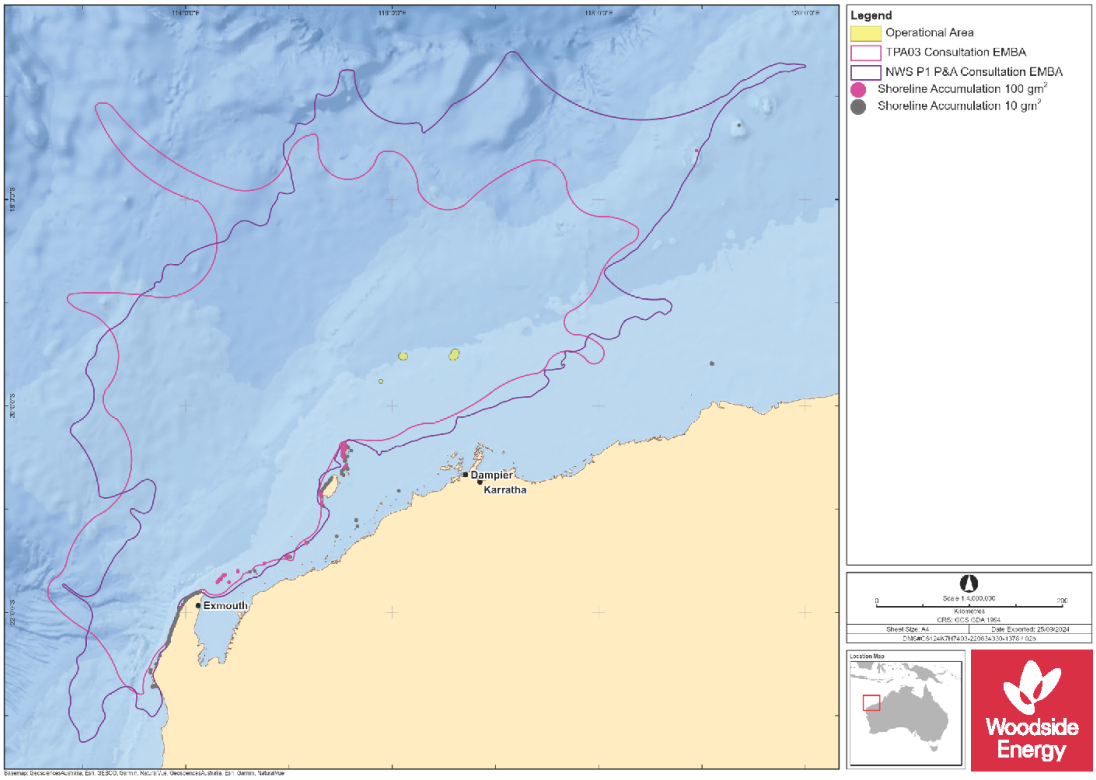


Figure 2: EMBAs for NWS Phase 1 Well P&A and TPA03 Well Intervention EPs

Mitigation and management measures

Woodside has undertaken an assessment to identify potential impacts and risks to the environment arising from the NWS Phase 1 Well Plug and Abandonment and TPA03 Well Intervention activities. Several mitigation and management measures for the activities are outlined in **Table 3**. Further details will be provided in the EP.

Table 3. Summary of key risks and impacts and preliminary management measures for the activities

Potential Impact/Risk	Description of Source of Potential Impact/Risk	Description of Potential Impact/Risk	Proposed Mitigation and/or Management Measure
Planned Activities (Routine and Non-routine)			
Physical presence: interaction with other marine users	• The MODU will plug and abandon the five production wells and perform the TPA03 well intervention. The MODU will be supported by other vessels and helicopter flights as required. • The physical presence of the MODU and project vessels within the Operational Area has the potential to displace other marine users.	• There is the potential for localised interaction with commercial fishing activities and commercial shipping. • Due to the offshore location and the localised nature of the activity, if there is an interaction it is expected to be negligible with no lasting effect.	• Vessels adhere to regulatory requirements for navigational safety. • Establish a temporary 500 m exclusion zone around the MODU which is communicated to marine users. • Notify relevant government departments, and fishing industry representative bodies prior to commencement and on completion of activities. • Notify the Australian Hydrographic Office prior to commencement of the activity so that marine users are aware of the activity. • Consult with relevant persons so they are informed of the proposed activities. • Where possible well infrastructure will be removed above the mudline once wells are permanently abandoned in accordance with applicable regulatory requirements.
Physical presence: disturbance to benthic habitat	• Installation and recovery of the MODU mooring anchors and chains will disturb the seabed. • Wellhead cleaning and removal will cause localised seabed disturbance around the wellhead. • Use of remotely operated and placement of equipment on the seabed will disturb small areas of benthic habitat. • Infrastructure deburial and short-term placement of infrastructure may be required.	• The Operational Area consists of sandy substrate, with marine growth on the subsea infrastructure. • Activities will be localised and of short duration, hence physical impacts to the seabed are expected to be negligible.	• Project specific mooring design analysis for anchored MODU to reduce the likelihood of anchor drag leading to seabed disturbance. • Well infrastructure temporarily placed on the seabed will be removed on completion of the plug and abandonment and decommissioning activities. • Subsea infrastructure to be marked on navigational charts until removal. • No anchoring of support vessels. • Comply with requirements of *Underwater Cultural Heritage Act 2018 (Cth).*

Routine acoustic emissions: vessels, helicopters, and mechanical equipment operation	• The operation of the MODU, project vessels, and positioning equipment will generate noise both in the air and underwater due to the operation of thruster engines, propellers, and the use of cutting tools subsea.
	• Helicopter noise within the Operational Area will occur during helicopter take-off and landing.
		• Elevated underwater noise may affect marine fauna, including marine mammals, turtles, and fish in the following ways:
		  • Through short-term behavioural disturbance.
		  • By masking or interfering with other biologically important sounds.
		• The Operational Area does not overlap biologically important areas for fauna sensitive to underwater noise (e.g. cetaceans). The noise emissions during the activity will not credibly cause injury to fauna, but may result in localised, short-term behavioural disturbance and masking.
			• Comply with regulatory requirements for interactions with marine fauna to prevent adverse interactions.

Potential Impact/Risk	Description of Source of Potential Impact/Risk	Description of Potential Impact/Risk	Proposed Mitigation and/or Management Measure
Routine discharges: marine wastewater	• Routine discharge of sewage, grey water, and putrescible wastes to marine environment from project vessels within the Operational Area. • Routine discharge of deck and bilge water to marine environment from project vessels within the Operational Area.	• Short-term, localised decrease in water quality around the vessel.	• Marine discharges managed according to regulatory requirements. • Chemicals selected with the lowest reasonably practicable environmental impacts and risks subject to technical constraints and approved through the Woodside chemical assessment process.
Routine and non-routine discharges: drilling activities	• Plugging and abandonment (P&A) and well intervention will result in subsea discharges, such as cement, drilling chemicals, and residual water-based suspension and drilling fluids within the wells. • Non-routine discharge of unused bulk products at the completion of the plug and abandonment and well intervention activities.	• Localised, negligible, changes to sediment quality at the discharge locations. • Short-term, localised decrease in water quality at the discharge locations.	• Marine discharges managed according to regulatory requirements. • Chemicals selected with the lowest reasonably practicable environmental impacts and risks subject to technical constraints and approved through the Woodside chemical assessment process. • Options for use of excess bulk cement, bentonite or barite will be managed and only discharged to the marine environment as a last option.
Atmospheric emissions and greenhouse gas (GHG) emissions	• Atmospheric emissions and GHG emissions will be associated with the MODU, project vessels, and helicopters from internal combustion engines and incineration activities. • Atmospheric emissions will be associated with venting of residual gas and contingent flaring from the MODU during P&A activities.	• Localised, short-term decrease in air quality.	• Comply with legislative and regulatory requirements for marine air pollution and GHG emissions reporting. • Flaring and venting of hydrocarbons is restricted to a duration necessary to perform the P&A activity.
Light emissions from project vessels	• Light emissions from MODU and support vessels. • Light emissions may be generated by flaring during well P&A if required. Flaring is only expected to occur for short durations (hours).	Light emissions may affect fauna (such as marine turtles and birds) in two main ways: • Behaviour: artificial lighting has the potential to create a constant level of light at night that can override natural levels and cycles. • Orientation: if an artificial light source is brighter than a natural source, the artificial light may override natural cues, leading to disorientation.	• Implementation of the Woodside Offshore Seabird Management Plan. • Lighting will be limited to the minimum required for navigation and safe operational requirements.

Potential Impact/Risk	Description of Source of Potential Impact/Risk	Description of Potential Impact/Risk	Proposed Mitigation and/or Management Measure
Unplanned Events (Accidents / Incidents)			
Unplanned hydrocarbon release – loss of well control	A loss of well control during plugging and abandonment or well intervention is extremely unlikely to occur. However, such a loss of well control, should it occur, may result in the unplanned release of hydrocarbons from a well.	• In the highly unlikely event of a loss of well control causing a release of hydrocarbons, impacts to water quality and marine ecosystems could occur. • The wells within the scope of the EP are gas and condensate production wells. Any gas released would dissipate in the atmosphere. The condensates consist of relatively light molecular weight hydrocarbons that are volatile and non-persistent in nature with around 90% evaporating within the first 24 hours. • Potential impacts across the whole EMBA were assessed including receptors such as plankton, fish, marine mammals, seabirds and migratory shorebirds, tourism, recreation, and commercial fisheries (for example). • The potential biological and ecological impacts of an accidental hydrocarbon release from a loss of well control during the activities are expected to have minor, short term impacts to species and habitats, but not affecting ecosystem function.	• Plugging and abandonment and well intervention activities done in accordance with accepted well operation management plan (WOMP). The WOMP required effective barriers to always be in place to prevent the unplanned release of hydrocarbons. • Vessels adhere to regulatory requirements for navigational safety. • Establish a 500 m temporary exclusion zone around the MODU which is communicated to marine users. • Spill response arrangements supporting the Oil Pollution Emergency Plan (OPEP) will be tested to ensure the OPEP can be implemented as planned. • Emergency response activities would be implemented in line with the OPEP.
Unplanned hydrocarbon release – vessel collision	Project vessels will use marine diesel fuel, meaning a vessel collision involving a project vessel or third- party during the activity may potentially result in the release of marine diesel. For a collision to result in the worst-case scenario diesel release, several factors must occur as follows: • Identified causes of vessel interaction must result in a collision. • The collision has enough force to penetrate the vessel hull and 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.	• In the highly unlikely event of a vessel collision causing a release of hydrocarbons, impacts to water quality and marine ecosystems could occur. • Marine diesel is a relatively volatile, non-persistent in nature hydrocarbon with around 25% evaporating within the first 24 hours. • Potential impacts across the whole EMBA were assessed including receptors such as plankton, fish, marine mammals, seabirds and migratory shorebirds, tourism, recreation, and commercial fisheries (for example). • The potential biological and ecological impacts of an accidental hydrocarbon release as a result of a vessel collision during the activities are expected to have minor, short term impacts to species and habitats, but not affecting ecosystem function.	• Comply with regulatory requirements for the prevention of vessel collisions and safety and emergency arrangements. • Consult with relevant persons so that other marine users are informed and aware, reducing the likelihood of a collision. • Establish temporary exclusion zones around vessels which are communicated to marine users to reduce the likelihood of collision. • Spill response arrangements supporting the OPEP will be tested to ensure the OPEP can be implemented as planned. • Emergency response activities would be implemented in line with the OPEP.

Potential Impact/Risk	Description of Source of Potential Impact/Risk	Description of Potential Impact/Risk	Proposed Mitigation and/or Management Measure
Unplanned hydrocarbon release - bunkering	Accidental loss of hydrocarbons to the marine environment during planned bunkering/refuelling may occur caused by partial or total failure of a bulk transfer hose or fittings due to operational stress or other integrity issues.	• The biological consequences of such a small volume spill on identified open water sensitive receptors relate to the potential for slight impacts to megafauna, plankton and fish populations that are within the spill-affected area.	• Preventing unplanned hydrocarbon release due to bunkering. • Comply with regulatory requirements for the prevention of marine pollution. • Appropriate bunkering equipment kept and maintained. • Compliance with Contractor procedures for the management of bunkering/ helicopter operations to reduce the likelihood and potential severity of a spill.
Unplanned discharge: deck spills	Accidental discharge of hydrocarbons/ chemicals from MODU or project vessel deck activities and equipment (such as cranes and winches).	• Unplanned discharges of non-process chemicals and hydrocarbons may decrease the water quality in the immediate vicinity of the release. Only small volumes (approximately <100 L) would be expected to potentially occur, resulting in very short-term impacts to water quality, and limited to the immediate release location. • No significant impacts from the accidental discharges described would be anticipated due to the offshore/open water locations, low sensitivity of surrounding water quality and high level of dilution into the open water marine environment of the Operational Area.	• Comply with regulatory requirements for the prevention of marine pollution. • Liquid chemical and fuel storage areas are bunded or secondarily contained when they are not being handled/moved temporarily. • Maintain and locate spill kits in close proximity to hydrocarbon storage areas and deck areas for use to contain and recover deck spills.
Unplanned discharge of solid hazardous / non-hazardous solid waste / equipment	• Accidental loss of hazardous or non-hazardous wastes (including dropped objects) to the marine environment. • Generation and disposal of waste from well infrastructure removal. • Dropped objects resulting in disturbance of benthic habitat.	• The potential impacts of hazardous or non-hazardous solid wastes and 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. • Incorrect classification of waste can also result in inappropriate disposal of hazardous decommissioning wastes that could contaminate non-hazardous waste streams. This has the potential to result in contamination to air, soil and water during disposal. • In the unlikely event of loss of an object being dropped into the marine environment, potential environmental effects would be limited to localised physical impacts on benthic communities.	• Comply with regulatory requirements for the prevention of marine pollution and handling of hazardous wastes. • Disposal of waste associated with the subsea infrastructure will comply with relevant State and Commonwealth legislation. • Project vessel waste arrangements which require waste segregation, recording and safe handling of waste according to their hazard and recyclability class. • Solid waste/equipment dropped into the marine environment will be recovered where safe and practicable to do so. • The project vessels' work procedures for lifts, bulk transfers and cargo loading which require safe lifting and management of loads. • Implementation of an infrastructure disposal and resource recovery strategy that tracks waste, considers the waste hierarchy and considers contingency procedures for dealing with contaminants.

Potential Impact/Risk	Description of Source of Potential Impact/Risk	Description of Potential Impact/Risk	Proposed Mitigation and/or Management Measure
Physical presence: vessel collision with marine fauna	• Vessel movements have the potential to result in collisions between project vessel (hull and propellers) and marine fauna. • Project vessels would typically be stationary or moving at low speeds when undertaking the activity.	• Given the absence of aggregations, duration of activities within the Operational Area and the slow speeds at which project vessels operate, collisions with cetaceans, marine turtles and whale sharks are considered highly unlikely. • Collisions between vessels and marine fauna may result in injury to, or death of, marine fauna.	• Comply with regulatory requirements for interactions with marine fauna to reduce the likelihood of a collision occurring.
Accidental introduction of invasive marine species (IMS)	• Project vessels have the potential to introduce IMS to the Operational Area through marine biofouling (containing IMS) on vessels, as well as within high-risk ballast water exchange.	• The likelihood of IMS being introduced and establishing viable populations within these Operational Area or immediate surrounds is considered remote. • Introduction of IMS may result in changes to the ecology of the Operational Area and competition with existing biota.	• Project vessels will manage their ballast water using one of the approved ballast water management options, as outlined in the Australian Ballast Water Management Requirements. • Woodside's IMS risk assessment process will be applied to project vessels and immersible equipment undertaking the activities.

Feedback

Woodside consults relevant persons in the course of preparing Environment Plans to notify them of the activity and to obtain relevant feedback to inform its planning for proposed petroleum activities in the region.

If you would like to comment on the proposed activities outlined in this information sheet please contact Woodside before **30 October 2024** via:

E: Consultation@feedback.woodside.com

Phone: 1800 442 977

You can subscribe on our website to receive Consultation Information Sheets for proposed activities:

www.woodside.com/what-we-do/consultation-activities.

Please note that stakeholder feedback will be communicated to the National Offshore Petroleum Safety and Environmental Management Authority (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 submissions 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

6.1.2 Summary information sheet

Woodside Energy

CONSULTATION

SUMMARY INFORMATION SHEET

September 2024

NORTH WEST SHELF PHASE 1 WELL PLUG AND ABANDONMENT AND TPA03 WELL INTERVENTION ENVIRONMENT PLAN

CARNARVON BASIN, NORTH-WEST AUSTRALIA

Woodside consults relevant persons in the course of preparing an Environment Plan (EP) to notify them and obtain their input. This assists 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. These are the intended outcomes of consultation.

This summary information sheet provides a high-level overview of the North West Shelf (NWS) Phase 1 Well Plug and Abandonment and TPA03 Well Intervention EP.

Further details, including an assessment of the potential impacts and risks to the environment, as well as mitigation and management measures, are available within the NWS Phase 1 Well Plug and Abandonment and TPA03 Well Intervention EP Consultation Information Sheet (September 2024) which can be found at: http://www.woodside.com/what-we-do/consultation-activities

Overview

Woodside is submitting the NWS Phase 1 Well Plug and Abandonment and TPA03 Well Intervention EP. This plan covers the permanent plugging and abandonment of production wells in the Angel and Perseus-over-Goodwyn fields, and the completion of discrete technical work on the TPA03 production well in the Tidepole field.

The wells are in water depths ranging from 77 m to 128 m on the North West Shelf. The work will take place approximately 120 km north of Dampier. **Figure 1** is a map showing the location of the wells and Woodside's Operational Area for the work.

Summary of activities includes:

- Permanently plug and abandon three production wells in the Angel field and two production wells in the Perseus-over-Goodwyn field
- Complete discrete down-hole technical work at the TPA03 production well.

This work will be done using an offshore drilling rig supported by vessels and helicopters. Similar rigs, vessels and helicopters are often used in the oil and gas industry.

Woodside plans to do the work between April 2025 and December 2026. The work may take up to around 30 days per well.

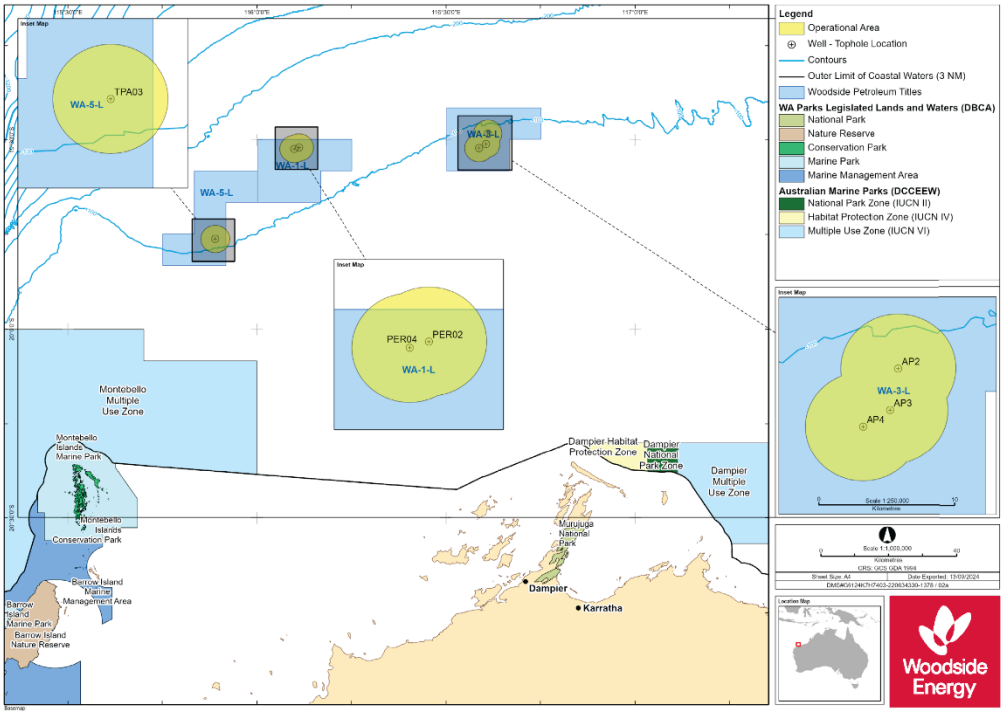


Figure 1: Wells and Operational Area for the NWS Phase 1 Well Plug and Abandonment and TPA03 Well Intervention EP

Environmental Impacts and Management

The work includes planned activities that may impact the environment. Unplanned events, such as accidents, may also result in environmental risks. Woodside manages the work to reduce impacts and risks to as low as reasonably practicable (ALARP) and to an acceptable level.

Planned activities are activities that Woodside knows will happen as part of this work program. For example, planned activities include other users of the sea being temporarily stopped from accessing the work area, or the vessels used for the work will generate underwater noise, light emissions, atmospheric emissions, and routine discharges (such as sewage, waste, and deck drainage). These planned activities will comply with legislative and regulatory requirements.

Unplanned events are not planned as part of the work program, but may be the result of an accident, incident or emergency. It is very unlikely that there will be an unplanned event. Unplanned events might include a spill of fuel or oil from a vessel collision, a spill on the deck of a vessel (such as during refuelling), unplanned seabed and/or marine life disturbance, waste entering the environment and accidental introduction of invasive species from outside the region.

A table showing all planned and unplanned activities, potential impacts and management measures for each is included in the Consultation Information Sheet (September 2024), which is available here: https://www.woodside.com/sustainability/consultation-activities.

The area over which unplanned events could have environmental impacts is shown in the map below (**Figure 2**). This is referred to as the environment that may be affected (EMBA). The location where the work will be done is known as the Operational Area. The Operational Area is also shown on the maps.

Environment that may be affected (EMBA)

The EMBA is a mathematically modelled area of the largest possible spatial extent where the NWS Phase 1 Well Plug and Abandonment and TPA03 Well Intervention EP activities could potentially have an environmental consequence. The broadest extent of the model takes into consideration planned and unplanned activities. For the EP, the EMBA has been developed combining numerous modelling outputs based on scenarios involving a release of hydrocarbons to the environment.

These scenarios are highly unlikely to occur. The most credible modelling scenarios that inform the EMBA are based on hydrocarbon release as a result of well loss of containment, subsea loss of containment and vessel collision. The EMBA is depicted in **Figure 2.**

The EMBA does not represent the extent of the predicted impact of a release of hydrocarbons. Rather, the EMBA represents the merged area of many possible paths that a hydrocarbon release could travel, depending on factors including the weather and ocean conditions at the time of the release. This means that in the highly unlikely event that a hydrocarbon release does occur, the whole EMBA will not be affected. Only a minimal, specific part of the EMBA will be affected and that portion will only be known at the time of the release.

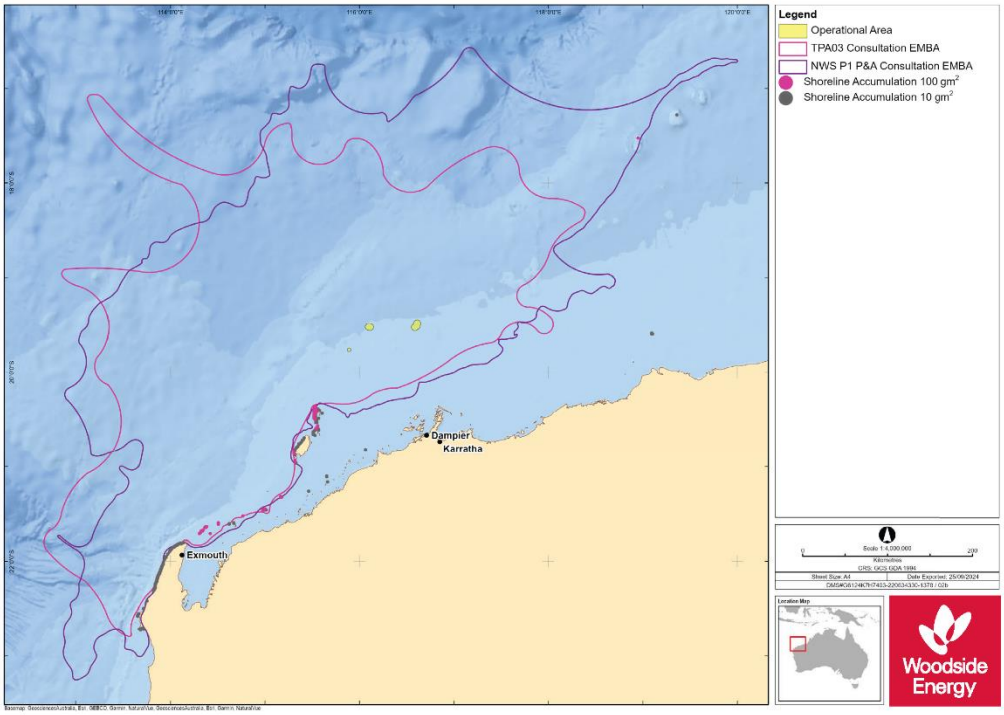


Figure 2: Environment That May Be Affected (EMBA) by the NWS Phase 1 Well Plug and Abandonment and TPA03 Well Intervention activities

Feedback

Woodside consults relevant persons in the course of preparing EPs to notify them of the activity and to obtain relevant feedback to inform its planning for proposed petroleum activities in the region. If you would like to comment on the proposed activities outlined in this information sheet please contact Woodside before **30 October 2024** via:

E: Feedback@woodside.com

Toll free: 1800 442 977

You can subscribe on our website to receive Consultation Information Sheets for proposed activities:
www.woodside.com/what-we-do/consultation-activities

Please note that stakeholder feedback will be communicated to the National Offshore Petroleum Safety and Environmental Management Authority (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 EP 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 may 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 no 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

6.1.3 Updated Consultation information sheet

Woodside Energy

CONSULTATION

INFORMATION SHEET

September 2024

NORTH WEST SHELF PHASE 1 WELL PLUG AND ABANDONMENT AND TPA03 WELL INTERVENTION ENVIRONMENT PLAN

CARNARVON BASIN, NORTH-WEST AUSTRALIA

Woodside consults relevant persons in the course of preparing an Environment Plan (EP) to notify them, obtain their input and to assist Woodside to confirm current measures or identify additional measures, if any, that could be taken to lessen or avoid potential adverse effects of the proposed activity on the environment. This is the intended outcome of consultation.

Woodside's aim is to ensure the proposed activity is carried out in a manner that is consistent with the principles of ecologically sustainable development (ESD), by which the environmental impacts and risks of the activity are reduced to as low as reasonably practicable (ALARP) and to an acceptable level. We want relevant persons whose functions, interests or activities that 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.

Overview

Woodside is submitting the North West Shelf (NWS) Phase 1 Well Plug and Abandonment (P&A) and TPA03 Well Intervention EP in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth)*.

The EP covers:

- Permanent plugging and abandonment of five NWS production wells
- Well intervention on the TPA03 production well.

The plugging and abandonment and well intervention will be undertaken using a moored or hybrid (mooring and Dynamic Positioning (DP) capability) semi-submersible mobile offshore drilling unit (MODU) and associated support vessels.

Woodside is decommissioning redundant equipment in its operating fields. Infrastructure that remains in the Angel and Perseus-over-Goodwyn (PoG) fields will continue to be managed under the Angel Operations and Goodwyn Alpha (GWA) Operations EP, respectively.

Location

All wells are in Commonwealth waters around Woodside's existing production facilities. The closest well to shore is approximately 125 km north of Dampier as shown in **Figure 1**. The wells are in water depths ranging from approximately 80 m to 128 m. The locations of the wells are in **Table 2**.

Proposed activity

Activities under this EP include:

- the plugging and abandonment of the AP 2, AP 3, and AP 4 wells in the Angel field. These wells tie back to the Angel platform. Production from these wells has ceased and the wells have been shut in. Well infrastructure (Christmas trees and wellheads) above the mudline will be removed following plugging of these wells.
- Wellheads may either be recovered during the plugging and abandonment activities or temporarily placed on the seabed for later recovery. If Angel wellheads aren't removed by the MODU, removal will be conducted under the proposed Angel Subsea Infrastructure Removal Environment Plan.
- The plugging and abandonment of the PER02 and PER04 wells in the PoG field. These wells tie back to the Goodwyn platform. Production from these wells has ceased and the wells have been shut in. The Christmas trees may be removed following plugging of these wells. The trees may either be removed during the plugging and abandonment activities or temporarily placed on the seabed for later recovery. Removal of the PoG wellheads above the mudline will be included in a separate future approval.
- Well intervention activities at the TPA03 well in the Tidepole field will remediate a down-hole valve and restore production from the lower reservoir. The well is currently shut it; well start-up and production following intervention activities will be managed under the Goodwyn Alpha (GWA) Operations EP.
- Preparation and support for the above activities is also included in the EP. Preparation and support may include inspections, cleaning, laying and recovery of moorings for the MODU, and support whilst the MODU is in the Operational Area.

Timing and duration

The activities are planned to be done as a single campaign. Indicative timings and approximate durations are:

NWS Plug and Abandonment

- Preparatory activities: approximately 7-10 days per well between around Q2 2025 and Q4 2025.
- Plug and abandonment: approximately 19–33 days per well between around Q4 2025 and Q3 2026.
- Removal of well infrastructure: approximately 1–5 days per well between around Q2 2026 and Q4 2026, if removed by the MODU under this EP.
- Recovery of ancillary equipment: approximately 1–2 days per well between around Q3 2026 and Q4 2026.

TPA03 Well Intervention

- Well intervention: approximately 5–14 days between Q4 2025 and Q3 2026.

The timing and duration of the activities are subject to vessel availability, weather, and other unforeseen circumstances.

Vessels

The plugging and abandonment and well intervention activities may be carried out using a moored or hybrid semi-submersible MODU. Preparation and support activities will be done by offshore support vessels.

Helicopters will be used to transfer crew and equipment between the MODU (and support vessels) and the shore.

Communications with mariners

The locations of all wells are marked on nautical charts. A 4000 m radius Operational Area will apply around each well. This includes a temporary 500 m radius exclusion zone around the MODU to manage vessel movements.

Marine notices will be issued prior to activity commencement to alert vessels which may be operating in waters nearby.

Joint Venture

Woodside operates the facilities in WA-1-L, WA-3-L, and WA-5-L on behalf of the North West Shelf Joint Venture. The participants in the North West Shelf Joint Venture are:

- Woodside Energy Ltd
- Woodside Energy (North West Shelf) Pty Ltd
- BP Developments Australia Pty Ltd
- Chevron Australia Pty Ltd
- Japan Australia LNG (MIMI) Pty Ltd
- CNOOC NWS Private Ltd
- Shell Australia Pty Ltd.

We welcome your feedback by 30 October 2024.

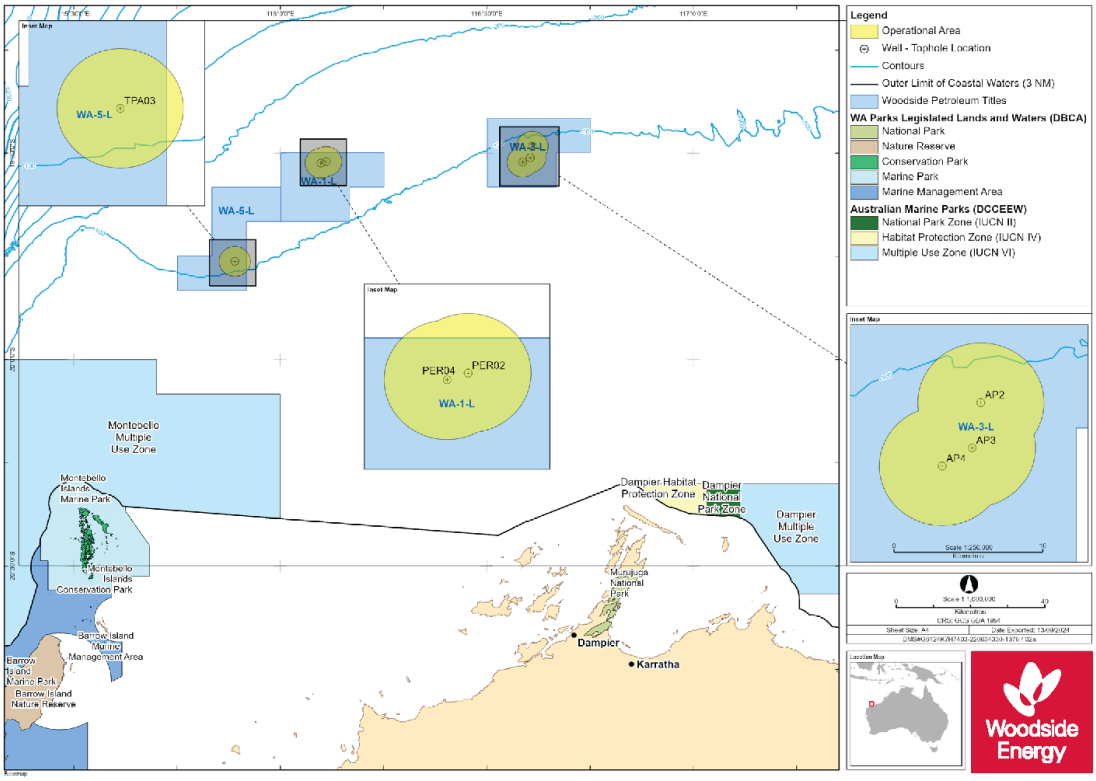


Figure 1: Wells and Operational Area for the NWS Phase 1 Well Plug and Abandonment and TPA03 Well Intervention EP

Table 1. Activity Summary

NWS Phase 1 Plug and Abandonment and TPA03 Well Intervention Environment Plan	
Location	• Production licenses WA-1-L, WA-3-L, and WA-5-L
Approximate water depth	• 80 m – 128 m
Activity summary	• Permanent plugging and abandonment of five NWS production wells • Removal of Christmas trees and wellheads, which may be recovered following removal or temporarily placed on the seabed for later recovery • Well intervention on the TPA03 production well to remediate down-hole valve • Preparation and support activities (e.g. inspections, cleaning, pre-laying of moorings, recovery of moorings)
Infrastructure	• AP 2, AP 3, and AP 4 production wells in the Angel field • PER02 and PER04 production wells in the PoG field • TPA03 production well in the Tidepole field
Commencement date	• Expected to commence around Q2 2025
Finish date	• Expected to be completed by around the end of Q4 2026
Estimated duration	**NWS Plug and Abandonment** • Preparatory activities: approximately 7–10 days per well • Plug and abandonment: approximately 19–33 days per well • Removal of well infrastructure: approximately 1–5 days per well • Recovery of ancillary equipment (e.g. mooring recovery): approximately 1–2 days **TPA03 Well Intervention** • Well intervention: approximately 5–14 days
Operational Area and exclusion zone	• Operational Area: 4000 m around each well • Temporary exclusion zone: 500 m around the MODU
Vessels	• MODU • Support vessels • Helicopters
Distance to nearest town	• Operational Area is approximately 125 km north of Dampier
Distance to nearest marine park / nature reserve	• Dampier Marine Park is approximately 90 km south of the Operational Area

Table 2. Approximate locations of wells

Wells	Approximate Water Depth (m)	Latitude	Longitude	Titles
AP 2	80	19° 28' 59" S	116° 36' 37" E	WA-3-L
AP 3	80	19° 30' 38" S	116° 36' 18" E	WA-3-L
AP 4	90	19° 31' 18" S	116° 35' 13" E	WA-3-L
PER02	127	19° 31' 11" S	116° 6' 39" E	WA-1-L
PER04	128	19° 31' 26" S	116° 5' 53" E	WA-1-L
TPA03	113	19° 45' 43" S	115° 53' 23" E	WA-5-L

Environment That May Be Affected (EMBA)

The EMBA is a mathematically modelled area of the largest possible spatial extent where the plug and abandonment and well intervention activities could potentially have an environmental consequence. The broadest extent of the model takes into consideration planned and unplanned activities. For the EP, the EMBA has been developed combining numerous modelling outputs based on scenarios involving a release of hydrocarbons to the environment. These scenarios are highly unlikely to occur. The most credible modelling scenarios that inform the EMBA are based on hydrocarbon release from a loss of well control from either the PER02, AP 3, or TPA03 wells. The EMBA is depicted in **Figure 2.**

The EMBA does not represent the extent of the predicted impact of a release of hydrocarbons. Rather, the EMBA represents the merged area of many possible paths that a hydrocarbon release could travel, depending on factors including the weather and ocean conditions at the time of the release. This means that in the highly unlikely event that a hydrocarbon release does occur, the whole EMBA will not be affected. Only a minimal, specific part of the EMBA will be affected and that portion will only be known at the time of the release.

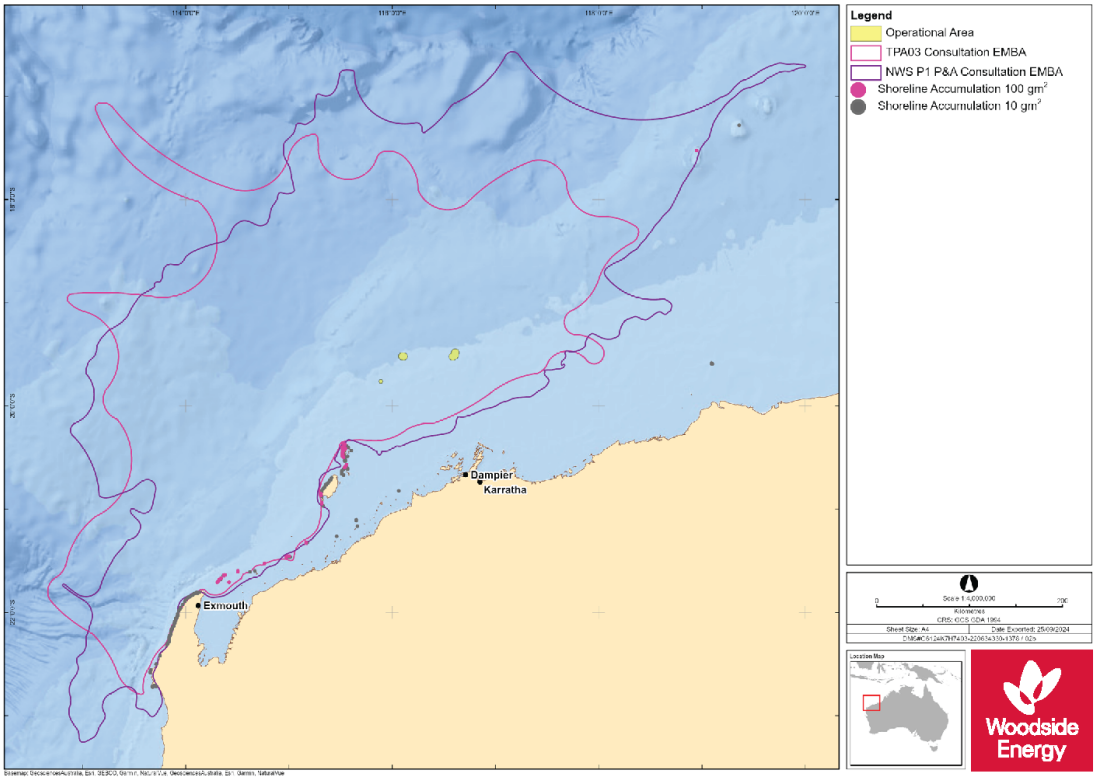


Figure 2: EMBAs for NWS Phase 1 Well P&A and TPA03 Well Intervention EPs

Mitigation and management measures

Woodside has undertaken an assessment to identify potential impacts and risks to the environment arising from the NWS Phase 1 Well Plug and Abandonment and TPA03 Well Intervention activities. Several mitigation and management measures for the activities are outlined in **Table 3**. Further details will be provided in the EP.

Table 3. Summary of key risks and impacts and preliminary management measures for the activities

Potential Impact/Risk	Description of Source of Potential Impact/Risk	Description of Potential Impact/Risk	Proposed Mitigation and/or Management Measure
Planned Activities (Routine and Non-routine)			
Physical presence: interaction with other marine users	• The MODU will plug and abandon the five production wells and perform the TPA03 well intervention. The MODU will be supported by other vessels and helicopter flights as required. • The physical presence of the MODU and project vessels within the Operational Area has the potential to displace other marine users.	• There is the potential for localised interaction with commercial fishing activities and commercial shipping. • Due to the offshore location and the localised nature of the activity, if there is an interaction it is expected to be negligible with no lasting effect.	• Vessels adhere to regulatory requirements for navigational safety. • Establish a temporary 500 m exclusion zone around the MODU which is communicated to marine users. • Notify relevant government departments, and fishing industry representative bodies prior to commencement and on completion of activities. • Notify the Australian Hydrographic Office prior to commencement of the activity so that marine users are aware of the activity. • Consult with relevant persons so they are informed of the proposed activities. • Where possible well infrastructure will be removed above the mudline once wells are permanently abandoned in accordance with applicable regulatory requirements.
Physical presence: disturbance to benthic habitat	• Installation and recovery of the MODU mooring anchors and chains will disturb the seabed. • Wellhead cleaning and removal will cause localised seabed disturbance around the wellhead. • Use of remotely operated and placement of equipment on the seabed will disturb small areas of benthic habitat. • Infrastructure deburial and short-term placement of infrastructure may be required.	• The Operational Area consists of sandy substrate, with marine growth on the subsea infrastructure. • Activities will be localised and of short duration, hence physical impacts to the seabed are expected to be negligible.	• Project specific mooring design analysis for anchored MODU to reduce the likelihood of anchor drag leading to seabed disturbance. • Well infrastructure temporarily placed on the seabed will be removed on completion of the plug and abandonment and decommissioning activities. • Subsea infrastructure to be marked on navigational charts until removal. • No anchoring of support vessels. • Comply with requirements of *Underwater Cultural Heritage Act 2018 (Cth).*

Routine acoustic emissions: vessels, helicopters, and mechanical equipment operation	• The operation of the MODU, project vessels, and positioning equipment will generate noise both in the air and underwater due to the operation of thruster engines, propellers, and the use of cutting tools subsea.
	• Helicopter noise within the Operational Area will occur during helicopter take-off and landing.
		• Elevated underwater noise may affect marine fauna, including marine mammals, turtles, and fish in the following ways:
		  • Through short-term behavioural disturbance.
		  • By masking or interfering with other biologically important sounds.
		• The Operational Area does not overlap biologically important areas for fauna sensitive to underwater noise (e.g. cetaceans). The noise emissions during the activity will not credibly cause injury to fauna, but may result in localised, short-term behavioural disturbance and masking.
			• Comply with regulatory requirements for interactions with marine fauna to prevent adverse interactions.

Potential Impact/Risk	Description of Source of Potential Impact/Risk	Description of Potential Impact/Risk	Proposed Mitigation and/or Management Measure
Routine discharges: marine wastewater	• Routine discharge of sewage, grey water, and putrescible wastes to marine environment from project vessels within the Operational Area. • Routine discharge of deck and bilge water to marine environment from project vessels within the Operational Area.	• Short-term, localised decrease in water quality around the vessel.	• Marine discharges managed according to regulatory requirements. • Chemicals selected with the lowest reasonably practicable environmental impacts and risks subject to technical constraints and approved through the Woodside chemical assessment process.
Routine and non-routine discharges: drilling activities	• Plugging and abandonment (P&A) and well intervention will result in subsea discharges, such as cement, drilling chemicals, and residual water-based suspension and drilling fluids within the wells. • Non-routine discharge of unused bulk products at the completion of the plug and abandonment and well intervention activities.	• Localised, negligible, changes to sediment quality at the discharge locations. • Short-term, localised decrease in water quality at the discharge locations.	• Marine discharges managed according to regulatory requirements. • Chemicals selected with the lowest reasonably practicable environmental impacts and risks subject to technical constraints and approved through the Woodside chemical assessment process. • Options for use of excess bulk cement, bentonite or barite will be managed and only discharged to the marine environment as a last option.
Atmospheric emissions and greenhouse gas (GHG) emissions	• Atmospheric emissions and GHG emissions will be associated with the MODU, project vessels, and helicopters from internal combustion engines and incineration activities. • Atmospheric emissions will be associated with venting of residual gas and contingent flaring from the MODU during P&A activities.	• Localised, short-term decrease in air quality.	• Comply with legislative and regulatory requirements for marine air pollution and GHG emissions reporting. • Flaring and venting of hydrocarbons is restricted to a duration necessary to perform the P&A activity.
Light emissions from project vessels	• Light emissions from MODU and support vessels. • Light emissions may be generated by flaring during well P&A if required. Flaring is only expected to occur for short durations (hours).	Light emissions may affect fauna (such as marine turtles and birds) in two main ways: • Behaviour: artificial lighting has the potential to create a constant level of light at night that can override natural levels and cycles. • Orientation: if an artificial light source is brighter than a natural source, the artificial light may override natural cues, leading to disorientation.	• Implementation of the Woodside Offshore Seabird Management Plan. • Lighting will be limited to the minimum required for navigation and safe operational requirements.

Potential Impact/Risk	Description of Source of Potential Impact/Risk	Description of Potential Impact/Risk	Proposed Mitigation and/or Management Measure
Unplanned Events (Accidents / Incidents)			
Unplanned hydrocarbon release – loss of well control	A loss of well control during plugging and abandonment or well intervention is extremely unlikely to occur. However, such a loss of well control, should it occur, may result in the unplanned release of hydrocarbons from a well.	• In the highly unlikely event of a loss of well control causing a release of hydrocarbons, impacts to water quality and marine ecosystems could occur. • The wells within the scope of the EP are gas and condensate production wells. Any gas released would dissipate in the atmosphere. The condensates consist of relatively light molecular weight hydrocarbons that are volatile and non-persistent in nature with around 90% evaporating within the first 24 hours. • Potential impacts across the whole EMBA were assessed including receptors such as plankton, fish, marine mammals, seabirds and migratory shorebirds, tourism, recreation, and commercial fisheries (for example). • The potential biological and ecological impacts of an accidental hydrocarbon release from a loss of well control during the activities are expected to have minor, short term impacts to species and habitats, but not affecting ecosystem function.	• Plugging and abandonment and well intervention activities done in accordance with accepted well operation management plan (WOMP). The WOMP required effective barriers to always be in place to prevent the unplanned release of hydrocarbons. • Vessels adhere to regulatory requirements for navigational safety. • Establish a 500 m temporary exclusion zone around the MODU which is communicated to marine users. • Spill response arrangements supporting the Oil Pollution Emergency Plan (OPEP) will be tested to ensure the OPEP can be implemented as planned. • Emergency response activities would be implemented in line with the OPEP.
Unplanned hydrocarbon release – vessel collision	Project vessels will use marine diesel fuel, meaning a vessel collision involving a project vessel or third- party during the activity may potentially result in the release of marine diesel. For a collision to result in the worst-case scenario diesel release, several factors must occur as follows: • Identified causes of vessel interaction must result in a collision. • The collision has enough force to penetrate the vessel hull and 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.	• In the highly unlikely event of a vessel collision causing a release of hydrocarbons, impacts to water quality and marine ecosystems could occur. • Marine diesel is a relatively volatile, non-persistent in nature hydrocarbon with around 25% evaporating within the first 24 hours. • Potential impacts across the whole EMBA were assessed including receptors such as plankton, fish, marine mammals, seabirds and migratory shorebirds, tourism, recreation, and commercial fisheries (for example). • The potential biological and ecological impacts of an accidental hydrocarbon release as a result of a vessel collision during the activities are expected to have minor, short term impacts to species and habitats, but not affecting ecosystem function.	• Comply with regulatory requirements for the prevention of vessel collisions and safety and emergency arrangements. • Consult with relevant persons so that other marine users are informed and aware, reducing the likelihood of a collision. • Establish temporary exclusion zones around vessels which are communicated to marine users to reduce the likelihood of collision. • Spill response arrangements supporting the OPEP will be tested to ensure the OPEP can be implemented as planned. • Emergency response activities would be implemented in line with the OPEP.

Potential Impact/Risk	Description of Source of Potential Impact/Risk	Description of Potential Impact/Risk	Proposed Mitigation and/or Management Measure
Unplanned hydrocarbon release - bunkering	Accidental loss of hydrocarbons to the marine environment during planned bunkering/refuelling may occur caused by partial or total failure of a bulk transfer hose or fittings due to operational stress or other integrity issues.	• The biological consequences of such a small volume spill on identified open water sensitive receptors relate to the potential for slight impacts to megafauna, plankton and fish populations that are within the spill-affected area.	• Preventing unplanned hydrocarbon release due to bunkering. • Comply with regulatory requirements for the prevention of marine pollution. • Appropriate bunkering equipment kept and maintained. • Compliance with Contractor procedures for the management of bunkering/ helicopter operations to reduce the likelihood and potential severity of a spill.
Unplanned discharge: deck spills	Accidental discharge of hydrocarbons/ chemicals from MODU or project vessel deck activities and equipment (such as cranes and winches).	• Unplanned discharges of non-process chemicals and hydrocarbons may decrease the water quality in the immediate vicinity of the release. Only small volumes (approximately <100 L) would be expected to potentially occur, resulting in very short-term impacts to water quality, and limited to the immediate release location. • No significant impacts from the accidental discharges described would be anticipated due to the offshore/open water locations, low sensitivity of surrounding water quality and high level of dilution into the open water marine environment of the Operational Area.	• Comply with regulatory requirements for the prevention of marine pollution. • Liquid chemical and fuel storage areas are bunded or secondarily contained when they are not being handled/moved temporarily. • Maintain and locate spill kits in close proximity to hydrocarbon storage areas and deck areas for use to contain and recover deck spills.
Unplanned discharge of solid hazardous / non-hazardous solid waste / equipment	• Accidental loss of hazardous or non-hazardous wastes (including dropped objects) to the marine environment. • Generation and disposal of waste from well infrastructure removal. • Dropped objects resulting in disturbance of benthic habitat.	• The potential impacts of hazardous or non-hazardous solid wastes and 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. • Incorrect classification of waste can also result in inappropriate disposal of hazardous decommissioning wastes that could contaminate non-hazardous waste streams. This has the potential to result in contamination to air, soil and water during disposal. • In the unlikely event of loss of an object being dropped into the marine environment, potential environmental effects would be limited to localised physical impacts on benthic communities.	• Comply with regulatory requirements for the prevention of marine pollution and handling of hazardous wastes. • Disposal of waste associated with the subsea infrastructure will comply with relevant State and Commonwealth legislation. • Project vessel waste arrangements which require waste segregation, recording and safe handling of waste according to their hazard and recyclability class. • Solid waste/equipment dropped into the marine environment will be recovered where safe and practicable to do so. • The project vessels' work procedures for lifts, bulk transfers and cargo loading which require safe lifting and management of loads. • Implementation of an infrastructure disposal and resource recovery strategy that tracks waste, considers the waste hierarchy and considers contingency procedures for dealing with contaminants.

Potential Impact/Risk	Description of Source of Potential Impact/Risk	Description of Potential Impact/Risk	Proposed Mitigation and/or Management Measure
Physical presence: vessel collision with marine fauna	• Vessel movements have the potential to result in collisions between project vessel (hull and propellers) and marine fauna. • Project vessels would typically be stationary or moving at low speeds when undertaking the activity.	• Given the absence of aggregations, duration of activities within the Operational Area and the slow speeds at which project vessels operate, collisions with cetaceans, marine turtles and whale sharks are considered highly unlikely. • Collisions between vessels and marine fauna may result in injury to, or death of, marine fauna.	• Comply with regulatory requirements for interactions with marine fauna to reduce the likelihood of a collision occurring.
Accidental introduction of invasive marine species (IMS)	• Project vessels have the potential to introduce IMS to the Operational Area through marine biofouling (containing IMS) on vessels, as well as within high-risk ballast water exchange.	• The likelihood of IMS being introduced and establishing viable populations within these Operational Area or immediate surrounds is considered remote. • Introduction of IMS may result in changes to the ecology of the Operational Area and competition with existing biota.	• Project vessels will manage their ballast water using one of the approved ballast water management options, as outlined in the Australian Ballast Water Management Requirements. • Woodside's IMS risk assessment process will be applied to project vessels and immersible equipment undertaking the activities.

Feedback

Woodside consults relevant persons in the course of preparing Environment Plans to notify them of the activity and to obtain relevant feedback to inform its planning for proposed petroleum activities in the region.

If you would like to comment on the proposed activities outlined in this information sheet please contact Woodside before **30 October 2024** via:

E: Consultation@feedback.woodside.com

Phone: 1800 442 977

You can subscribe on our website to receive Consultation Information Sheets for proposed activities:

www.woodside.com/what-we-do/consultation-activities.

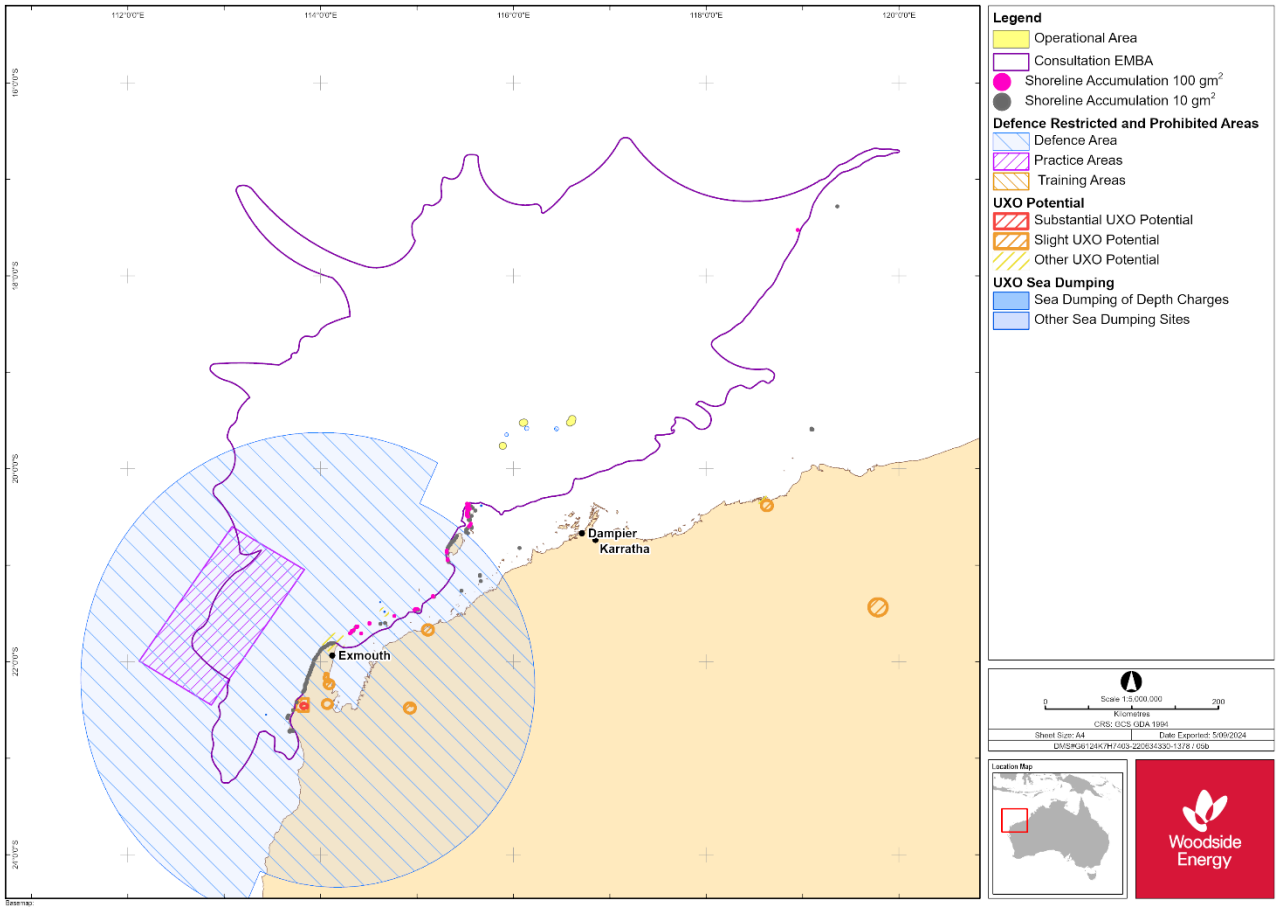
Please note that stakeholder feedback will be communicated to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) as required under legislation. Woodside will communicate any material changes to the proposed activity to affected relevant persons as relevant and appropriate.

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 submissions associated with the planned activities (which may or may not be confidential).

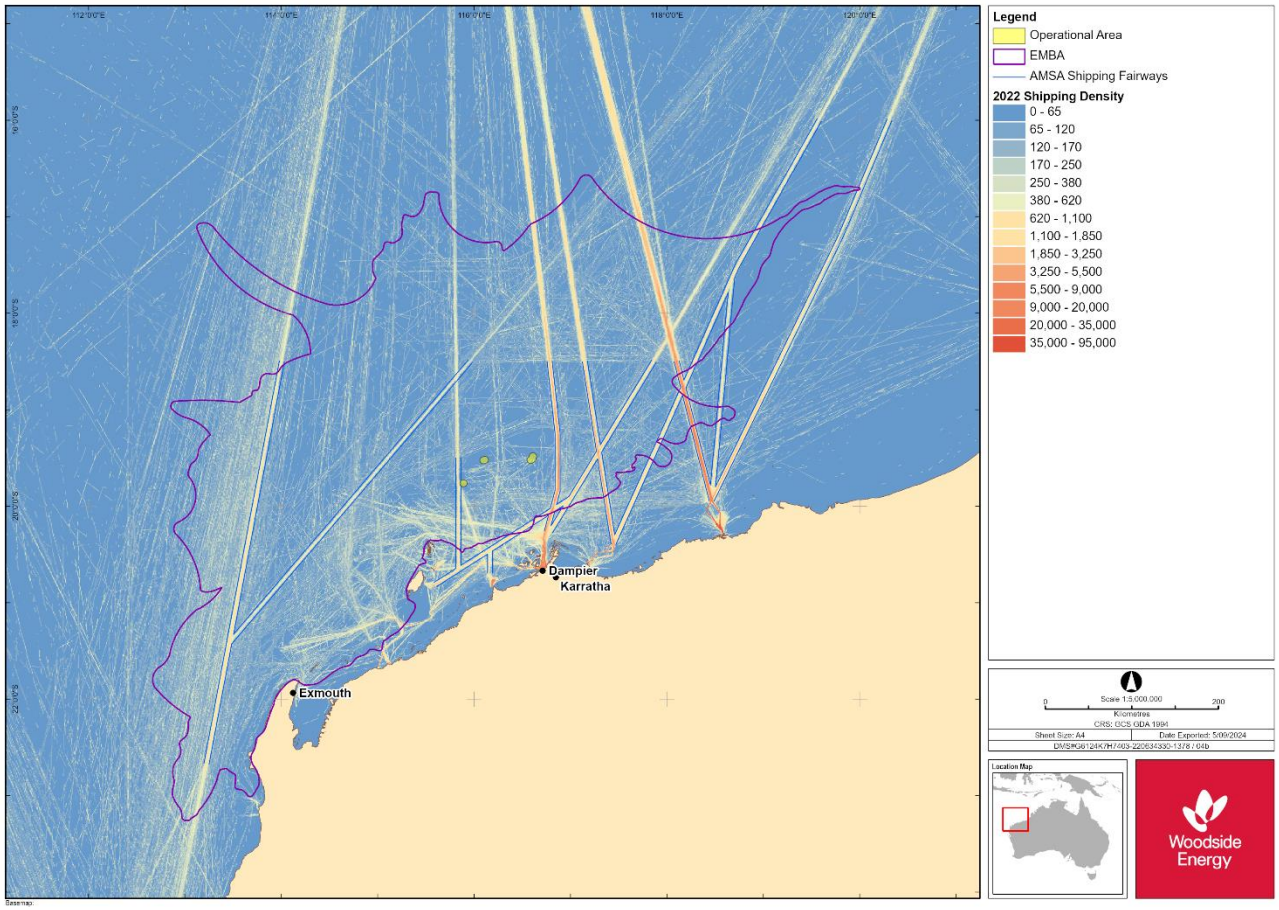
Please let us know if you request that particular information that you provide in the consultation not be published. If so, we will make your request known to NOPSEMA.

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

6.1.4 Defence zones map



6.1.5 Vessel density map



6.1.6 Shipwrecks

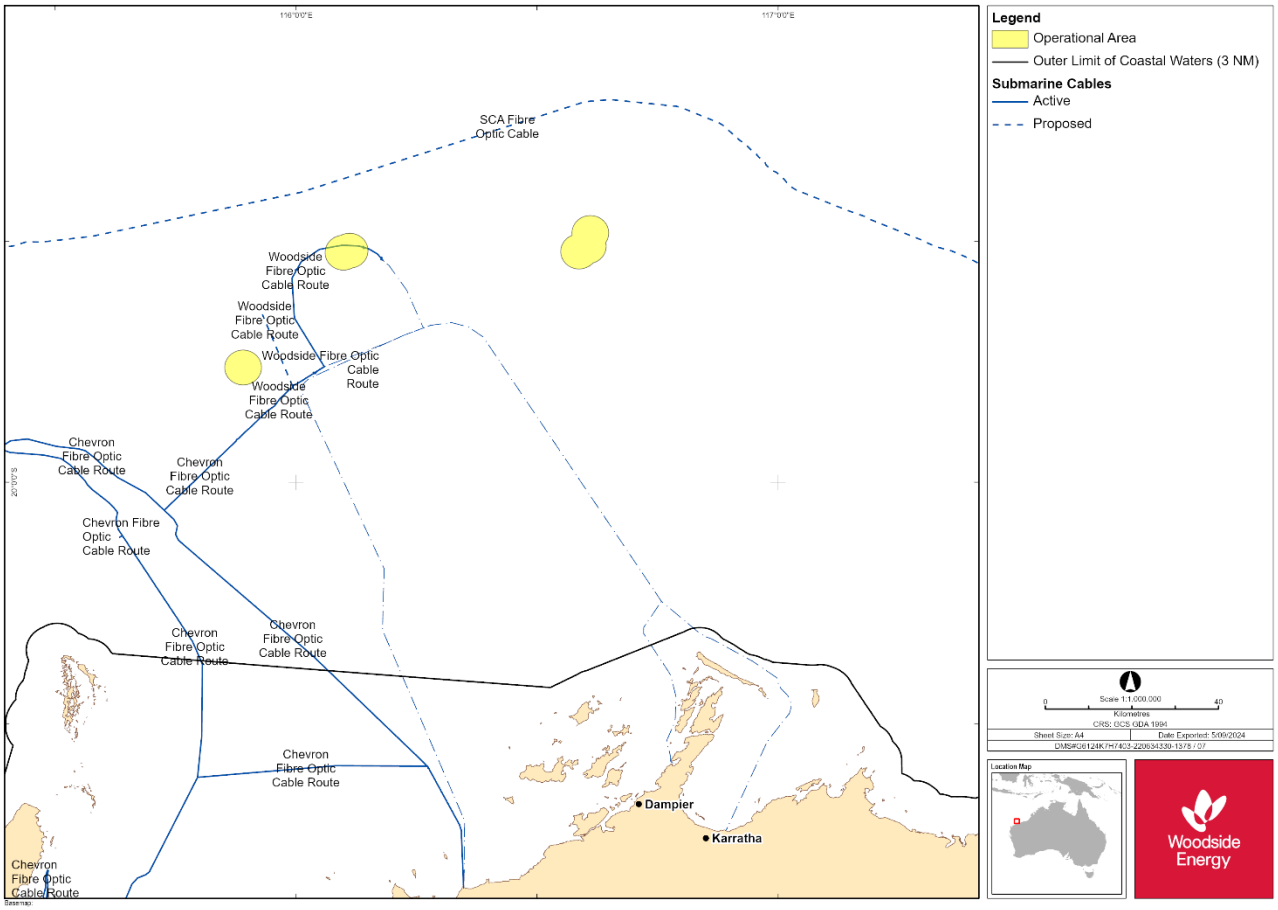
North West Shelf Phase 1 Well Plug and Abandonment and TPA03 Well Intervention Environment Plan – Commonwealth Shipwrecks

Vessel Name	Vessel Type	When Lost	Where Lost	Latitude	Longitude
Agnes	Sailing vessel	1893	Exmouth Gulf	-21.75	114.0833333
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
Curlew	Sailing vessel	1911	At Onslow, Monte Bellos Group	-20	115.1666667
Don Joseph	Sailing vessel	1899	6.5 Kilometres North of Point Cloates	-22.61666667	113.6
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
Fairy Queen	Sailing vessel	1875	Exmouth N W Cape	-21.81715	114.1891167
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
Haw Kiet	Unknown	2003		-18.45816667	117.2583333
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
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

Mabel	Sailing vessel	1893	Exmouth Gulf	-21.75	114.0833333
Marietta	Unknown	1905	Barrow Island	-20	115.1666667
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
Norwegian Bay Unidentified Barge	Barge		Off Norwegian Bay Whaling Station	-22.592436	113.670572
Norwegian Bay Whaling Station boat		1990	10 m N of whaling station jetty	-22.59274583	113.6715683
Occator	Sailing vessel	1856	Around 55 kilometres south of the Cape at Carbaddaman Passage	-22.41666667	113.6833333
Olive	Sailing vessel	1893	Exmouth Gulf	-21.75	114.0833333
Pearl	Sailing vessel	1896	Exmouth Gulf, Meda Creek	-21.75	114.0833333
Perth	Twin screw steamer	1887	Point Cloates	-22.69246667	113.6422667
Point Cloates Unidentified	Unknown		Near Correio da Azia site	-22.86343333	113.7506667
Queen	Sailing vessel	1891	Off Point Cloates	-22.55	113.5
Rapid	Sailing vessel	1811	Ningaloo Reef	-22.739438	113.692643
Ruby	Sailing vessel	1893	Exmouth Gulf	-21.75	114.0833333
S.S.S.	Unknown	1901	Off Point Cloates	-22.65	113.5833333
Sea Queen	Sailing vessel	1893	Exmouth Gulf	-21.75	114.0833333
Shunsei Maru	Unknown	1931	Carbaddaman Passage, north of Point Cloates	-22.41666667	113.6833333
Smuggler	Sailing vessel	1893	Exmouth Gulf	-21.75	114.0833333
Stefano	Sailing vessel	1875	Point Cloates	-22.82688333	113.7211833
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

Unidentified Lugger	Unknown	1893	Exmouth Gulf	-21.75	114.0833333
Veronica	Sailing vessel	1928	Sunday Island, Exmouth Gulf	-21.68333333	114.3833333
Vianen	Sailing vessel	1628	Barrow Island Area	-20	115.1666667
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

6.1.7 Submarine communication cables map



6.1.8 Email sent to Australasian Centre for Corporate Responsibility (ACCR), Australian Border Force (ABF), Australian Conservation Foundation (ACF), Australian Energy Producers (AEP), Australian Marine Conservation Society (AMCS), Australian Maritime Safety Authority (AMSA) – Marine Pollution, BP, Bounty Oil and Gas, Broome Chamber of Commerce and Industry (BCCI), Cape Conservation Group (CCG), Carbon CQ, Carnarvon Chamber of Commerce and Industry, Carnarvon Energy Ltd, City of Karratha, Coastal Oil and Gas, Conservation Council of WA (CCWA), Department of Biodiversity, Conservation and Attractions (DBCA),

Department of Energy, Mines, Industry Regulation and Safety (DEMIRS), Department of Industry, Science and Resources (DISR), Environs Kimberley, Exmouth Chamber of Commerce and Industry, Exmouth Community Liaison Group, Finder Energy, Friends of the Earth, Greenpeace Australia Pacific (GAP), InCapture, INPEX Alpha, Jadestone Energy, JX Nippon, KATO Energy , KUFPEC, Karratha Community Liaison Group, Karratha and Districts Chamber of Commerce and Industry, Kyushu Electric Wheatstone, Marine Tourism WA, Maritime Union of Australia (MUA), Market Forces, Mobil, Ningaloo Coast World Heritage Advisory Committee (NCWHAC), OMV Australia, Onslow Chamber of Commerce and Industry, PE Wheatstone, Pathfinder Energy, Pilbara Ports Authority, Port Hedland Chamber of Commerce and Industry, Protect Ningaloo, Recfishwest, Santos, Shire of Broome, Shire of Carnarvon, Shire of Exmouth, Skye Napoleon Pty Ltd, The Wilderness Society, Vermilion Energy, WA Game Fishing Association, Western Australian Marine Science Institution (WAMSI), Western Gas – 27 September 2024

Woodside is planning to submit the North West Shelf (NWS) Phase 1 Well Plug and Abandonment and TPA03 Well Intervention Environment Plan (EP) which involves the permanent plug and abandonment (P&A) of five NWS production wells located in proposed activities in Production Licenses WA-1-L, WA-3-L and the well intervention of the TPA03 production well in WA-5-L. The activities are located in Commonwealth waters around Woodside's existing Angel and Goodwyn production facilities, with the closest well to shore approximately 125 kilometres (km) north of Dampier, Western Australia.

Overview

The activities under the NWS Phase 1 Well P&A and TPA03 Well Intervention EP will be undertaken using a moored or hybrid (mooring and Dynamic Positioning (DP) capability) semi-submersible mobile offshore drilling unit (MODU) and associated support vessels in water depths between approximately 77 metres (m) to 128 m.

The proposed activity includes:

- The P&A of the AP 2, AP 3, and AP 4 wells in the Angel field. These wells tie back to the Angel platform. Production from these wells has ceased and the wells have been shut in. Well infrastructure (Christmas trees and wellheads) above the mudline will be removed following plugging of these wells. Wellheads may either be recovered during the P&A activities or temporarily placed on the seabed for later recovery. If Angel wellheads are not removed by the MODU, removal will be conducted under the Angel Subsea Infrastructure Removal EP.
- The P&A of the PER02 and PER04 wells in the Perseus-over-Goodwyn (PoG) field. These wells tie back to the Goodwyn platform. Production from these wells has ceased and the wells have been shut in. The Christmas trees may be removed following plugging of these wells. The trees may either be removed during the P&A activities or temporarily placed on the seabed for recovery later. Removal of the PER02 and PER04 wellheads above the mudline will be included in a separate future approval.
- Well intervention activities at the TPA03 well in the Tidepole field to remediate a down-hole valve and restore production from the lower reservoir. The well is currently shut in. Well start-up and production following intervention activities will be managed under the Goodwyn Alpha (GWA) Operations EP.

These activities are planned to commence around Q2 2025 and are expected to be completed at the end of Q4 2026.

Environment that May Be Affected (EMBA)
The EMBA is the largest area where activities could potentially have a direct or indirect impact on the environment. The broadest extent of the EMBA takes into consideration planned and unplanned activities, and for this EP, is determined by modelling a release of hydrocarbons from a loss of well control from either the PER02, AP3, or TPA03 wells. A release of this kind is highly unlikely to occur.

The EMBA models the merged area of many possible paths that a hydrocarbon release could travel depending on factors including the weather and ocean conditions at the time of the release. This means in the highly unlikely event a loss of well control does occur, the whole EMBA will not be affected.

A **Consultation Information Sheet** is attached, which provides additional background on the proposed activities including summaries of potential key impacts and risks and associated management measures. This is also available on our website. Here you can also subscribe to our newsletter *Let's Talk – Our Plans, Your Say* and to receive updates on our consultation activities.

Activity: North West Shelf (NWS) Phase 1 Well Plug and Abandonment (P&A) and TPA03 Well Intervention EP

North West Shelf (NWS) Phase 1 Well Plug and Abandonment (P&A) and TPA03 Well Intervention Environment Plan	
Summary	Permanent plugging and abandonment of five NWS production wells, and well intervention on the TPA03 production well
Permit Area	Production Licenses WA-1-L, WA-3-L and WA-5-L
Location	AP2 - 19° 29' 55" S, 116° 35' 53" E AP3 - 19° 29' 0" S, 116° 36' 37" E AP4 - 19° 30' 38" S, 116° 36' 19" E PER02 - 19° 31' 12" S, 116° 06' 39" E PER04 - 19° 31' 07" S, 116° 05' 54" E TPA03 - 19° 45' 44" S, 115° 53' 24" E
Approx. Water Depth (m)	77-128 m
Timing	Expected commencement date: Q2 2025 Expected finish date: Q4 2026
Duration	NWS Phase 1 Well P&A: • Preparatory activities: approximately 7–10 days per well • P&A: approximately 19–33 days per well

	• Removal of well infrastructure: approximately 1–5 days per well • Recovery of ancillary equipment (e.g. mooring recovery): approximately 1–2 days. TPA03 Well Intervention: • Approximately 5–14 days.
Operational Area/exclusion zones	• Operational area: 4000 m around each well • Temporary exclusion zone: 500 m around the MODU.
Infrastructure	• AP 2, AP 3, and AP 4 production wells in the Angel field • PER02 and PER04 production wells in the Perseus-over-Goodwyn (PoG) field • TPA03 production well in the Tidepole field.
Vessels	MODU, support vessels and helicopters.

Feedback
If you have feedback specific to the proposed activities described under the proposed EP, we welcome your feedback via email at consultation@feedback.woodside.com, via phone call at 1800 442 977 or via the feedback form on our website by **30 October 2024.**

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.

The National Offshore Petroleum Safety and Environmental Management Authority (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 Consultation

6.1.9 Email sent to Aquaculture Council of Western Australia – 21 November 2024

I am following up on your conversation with [Individual 1] on Tuesday on a Woodside decommissioning activity and our Environment Plan consultation.

Woodside is planning to submit the North West Shelf (NWS) Phase 1 Well Plug and Abandonment and TPA03 Well Intervention Environment Plan (EP) which involves the permanent plug and abandonment (P&A) of five NWS production wells located in Production Licenses WA-1-L, WA-3-L and the well intervention of the TPA03 production well in WA-5-L. The activities are located in Commonwealth waters around Woodside's existing Angel and Goodwyn production facilities, with the closest well to shore approximately 125 kilometres (km) north of Dampier, Western Australia.

Overview

The activities under the NWS Phase 1 Well P&A and TPA03 Well Intervention EP will be undertaken using a moored or hybrid (mooring and Dynamic Positioning (DP) capability) semi-submersible mobile offshore drilling unit (MODU) and associated support vessels in water depths between approximately 80 metres (m) to 128 m.

The proposed activity includes:

- The P&A of the AP 2, AP 3, and AP 4 wells in the Angel field. These wells tie back to the Angel platform. Production from these wells has ceased and the wells have been shut in. Well infrastructure (Christmas trees and wellheads) above the mudline will be removed following plugging of these wells. Wellheads may either be recovered during the P&A activities or temporarily placed on the seabed for later recovery. If Angel wellheads are not removed by the MODU, removal will be conducted under the Angel Subsea Infrastructure Removal EP.
- The P&A of the PER02 and PER04 wells in the Perseus-over-Goodwyn (PoG) field. These wells tie back to the Goodwyn platform. Production from these wells has ceased and the wells have been shut in. The Christmas trees may be removed following plugging of these wells. The trees may either be removed during the P&A activities or temporarily placed on the seabed for recovery later. Removal of the PER02 and PER04 wellheads above the mudline will be included in a separate future approval.
- Well intervention activities at the TPA03 well in the Tidepole reservoir to remediate a down-hole valve and restore production from the lower reservoir. The well is currently shut in. Well start-up and production following intervention activities will be managed under the Goodwyn Alpha (GWA) Operations EP.

These activities are planned to commence around Q2 2025 and are expected to be completed at the end of Q4, 2026.

Operational area / exclusion zones

The activity Operational Area will consist of a 4000 m radius around each well. This area is where the MODU and activity vessels can be expected to be operating whilst undertaking P&A and well intervention activities There are no restrictions to other vessels within the Operational Area apart from being advised to take care. A temporary 500 m exclusion zone will be established around the MODU while undertaking activities at each well location. The exclusion zone is established for navigational safety and fishing vessels are not allowed to enter the exclusion zone.

Environment that May Be Affected (EMBA)

The EMBA is the largest area where activities could potentially have a direct or indirect impact on the environment. The broadest extent of the EMBA takes into consideration

planned and unplanned activities, and for this EP, is determined by modelling a release of hydrocarbons from a loss of well control from either the PER02, AP3, or TPA03. A release of this kind is highly unlikely to occur.

The EMBA models the merged area of many possible paths that a hydrocarbon release could travel depending on factors including the weather and ocean conditions at the time of the release. This means in the highly unlikely event a loss of well control does occur, the whole EMBA will not be affected.

A **Consultation Information Sheet** is attached, which provides additional background on the proposed activities including summaries of potential key impacts and risks and associated management measures. This is also available on our website. Here you can also subscribe to our newsletter *Let's Talk – Our Plans, Your Say* and to receive updates on our consultation activities.

Woodside is providing this information to the Aquaculture Council of Western Australia as our mapping data shows the EMBA for this EP overlaps with pearl farm leases in the Montebello Islands and an aquaculture site in the Mackerel Islands.

Please let us know if you require notification prior to and on completion of the proposed activities.

Activity: North West Shelf (NWS) Phase 1 Well Plug and Abandonment (P&A) and TPA03 Well Intervention EP

North West Shelf (NWS) Phase 1 Well Plug and Abandonment (P&A) and TPA03 Well Intervention Environment Plan	
Summary	Permanent plugging and abandonment of five NWS production wells, and well intervention on the TPA03 production well
Permit Area	Production Licenses WA-1-L, WA-3-L and WA-5-L
Location	AP2 - 19° 28' 59" S, 116° 36' 37" E AP3 - 19° 30' 38" S, 116° 36' 18" E AP4 - 19° 31' 18" S, 116° 35' 13" E PER02 - 19° 31' 11" S, 116° 6' 39" E PER 04 - 19° 31' 26" S, 116° 5' 53" E TPA03 - 19° 45' 43" S, 115° 53' 23" E
Approx. Water Depth (m)	80-128 m
Timing	Expected commencement date: Q2 2025 Expected finish date: Q4 2026
Duration	NWS Phase 1 Well P&A: • Preparatory activities: approximately 7–10 days per well • P&A: approximately 19–33 days per well • Removal of well infrastructure: approximately 1–5 days per well

	• Recovery of ancillary equipment (e.g. mooring recovery): approximately 1–2 days. TPA03 Well Intervention: • Approximately 5–14 days.
Operational Area / exclusion zones	• Operational area: 4000 m around each well • Temporary exclusion zone: 500 m around the MODU.
Infrastructure	• AP 2, AP 3, and AP 4 production wells in the Angel field • PER02 and PER04 production wells in the Perseus-over-Goodwyn (PoG) field • TPA03 production well in the Tidepole field.
Vessels	MODU, support vessels and helicopters.

Feedback
If you have feedback specific to the proposed activities described under the proposed EP, we welcome your feedback via email at Consultation@feedback.woodside.com, via phone call at 1800 442 977 or via the feedback form on our website by **21 December 2024.**

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 so that the information is not included when the EP is published on NOPSEMA's website.

The National Offshore Petroleum Safety and Environmental Management Authority (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 Consultation

6.1.10 Email sent to Australian Hydrographic Office (AHO) – 27 September 2024

Woodside is planning to submit the North West Shelf (NWS) Phase 1 Well Plug and Abandonment and TPA03 Well Intervention Environment Plan (EP) which involves the permanent plug and abandonment (P&A) of five NWS production wells located in Production Licenses WA-1-L, WA-3-L and the well intervention of the TPA03 production well in WA-5-L. The activities are located in Commonwealth waters around Woodside's existing Angel and

Goodwyn production facilities, with the closest well to shore approximately 125 kilometres (km) north of Dampier, Western Australia.

Overview
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The proposed activity includes:

- The P&A of the AP 2, AP 3, and AP 4 wells in the Angel field. These wells tie back to the Angel platform. Production from these wells has ceased and the wells have been shut in. Well infrastructure (Christmas trees and wellheads) above the mudline will be removed following plugging of these wells. Wellheads may either be recovered during the P&A activities or temporarily placed on the seabed for later recovery. If Angel wellheads are not removed by the MODU, removal will be conducted under the Angel Subsea Infrastructure Removal EP.
- The P&A of the PER02 and PER04 wells in the Perseus-over-Goodwyn (PoG) field. These wells tie back to the Goodwyn platform. Production from these wells has ceased and the wells have been shut in. The Christmas trees may be removed following plugging of these wells. The trees may either be removed during the P&A activities or temporarily placed on the seabed for recovery later. Removal of the PER02 and PER04 wellheads above the mudline will be included in a separate future approval.
- Well intervention activities at the TPA03 well in the Tidepole field to remediate a down-hole valve and restore production from the lower reservoir. The well is currently shut in. Well start-up and production following intervention activities will be managed under the Goodwyn Alpha (GWA) Operations EP.

These activities are planned to commence around Q2 2025 and are expected to be completed at the end of Q4 2026.

Environment that May Be Affected (EMBA)
The EMBA is the largest area where activities could potentially have a direct or indirect impact on the environment. The broadest extent of the EMBA takes into consideration planned and unplanned activities, and for this EP, is determined by modelling a release of hydrocarbons from a loss of well control from either the PER02, AP3, or TPA03 wells. A release of this kind is highly unlikely to occur.

The EMBA models the merged area of many possible paths that a hydrocarbon release could travel depending on factors including the weather and ocean conditions at the time of the release. This means in the highly unlikely event a loss of well control does occur, the whole EMBA will not be affected.

A **Consultation Information Sheet** is attached, which provides additional background on the proposed activities including summaries of potential key impacts and risks and associated management measures. This is also available on our website. Here you can also subscribe to our newsletter *Let's Talk – Our Plans, Your Say* and to receive updates on our consultation activities.

Please also find attached a vessel density map and a GIS Shape File.

Activity: North West Shelf (NWS) Phase 1 Well Plug and Abandonment (P&A) and TPA03 Well Intervention EP

North West Shelf (NWS) Phase 1 Well Plug and Abandonment (P&A) and TPA03 Well Intervention Environment Plan	
Summary	Permanent plugging and abandonment of five NWS production wells, and well intervention on the TPA03 production well
Permit Area	Production Licenses WA-1-L, WA-3-L and WA-5-L
Location	AP2 - 19° 29’ 55” S, 116° 35’ 53” E AP3 - 19° 29’ 0” S, 116° 36’ 37” E AP4 - 19° 30’ 38” S, 116° 36’ 19” E PER02 - 19° 31’ 12” S, 116° 06’ 39” E PER04 - 19° 31’ 07” S, 116° 05’ 54” E TPA03 - 19° 45’ 44” S, 115° 53’ 24” E
Approx. Water Depth (m)	77-128 m
Timing	Expected commencement date: Q2 2025 Expected finish date: Q4 2026
Duration	NWS Phase 1 Well P&A: • Preparatory activities: approximately 7–10 days per well • P&A: approximately 19–33 days per well • Removal of well infrastructure: approximately 1–5 days per well • Recovery of ancillary equipment (e.g. mooring recovery): approximately 1–2 days. TPA03 Well Intervention: • Approximately 5–14 days.
Operational Area/exclusion zones	• Operational area: 4000 m around each well • Temporary exclusion zone: 500 m around the MODU.
Infrastructure	• AP 2, AP 3, and AP 4 production wells in the Angel field • PER02 and PER04 production wells in the Perseus-over-Goodwyn (PoG) field • TPA03 production well in the Tidepole field.
Vessels	MODU, support vessels and helicopters.

Feedback

If you have feedback specific to the proposed activities described under the proposed EP, we welcome your feedback via email at consultation@feedback.woodside.com, via phone call at 1800 442 977 or via the feedback form on our website by **30 October 2024.**

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
Woodside Energy Consultation

6.1.11 Email sent to Australian Maritime Safety Authority (AMSA) - Marine Safety – 27 September 2024

Woodside is planning to submit the North West Shelf (NWS) Phase 1 Well Plug and Abandonment and TPA03 Well Intervention Environment Plan (EP) which involves the permanent plug and abandonment (P&A) of five NWS production wells located in Production Licenses WA-1-L, WA-3-L and the well intervention of the TPA03 production well in WA-5-L. The activities are located in Commonwealth waters around Woodside's existing Angel and Goodwyn production facilities, with the closest well to shore approximately 125 kilometres (km) north of Dampier, Western Australia.

Overview
The activities under the NWS Phase 1 Well P&A and TPA03 Well Intervention EP will be undertaken using a moored or hybrid (mooring and Dynamic Positioning (DP) capability) semi-submersible mobile offshore drilling unit (MODU) and associated support vessels in water depths between approximately 77 metres (m) to 128 m.

The proposed activity includes:

- The P&A of the AP 2, AP 3, and AP 4 wells in the Angel field. These wells tie back to the Angel platform. Production from these wells has ceased and the wells have been shut in. Well infrastructure (Christmas trees and wellheads) above the mudline will be removed following plugging of these wells. Wellheads may either be recovered during the P&A activities or temporarily placed on the seabed for later recovery. If Angel wellheads are not removed by the MODU, removal will be conducted under the Angel Subsea Infrastructure Removal EP.

- The P&A of the PER02 and PER04 wells in the Perseus-over-Goodwyn (PoG) field. These wells tie back to the Goodwyn platform. Production from these wells has ceased and the wells have been shut in. The Christmas trees may be removed following plugging of these wells. The trees may either be removed during the P&A activities or temporarily placed on the seabed for recovery later. Removal of the PER02 and PER04 wellheads above the mudline will be included in a separate future approval.
- Well intervention activities at the TPA03 well in the Tidepole field to remediate a down-hole valve and restore production from the lower reservoir. The well is currently shut in. Well start-up and production following intervention activities will be managed under the Goodwyn Alpha (GWA) Operations EP.

These activities are planned to commence around Q2 2025 and are expected to be completed at the end of Q4 2026.

Environment that May Be Affected (EMBA)
The EMBA is the largest area where activities could potentially have a direct or indirect impact on the environment. The broadest extent of the EMBA takes into consideration planned and unplanned activities, and for this EP, is determined by modelling a release of hydrocarbons from a loss of well control from either the PER02, AP3, or TPA03 wells. A release of this kind is highly unlikely to occur.

The EMBA models the merged area of many possible paths that a hydrocarbon release could travel depending on factors including the weather and ocean conditions at the time of the release. This means in the highly unlikely event a loss of well control does occur, the whole EMBA will not be affected.

A **Consultation Information Sheet** is attached, which provides additional background on the proposed activities including summaries of potential key impacts and risks and associated management measures. This is also available on our website. Here you can also subscribe to our newsletter *Let's Talk – Our Plans, Your Say* and to receive updates on our consultation activities.

Please also find attached a vessel density map and GIS shape files.

Please note that Woodside will:
- Notify the AHO no less than 4 weeks before operations commence,
- Notify AMSA's JRCC at least 24-48 hours before operations commence,
- Notify AMSA's JRCC when operations end,
- 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,
- Evaluate and implement adequate anti-collision measures including but not limited to installation of Automatic Identification System (AIS) units, offshore guard vessel/s that can monitor traffic, and additional warnings and/or lights to attract attention.

Activity: North West Shelf (NWS) Phase 1 Well Plug and Abandonment (P&A) and TPA03 Well Intervention EP

North West Shelf (NWS) Phase 1 Well Plug and Abandonment (P&A) and TPA03 Well Intervention Environment Plan	
Summary	Permanent plugging and abandonment of five NWS production wells, and well intervention on the TPA03 production well
Permit Area	Production Licenses WA-1-L, WA-3-L and WA-5-L
Location	AP2 - 19° 29’ 55” S, 116° 35’ 53” E AP3 - 19° 29’ 0” S, 116° 36’ 37” E AP4 - 19° 30’ 38” S, 116° 36’ 19” E PER02 - 19° 31’ 12” S, 116° 06’ 39” E PER04 - 19° 31’ 07” S, 116° 05’ 54” E TPA03 - 19° 45’ 44” S, 115° 53’ 24” E
Approx. Water Depth (m)	77-128 m
Timing	Expected commencement date: Q2 2025 Expected finish date: Q4 2026
Duration	NWS Phase 1 Well P&A: • Preparatory activities: approximately 7–10 days per well • P&A: approximately 19–33 days per well • Removal of well infrastructure: approximately 1–5 days per well • Recovery of ancillary equipment (e.g. mooring recovery): approximately 1–2 days. TPA03 Well Intervention: • Approximately 5–14 days.
Operational Area/exclusion zones	• Operational area: 4000 m around each well • Temporary exclusion zone: 500 m around the MODU.
Infrastructure	• AP 2, AP 3, and AP 4 production wells in the Angel field • PER02 and PER04 production wells in the Perseus-over-Goodwyn (PoG) field • TPA03 production well in the Tidepole field.
Vessels	MODU, support vessels and helicopters.

Feedback

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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
Woodside Energy Consultation

6.1.12 Email sent to Australian Communication Media Authority (ACMA) and Telstra – 27 September 2024

Woodside is planning to submit the North West Shelf (NWS) Phase 1 Well Plug and Abandonment and TPA03 Well Intervention Environment Plan (EP) which involves the permanent plug and abandonment (P&A) of five NWS production wells located in Production Licenses WA-1-L, WA-3-L and the well intervention of the TPA03 production well in WA-5-L. The activities are located in Commonwealth waters around Woodside's existing Angel and Goodwyn production facilities, with the closest well to shore approximately 125 kilometres (km) north of Dampier, Western Australia.

Overview
The activities under the NWS Phase 1 Well P&A and TPA03 Well Intervention EP will be undertaken using a moored or hybrid (mooring and Dynamic Positioning (DP) capability) semi-submersible mobile offshore drilling unit (MODU) and associated support vessels in water depths between approximately 77 metres (m) to 128 m.

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- The P&A of the PER02 and PER04 wells in the Perseus-over-Goodwyn (PoG) field. These wells tie back to the Goodwyn platform. Production from these wells has ceased and the wells have been shut in. The Christmas trees may be removed following plugging of these wells. The trees may either be removed during the P&A

activities or temporarily placed on the seabed for recovery later. Removal of the PER02 and PER04 wellheads above the mudline will be included in a separate future approval.
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A **Consultation Information Sheet** is attached, which provides additional background on the proposed activities including summaries of potential key impacts and risks and associated management measures. This is also available on our website. Here you can also subscribe to our newsletter *Let's Talk – Our Plans, Your Say* and to receive updates on our consultation activities.

Please also find attached a map of the submarine communication cables in the vicinity of the operational area.

Activity: North West Shelf (NWS) Phase 1 Well Plug and Abandonment (P&A) and TPA03 Well Intervention EP

North West Shelf (NWS) Phase 1 Well Plug and Abandonment (P&A) and TPA03 Well Intervention Environment Plan	
Summary	Permanent plugging and abandonment of five NWS production wells, and well intervention on the TPA03 production well
Permit Area	Production Licenses WA-1-L, WA-3-L and WA-5-L
Location	AP2 - 19° 29' 55" S, 116° 35' 53" E AP3 - 19° 29' 0" S, 116° 36' 37" E AP4 - 19° 30' 38" S, 116° 36' 19" E PER02 - 19° 31' 12" S, 116° 06' 39" E PER04 - 19° 31' 07" S, 116° 05' 54" E TPA03 - 19° 45' 44" S, 115° 53' 24" E

Approx. Water Depth (m)	77-128 m
Timing	Expected commencement date: Q2 2025 Expected finish date: Q4 2026
Duration	NWS Phase 1 Well P&A: • Preparatory activities: approximately 7–10 days per well • P&A: approximately 19–33 days per well • Removal of well infrastructure: approximately 1–5 days per well • Recovery of ancillary equipment (e.g. mooring recovery): approximately 1–2 days. TPA03 Well Intervention: • Approximately 5–14 days.
Operational Area/exclusion zones	• Operational area: 4000 m around each well • Temporary exclusion zone: 500 m around the MODU.
Infrastructure	• AP 2, AP 3, and AP 4 production wells in the Angel field • PER02 and PER04 production wells in the Perseus-over-Goodwyn (PoG) field • TPA03 production well in the Tidepole field.
Vessels	MODU, support vessels and helicopters.

Feedback

If you have feedback specific to the proposed activities described under the proposed EP, we welcome your feedback via email at consultation@feedback.woodside.com, via phone call at 1800 442 977 or via the feedback form on our website by **30 October 2024.**

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.

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Regards
Woodside Energy Consultation

6.1.13 Email sent to DAFF - Biosecurity – 27 September 2024

Woodside is planning to submit the North West Shelf (NWS) Phase 1 Well Plug and Abandonment and TPA03 Well Intervention Environmental Plan (EP) which involves the permanent plug and abandonment (P&A) of five NWS production wells located in Production Licenses WA-1-L, WA-3-L and the well intervention of the TPA03 production well in WA-5-L. The activities are located in Commonwealth waters around Woodside's existing Angel and Goodwyn production facilities, with the closest well to shore approximately 125 kilometres (km) north of Dampier, Western Australia.

Overview

The activities under the NWS Phase 1 Well P&A and TPA03 Well Intervention EP will be undertaken using a moored or hybrid (mooring and Dynamic Positioning (DP) capability) semi-submersible mobile offshore drilling unit (MODU) and associated support vessels in water depths between approximately 78 metres (m) to 128 m.

The proposed activity includes:

- The P&A of the AP 2, AP 3, and AP 4 wells in the Angel reservoir. These wells tie back to the Angel platform. Production from these wells has ceased and the wells have been shut in. Well infrastructure (Christmas trees and wellheads) above the mudline will be removed following plugging of these wells. Wellheads may either be recovered during the P&A activities or temporarily placed on the seabed for later recovery. If Angel wellheads are not removed by the MODU, removal will be conducted under the Angel Subsea Infrastructure Removal EP.
- The P&A of the PER02 and PER04 wells in the Perseus-over-Goodwyn (PoG) field. These wells tie back to the Goodwyn platform. Production from these wells has ceased and the wells have been shut in. The Christmas trees may be removed following plugging of these wells. The trees may either be removed during the P&A activities or temporarily placed on the seabed for recovery later. Removal of the PER02 and PER04 wellheads above the mudline will be included in a separate future approval.
- Well intervention activities at the TPA03 well in the Tidepole reservoir to remediate a down-hole valve and restore production from the lower reservoir. The well is currently shut in. Well start-up and production following intervention activities will be managed under the Goodwyn Alpha (GWA) Operations EP.

These activities are planned to commence around Q2 2025 and are expected to be completed at the end of Q4, 2026.

Operational area / exclusion zones

The activity Operational Area will consist of a 4000 m radius around each well. This area is where the MODU and activity vessels can be expected to be operating whilst undertaking P&A and well intervention activities. There are no restrictions to other vessels within the Operational Area apart from being advised to take care. A temporary 500 m exclusion zone will be

established around the MODU while undertaking activities at each well location. The exclusion zone is established for navigational safety and fishing vessels are not allowed to enter.

Environment that May Be Affected (EMBA)

The EMBA is the largest area where activities could potentially have a direct or indirect impact on the environment. The broadest extent of the EMBA takes into consideration planned and unplanned activities, and for this EP, is determined by modelling a release of hydrocarbons from a loss of well control from either the PER02, AP 3, or TPA03 wells. A release of this kind is highly unlikely to occur.

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Activity: North West Shelf (NWS) Phase 1 Well Plug and Abandonment (P&A) and TPA03 Well Intervention EP

North West Shelf (NWS) Phase 1 Well Plug and Abandonment (P&A) and TPA03 Well Intervention Environment Plan	
Summary	Permanent plugging and abandonment of five NWS production wells, and well intervention on the TPA03 production well
Permit Area	Production Licenses WA-1-L, WA-3-L and WA-5-L
Location	AP2 - 19° 29' 55" S, 116° 35' 53" E AP3 - 19° 29' 0" S, 116° 36' 37" E AP4 - 19° 30' 38" S, 116° 36' 19" E PER02 - 19° 31' 12" S, 116° 06' 39" E PER04 - 19° 31' 07" S, 116° 05' 54" E TPA03 - 19° 45' 44" S, 115° 53' 24" E
Approx. Water Depth (m)	77-128 m
Timing	Expected commencement date: Q2 2025 Expected finish date: Q4 2026
Duration	NWS Phase 1 Well P&A: • Preparatory activities: approximately 7–10 days per well • P&A: approximately 19–33 days per well

	• Removal of well infrastructure: approximately 1–5 days per well • Recovery of ancillary equipment (e.g. mooring recovery): approximately 1–2 days. TPA03 Well Intervention: • Approximately 5–14 days.
Operational area / exclusion zones	• Operational area: 4000 m around each well • Temporary exclusion zone: 500 m around the MODU.
Infrastructure	• AP 2, AP 3, and AP 4 production wells in the Angel field • PER02 and PER04 production wells in the Perseus-over-Goodwyn (PoG) field • TPA03 production well in the Tidepole field.
Vessels	MODU, support vessels and helicopters.
Commonwealth Fisheries	No Commonwealth managed fisheries active in Operational Areas. **Active in EMBA:** • North West Slope Trawl Fishery • Western Deepwater Trawl Fishery

Biosecurity

With respect to the biosecurity matters, please note the following information below:

Environment description	
The Operational Areas are located in Commonwealth waters within the North-west Marine Region (NWMR) in water depths of 77 - 128 m along the 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 relatively steep outer slope approximately 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.	
Potential IMS risk	***IMS mitigation management***
The introduction and establishment of invasive marine species has the potential to impact ecosystems/habitat, native species survival and socio-economic values, although the risk and impact assessment completed by Woodside identifies the likelihood of IMS introduction from various location potentials has remote or low likelihood of occurring.	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 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. Woodside recognises the requirement to manage biosecurity risk to domestic conveyances, the requirements under the Biosecurity Control Act 2015, and the mechanism for exemption under the Biosecurity (Exposed Conveyances - Exceptions from Biosecurity Control) Determination 2016. Woodside notes the specified timeframes for pre-arrival reporting using the Maritime and Aircraft Reporting System (MARS), and for submission of the supplied "Questionnaire for Biosecurity Exemptions for Biosecurity Control Determination". Woodside works closely with our suppliers and contractors to address the risks and assure awareness of the obligations outlined above.

Feedback

If you have feedback specific to the proposed activities described under the proposed EP, we welcome your feedback via email at Consultation@feedback.woodside.com, via phone call at 1800 442 977 or via the feedback form on our website by 4 November 2024.

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 so that the information is not included when the EP is published on NOPSEMA's website.

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6.1.14 Email sent to Chevron – 27 September 2024

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Overview
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Please also find attached a GIS Shape File.

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: North West Shelf (NWS) Phase 1 Well Plug and Abandonment (P&A) and TPA03 Well Intervention EP

North West Shelf (NWS) Phase 1 Well Plug and Abandonment (P&A) and TPA03 Well Intervention Environment Plan	
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Permit Area	Production Licenses WA-1-L, WA-3-L and WA-5-L
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Approx. Water Depth (m)	77-128 m
Timing	Expected commencement date: Q2 2025 Expected finish date: Q4 2026
Duration	NWS Phase 1 Well P&A:

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Operational Area/exclusion zones	• Operational area: 4000 m around each well • Temporary exclusion zone: 500 m around the MODU.
Infrastructure	• AP 2, AP 3, and AP 4 production wells in the Angel field • PER02 and PER04 production wells in the Perseus-over-Goodwyn (PoG) field • TPA03 production well in the Tidepole field.
Vessels	MODU, support vessels and helicopters.

Feedback
If you have feedback specific to the proposed activities described under the proposed EP, we welcome your feedback via email at consultation@feedback.woodside.com, via phone call at 1800 442 977 or via the feedback form on our website by **30 October 2024.**

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.

The National Offshore Petroleum Safety and Environmental Management Authority (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 Consultation

6.1.15 Email sent to Australian Fisheries Management Authority (AFMA), Commonwealth Fisheries Association (CFA), North West Slope Trawl Fishery and Western Deepwater Trawl Fishery licence holders – 27 September 2024

Woodside is planning to submit the North West Shelf (NWS) Phase 1 Well Plug and Abandonment and TPA03 Well Intervention Environment Plan (EP) which involves the permanent plug and abandonment (P&A) of five NWS production wells located in Production Licenses WA-1-L, WA-3-L and the well intervention of the TPA03 production well in WA-5-L. The activities are located in Commonwealth waters around Woodside's existing Angel and Goodwyn production facilities, with the closest well to shore approximately 125 kilometres (km) north of Dampier, Western Australia.

Overview

The activities under the NWS Phase 1 Well P&A and TPA03 Well Intervention EP will be undertaken using a moored or hybrid (mooring and Dynamic Positioning (DP) capability) semi-submersible mobile offshore drilling unit (MODU) and associated support vessels in water depths between approximately 77 metres (m) to 128 m.

The proposed activity includes:

- The P&A of the AP 2, AP 3, and AP 4 wells in the Angel field. These wells tie back to the Angel platform. Production from these wells has ceased and the wells have been shut in. Well infrastructure (Christmas trees and wellheads) above the mudline will be removed following plugging of these wells. Wellheads may either be recovered during the P&A activities or temporarily placed on the seabed for later recovery. If Angel wellheads are not removed by the MODU, removal will be conducted under the Angel Subsea Infrastructure Removal EP.
- The P&A of the PER02 and PER04 wells in the Perseus-over-Goodwyn (PoG) field. These wells tie back to the Goodwyn platform. Production from these wells has ceased and the wells have been shut in. The Christmas trees may be removed following plugging of these wells. The trees may either be removed during the P&A activities or temporarily placed on the seabed for recovery later. Removal of the PER02 and PER04 wellheads above the mudline will be included in a separate future approval.
- Well intervention activities at the TPA03 well in the Tidepole reservoir to remediate a down-hole valve and restore production from the lower reservoir. The well is currently shut in. Well start-up and production following intervention activities will be managed under the Goodwyn Alpha (GWA) Operations EP.

These activities are planned to commence around Q2 2025 and are expected to be completed at the end of Q4, 2026.

Operational area / exclusion zones

The activity Operational Area will consist of a 4000 m radius around each well. This area is where the MODU and activity vessels can be expected to be operating whilst undertaking P&A and well intervention activities There are no restrictions to other vessels within the Operational Area apart from being advised to take care. A temporary 500 m exclusion zone will be established around the MODU while undertaking activities at each well location. The exclusion zone is established for navigational safety and fishing vessels are not allowed to enter the exclusion zone.

Environment that May Be Affected (EMBA)

The EMBA is the largest area where activities could potentially have a direct or indirect impact on the environment. The broadest extent of the EMBA takes into consideration planned and unplanned activities, and for this EP, is determined by modelling a release of

hydrocarbons from a loss of well control from either the PER02, AP3, or TPA03. A release of this kind is highly unlikely to occur.

The EMBA models the merged area of many possible paths that a hydrocarbon release could travel depending on factors including the weather and ocean conditions at the time of the release. This means in the highly unlikely event a loss of well control does occur, the whole EMBA will not be affected.

A **Consultation Information Sheet** is attached, which provides additional background on the proposed activities including summaries of potential key impacts and risks and associated management measures. This is also available on our website. Here you can also subscribe to our newsletter *Let's Talk – Our Plans, Your Say* and to receive updates on our consultation activities.

Please note that Woodside has provided consultation information directly to licence holders it has assessed as 'relevant persons' for this EP, as well as relevant fishery representative bodies.

Please let us know if you require notification prior to and on completion of the proposed activities.

Activity: North West Shelf (NWS) Phase 1 Well Plug and Abandonment (P&A) and TPA03 Well Intervention EP

North West Shelf (NWS) Phase 1 Well Plug and Abandonment (P&A) and TPA03 Well Intervention Environment Plan	
Summary	Permanent plugging and abandonment of five NWS production wells, and well intervention on the TPA03 production well
Permit Area	Production Licenses WA-1-L, WA-3-L and WA-5-L
Location	AP2 - 19° 29' 55" S, 116° 35' 53" E AP3 - 19° 29' 0" S, 116° 36' 37" E AP4 - 19° 30' 38" S, 116° 36' 19" E PER02 - 19° 31' 12" S, 116° 06' 39" E PER04 - 19° 31' 07" S, 116° 05' 54" E TPA03 - 19° 45' 44" S, 115° 53' 24" E
Approx. Water Depth (m)	77-128 m
Timing	Expected commencement date: Q2 2025 Expected finish date: Q4 2026
Duration	NWS Phase 1 Well P&A: • Preparatory activities: approximately 7–10 days per well • P&A: approximately 19–33 days per well • Removal of well infrastructure: approximately 1–5 days per well

	• Recovery of ancillary equipment (e.g. mooring recovery): approximately 1–2 days. TPA03 Well Intervention: Approximately 5–14 days.
Operational Area / exclusion zones	• Operational area: 4000 m around each well • Temporary exclusion zone: 500 m around the MODU.
Infrastructure	• AP 2, AP 3, and AP 4 production wells in the Angel field • PER02 and PER04 production wells in the Perseus-over-Goodwyn (PoG) field • TPA03 production well in the Tidepole field.
Vessels	MODU, support vessels and helicopters.
Commonwealth Fisheries	No Commonwealth managed fisheries active in the Operational Areas. **Active in EMBA:** • North West Slope Trawl Fishery • Western Deepwater Trawl Fishery

Feedback

If you have feedback specific to the proposed activities described under the proposed EP, we welcome your feedback via email at Consultation@feedback.woodside.com, via phone call at 1800 442 977 or via the feedback form on our website by **30 October 2024.**

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 so that the information is not included when the EP is published on NOPSEMA's website.

The National Offshore Petroleum Safety and Environmental Management Authority (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 Consultation

6.1.16 Email sent to Department of Climate Change, Energy, the Environment and Water (DCCEEW) – 27 September 2024

Woodside is planning to submit the North West Shelf (NWS) Phase 1 Well Plug and Abandonment and TPA03 Well Intervention Environment Plan (EP) which involves the permanent plug and abandonment (P&A) of five NWS production wells located in Production Licenses WA-1-L, WA-3-L and the well intervention of the TPA03 production well in WA-5-L. The activities are located in Commonwealth waters around Woodside's existing Angel and Goodwyn production facilities, with the closest well to shore approximately 125 kilometres (km) north of Dampier, Western Australia.

Overview
The activities under the NWS Phase 1 Well P&A and TPA03 Well Intervention EP will be undertaken using a moored or hybrid (mooring and Dynamic Positioning (DP) capability) semi-submersible mobile offshore drilling unit (MODU) and associated support vessels in water depths between approximately 77 metres (m) to 128 m.

The proposed activity includes:

- The P&A of the AP 2, AP 3, and AP 4 wells in the Angel field. These wells tie back to the Angel platform. Production from these wells has ceased and the wells have been shut in. Well infrastructure (Christmas trees and wellheads) above the mudline will be removed following plugging of these wells. Wellheads may either be recovered during the P&A activities or temporarily placed on the seabed for later recovery. If Angel wellheads are not removed by the MODU, removal will be conducted under the Angel Subsea Infrastructure Removal EP.
- The P&A of the PER02 and PER04 wells in the Perseus-over-Goodwyn (PoG) field. These wells tie back to the Goodwyn platform. Production from these wells has ceased and the wells have been shut in. The Christmas trees may be removed following plugging of these wells. The trees may either be removed during the P&A activities or temporarily placed on the seabed for recovery later. Removal of the PER02 and PER04 wellheads above the mudline will be included in a separate future approval.
- Well intervention activities at the TPA03 well in the Tidepole field to remediate a down-hole valve and restore production from the lower reservoir. The well is currently shut in. Well start-up and production following intervention activities will be managed under the Goodwyn Alpha (GWA) Operations EP.

These activities are planned to commence around Q2 2025 and are expected to be completed at the end of Q4 2026.

Environment that May Be Affected (EMBA)
The EMBA is the largest area where activities could potentially have a direct or indirect impact on the environment. The broadest extent of the EMBA takes into consideration planned and unplanned activities, and for this EP, is determined by modelling a release of hydrocarbons from a loss of well control from either the PER02, AP3, or TPA03 wells. A release of this kind is highly unlikely to occur.

The EMBA models the merged area of many possible paths that a hydrocarbon release could travel depending on factors including the weather and ocean conditions at the time of

the release. This means in the highly unlikely event a loss of well control does occur, the whole EMBA will not be affected.

A **Consultation Information Sheet** is attached, which provides additional background on the proposed activities including summaries of potential key impacts and risks and associated management measures. This is also available on our website. Here you can also subscribe to our newsletter *Let's Talk – Our Plans, Your Say* and to receive updates on our consultation activities.

Please also find attached the details of Commonwealth shipwrecks that are relevant for this EP.

Activity: North West Shelf (NWS) Phase 1 Well Plug and Abandonment (P&A) and TPA03 Well Intervention EP

North West Shelf (NWS) Phase 1 Well Plug and Abandonment (P&A) and TPA03 Well Intervention Environment Plan	
Summary	Permanent plugging and abandonment of five NWS production wells, and well intervention on the TPA03 production well
Permit Area	Production Licenses WA-1-L, WA-3-L and WA-5-L
Location	AP2 - 19° 29' 55" S, 116° 35' 53" E AP3 - 19° 29' 0" S, 116° 36' 37" E AP4 - 19° 30' 38" S, 116° 36' 19" E PER02 - 19° 31' 12" S, 116° 06' 39" E PER04 - 19° 31' 07" S, 116° 05' 54" E TPA03 - 19° 45' 44" S, 115° 53' 24" E
Approx. Water Depth (m)	77-128 m
Timing	Expected commencement date: Q2 2025 Expected finish date: Q4 2026
Duration	NWS Phase 1 Well P&A: • Preparatory activities: approximately 7–10 days per well • P&A: approximately 19–33 days per well • Removal of well infrastructure: approximately 1–5 days per well • Recovery of ancillary equipment (e.g. mooring recovery): approximately 1–2 days. TPA03 Well Intervention: • Approximately 5–14 days.

Operational Area/exclusion zones	• Operational area: 4000 m around each well • Temporary exclusion zone: 500 m around the MODU.
Infrastructure	• AP 2, AP 3, and AP 4 production wells in the Angel field • PER02 and PER04 production wells in the Perseus-over-Goodwyn (PoG) field • TPA03 production well in the Tidepole field.
Vessels	MODU, support vessels and helicopters.

Feedback
If you have feedback specific to the proposed activities described under the proposed EP, we welcome your feedback via email at consultation@feedback.woodside.com, via phone call at 1800 442 977 or via the feedback form on our website by **30 October 2024.**

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.

The National Offshore Petroleum Safety and Environmental Management Authority (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 Consultation

6.1.17 Email sent to Department of Climate Change, Energy, the Environment and Water (DCCEEW) - Underwater Cultural Heritage – 26 November 2024

Woodside is planning to submit the North West Shelf (NWS) Phase 1 Well Plug and Abandonment and TPA03 Well Intervention Environment Plan (EP) which involves the permanent plug and abandonment (P&A) of five NWS production wells located in Production Licenses WA-1-L, WA-3-L and the well intervention of the TPA03 production well in WA-5-L. The activities are located in Commonwealth waters around Woodside's existing Angel and Goodwyn production facilities, with the closest well to shore approximately 125 kilometres (km) north of Dampier, Western Australia.

Overview

The activities under the NWS Phase 1 Well P&A and TPA03 Well Intervention EP will be undertaken using a moored or hybrid (mooring and Dynamic Positioning (DP) capability) semi-submersible mobile offshore drilling unit (MODU) and associated support vessels in water depths between approximately 80 metres (m) to 128 m.

The proposed activity includes:

- The P&A of the AP 2, AP 3, and AP 4 wells in the Angel field. These wells tie back to the Angel platform. Production from these wells has ceased and the wells have been shut in. Well infrastructure (Christmas trees and wellheads) above the mudline will be removed following plugging of these wells. Wellheads may either be recovered during the P&A activities or temporarily placed on the seabed for later recovery. If Angel wellheads are not removed by the MODU, removal will be conducted under the Angel Subsea Infrastructure Removal EP.
- The P&A of the PER02 and PER04 wells in the Perseus-over-Goodwyn (PoG) field. These wells tie back to the Goodwyn platform. Production from these wells has ceased and the wells have been shut in. The Christmas trees may be removed following plugging of these wells. The trees may either be removed during the P&A activities or temporarily placed on the seabed for recovery later. Removal of the PER02 and PER04 wellheads above the mudline will be included in a separate future approval.
- Well intervention activities at the TPA03 well in the Tidepole field to remediate a down-hole valve and restore production from the lower reservoir. The well is currently shut in. Well start-up and production following intervention activities will be managed under the Goodwyn Alpha (GWA) Operations EP.

These activities are planned to commence around Q2 2025 and are expected to be completed at the end of Q4 2026.

Environment that May Be Affected (EMBA)
The EMBA is the largest area where activities could potentially have a direct or indirect impact on the environment. The broadest extent of the EMBA takes into consideration planned and unplanned activities, and for this EP, is determined by modelling a release of hydrocarbons from a loss of well control from either the PER02, AP3, or TPA03 wells. A release of this kind is highly unlikely to occur.

The EMBA models the merged area of many possible paths that a hydrocarbon release could travel depending on factors including the weather and ocean conditions at the time of the release. This means in the highly unlikely event a loss of well control does occur, the whole EMBA will not be affected.

A **Consultation Information Sheet** is attached, which provides additional background on the proposed activities including summaries of potential key impacts and risks and associated management measures. This is also available on our website. Here you can also subscribe to our newsletter *Let's Talk – Our Plans, Your Say* and to receive updates on our consultation activities.

Please also find attached the details of Commonwealth shipwrecks that are relevant for this EP.

Activity: North West Shelf (NWS) Phase 1 Well Plug and Abandonment (P&A) and TPA03 Well Intervention EP

North West Shelf (NWS) Phase 1 Well Plug and Abandonment (P&A) and TPA03 Well Intervention Environment Plan	
Summary	Permanent plugging and abandonment of five NWS production wells, and well intervention on the TPA03 production well
Permit Area	Production Licenses WA-1-L, WA-3-L and WA-5-L
Location	AP2 - 19° 28’ 59” S, 116° 36’ 37” E AP3 - 19° 30’ 38” S, 116° 36’ 18” E AP4 - 19° 31’ 18” S, 116° 35’ 13” E PER02 - 19° 31’ 11” S, 116° 6’ 39” E PER 04 - 19° 31’ 26” S, 116° 5’ 53” E TPA03 - 19° 45’ 43” S, 115° 53’ 23” E
Approx. Water Depth (m)	80-128 m
Timing	Expected commencement date: Q2 2025 Expected finish date: Q4 2026
Duration	NWS Phase 1 Well P&A: • Preparatory activities: approximately 7–10 days per well • P&A: approximately 19–33 days per well • Removal of well infrastructure: approximately 1–5 days per well • Recovery of ancillary equipment (e.g. mooring recovery): approximately 1–2 days. TPA03 Well Intervention: • Approximately 5–14 days.
Operational Area/exclusion zones	• Operational area: 4000 m around each well • Temporary exclusion zone: 500 m around the MODU.
Infrastructure	• AP 2, AP 3, and AP 4 production wells in the Angel field • PER02 and PER04 production wells in the Perseus-over-Goodwyn (PoG) field • TPA03 production well in the Tidepole field.
Vessels	MODU, support vessels and helicopters.

Feedback

If you have feedback specific to the proposed activities described under the proposed EP, we welcome your feedback via email at consultation@feedback.woodside.com, via phone call at 1800 442 977 or via the feedback form on our website by **6 January 2025.**

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.

The National Offshore Petroleum Safety and Environmental Management Authority (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 Consultation

6.1.18 Email sent to Department of Transport – 27 September 2024

Woodside is planning to submit the North West Shelf (NWS) Phase 1 Well Plug and Abandonment and TPA03 Well Intervention Environment Plan (EP) which involves the permanent plug and abandonment (P&A) of five NWS production wells located in Production Licenses WA-1-L, WA-3-L and the well intervention of the TPA03 production well in WA-5-L. The activities are located in Commonwealth waters around Woodside's existing Angel and Goodwyn production facilities, with the closest well to shore approximately 125 kilometres (km) north of Dampier, Western Australia.

Overview
The activities under the NWS Phase 1 Well P&A and TPA03 Well Intervention EP will be undertaken using a moored or hybrid (mooring and Dynamic Positioning (DP) capability) semi-submersible mobile offshore drilling unit (MODU) and associated support vessels in water depths between approximately 77 metres (m) to 128 m.

The proposed activity includes:

- The P&A of the AP 2, AP 3, and AP 4 wells in the Angel field. These wells tie back to the Angel platform. Production from these wells has ceased and the wells have been shut in. Well infrastructure (Christmas trees and wellheads) above the mudline will be removed following plugging of these wells. Wellheads may either be recovered during the P&A activities or temporarily placed on the seabed for later recovery. If Angel wellheads are not removed by the MODU, removal will be conducted under the Angel Subsea Infrastructure Removal EP.

- The P&A of the PER02 and PER04 wells in the Perseus-over-Goodwyn (PoG) field. These wells tie back to the Goodwyn platform. Production from these wells has ceased and the wells have been shut in. The Christmas trees may be removed following plugging of these wells. The trees may either be removed during the P&A activities or temporarily placed on the seabed for recovery later. Removal of the PER02 and PER04 wellheads above the mudline will be included in a separate future approval.
- Well intervention activities at the TPA03 well in the Tidepole field to remediate a down-hole valve and restore production from the lower reservoir. The well is currently shut in. Well start-up and production following intervention activities will be managed under the Goodwyn Alpha (GWA) Operations EP.

These activities are planned to commence around Q2 2025 and are expected to be completed at the end of Q4 2026.

Environment that May Be Affected (EMBA)
The EMBA is the largest area where activities could potentially have a direct or indirect impact on the environment. The broadest extent of the EMBA takes into consideration planned and unplanned activities, and for this EP, is determined by modelling a release of hydrocarbons from a loss of well control from either the PER02, AP3, or TPA03 wells. A release of this kind is highly unlikely to occur.

The EMBA models the merged area of many possible paths that a hydrocarbon release could travel depending on factors including the weather and ocean conditions at the time of the release. This means in the highly unlikely event a loss of well control does occur, the whole EMBA will not be affected.

A **Consultation Information Sheet** is attached, which provides additional background on the proposed activities including summaries of potential key impacts and risks and associated management measures. This is also available on our website. Here you can also subscribe to our newsletter *Let's Talk – Our Plans, Your Say* and to receive updates on our consultation activities.

If there is a risk of a spill impacting State waters, Woodside will further consult the Department of Transport as outlined in the Department of Transport Offshore Petroleum Industry Guidance Note – Marine Oil Pollution: Response and Consultation Arrangements (July 2020).

Activity: North West Shelf (NWS) Phase 1 Well Plug and Abandonment (P&A) and TPA03 Well Intervention EP

North West Shelf (NWS) Phase 1 Well Plug and Abandonment (P&A) and TPA03 Well Intervention Environment Plan	
Summary	Permanent plugging and abandonment of five NWS production wells, and well intervention on the TPA03 production well
Permit Area	Production Licenses WA-1-L, WA-3-L and WA-5-L
Location	AP2 - 19° 29' 55" S, 116° 35' 53" E AP3 - 19° 29' 0" S, 116° 36' 37" E

	AP4 - 19° 30’ 38” S, 116° 36’ 19” E PER02 - 19° 31’ 12” S, 116° 06’ 39” E PER04 - 19° 31’ 07” S, 116° 05’ 54” E TPA03 - 19° 45’ 44” S, 115° 53’ 24” E
Approx. Water Depth (m)	77-128 m
Timing	Expected commencement date: Q2 2025 Expected finish date: Q4 2026
Duration	NWS Phase 1 Well P&A: • Preparatory activities: approximately 7–10 days per well • P&A: approximately 19–33 days per well • Removal of well infrastructure: approximately 1–5 days per well • Recovery of ancillary equipment (e.g. mooring recovery): approximately 1–2 days. TPA03 Well Intervention: • Approximately 5–14 days.
Operational Area/exclusion zones	• Operational area: 4000 m around each well • Temporary exclusion zone: 500 m around the MODU.
Infrastructure	• AP 2, AP 3, and AP 4 production wells in the Angel field • PER02 and PER04 production wells in the Perseus-over-Goodwyn (PoG) field • TPA03 production well in the Tidepole field.
Vessels	MODU, support vessels and helicopters.

Feedback

If you have feedback specific to the proposed activities described under the proposed EP, we welcome your feedback via email at consultation@feedback.woodside.com, via phone call at 1800 442 977 or via the feedback form on our website by **30 October 2024.**

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.

The National Offshore Petroleum Safety and Environmental Management Authority (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 Consultation

6.1.19 Email sent to Director of National Parks (DNP) – 27 September 2024

Woodside is planning to submit the North West Shelf (NWS) Phase 1 Well Plug and Abandonment and TPA03 Well Intervention Environment Plan (EP) which involves the permanent plug and abandonment (P&A) of five NWS production wells located in Production Licenses WA-1-L, WA-3-L and the well intervention of the TPA03 production well in WA-5-L. The activities are located in Commonwealth waters around Woodside's existing Angel and Goodwyn production facilities, with the closest well to shore approximately 125 kilometres (km) north of Dampier, Western Australia.

Overview
The activities under the NWS Phase 1 Well P&A and TPA03 Well Intervention EP will be undertaken using a moored or hybrid (mooring and Dynamic Positioning (DP) capability) semi-submersible mobile offshore drilling unit (MODU) and associated support vessels in water depths between approximately 77 metres (m) to 128 m.

The proposed activity includes:

- The P&A of the AP 2, AP 3, and AP 4 wells in the Angel field. These wells tie back to the Angel platform. Production from these wells has ceased and the wells have been shut in. Well infrastructure (Christmas trees and wellheads) above the mudline will be removed following plugging of these wells. Wellheads may either be recovered during the P&A activities or temporarily placed on the seabed for later recovery. If Angel wellheads are not removed by the MODU, removal will be conducted under the Angel Subsea Infrastructure Removal EP.
- The P&A of the PER02 and PER04 wells in the Perseus-over-Goodwyn (PoG) field. These wells tie back to the Goodwyn platform. Production from these wells has ceased and the wells have been shut in. The Christmas trees may be removed following plugging of these wells. The trees may either be removed during the P&A activities or temporarily placed on the seabed for recovery later. Removal of the PER02 and PER04 wellheads above the mudline will be included in a separate future approval.
- Well intervention activities at the TPA03 well in the Tidepole reservoir to remediate a down-hole valve and restore production from the lower reservoir. The well is currently shut in. Well start-up and production following intervention activities will be managed under the Goodwyn Alpha (GWA) Operations EP.

These activities are planned to commence around Q2 2025 and are expected to be completed at the end of Q4 2026.

Environment that May Be Affected (EMBA)

The EMBA is the largest area where activities could potentially have a direct or indirect impact on the environment. The broadest extent of the EMBA takes into consideration planned and unplanned activities, and for this EP, is determined by modelling a release of hydrocarbons from a loss of well control from either the PER02, AP 3, or TPA03 wells. A release of this kind is highly unlikely to occur.

The EMBA models the merged area of many possible paths that a hydrocarbon release could travel depending on factors including the weather and ocean conditions at the time of the release. This means in the highly unlikely event a loss of well control does occur, the whole EMBA will not be affected.

A **Consultation Information Sheet** is attached, which provides additional background on the proposed activities including summaries of potential key impacts and risks and associated management measures. This is also available on our website Here you can also subscribe to our newsletter *Let's Talk – Our Plans, Your Say* and to receive updates on our consultation activities.

Activity: North West Shelf (NWS) Phase 1 Well Plug and Abandonment (P&A) and TPA03 Well Intervention EP

North West Shelf (NWS) Phase 1 Well Plug and Abandonment (P&A) and TPA03 Well Intervention Environment Plan	
Summary	Permanent plugging and abandonment of five NWS production wells, and well intervention on the TPA03 production well
Permit Area	Production Licenses WA-1-L, WA-3-L and WA-5-L
Location	AP2 - 19° 29' 55" S, 116° 35' 53" E AP3 - 19° 29' 0" S, 116° 36' 37" E AP4 - 19° 30' 38" S, 116° 36' 19" E PER02 - 19° 31' 12" S, 116° 06' 39" E PER04 - 19° 31' 07" S, 116° 05' 54" E TPA03 - 19° 45' 44" S, 115° 53' 24" E
Approx. Water Depth (m)	77-128 m
Timing	Expected commencement date: Q2 2025 Expected finish date: Q4 2026
Duration	NWS Phase 1 Well P&A: • Preparatory activities: approximately 7–10 days per well • P&A: approximately 19–33 days per well • Removal of well infrastructure: approximately 1–5 days per well • Recovery of ancillary equipment (e.g. mooring recovery): approximately 1–2 days.

	TPA03 Well Intervention: • Approximately 5–14 days.
Operational areas / exclusion zones	• Operational area: 2000 m around each well • Temporary exclusion zone: 500 m around the MODU.
Infrastructure	• AP 2, AP 3, and AP 4 production wells in the Angel reservoir • PER02 and PER04 production wells in the Persus-over-Goodwyn (PoG) field • TPA03 production well in the Tidepole field.
Vessels	MODU, support vessels and helicopters.

Australian Marine Parks (AMPs)

We note Australian Government Guidance on consultation activities and confirm that:

- The proposed activities are outside the boundaries of a proclaimed Australian Marine Park (AMP), with the closest well (TPA03) located approximately 33 km northeast of the Commonwealth boundary of the Montebello Australian Marine Park (Multiple Use Zone).
- We have assessed potential risks to AMPs in the development of the proposed Environment Plan and consider that there are no credible risks as part of planned activities that have potential to impact the values of the AMPs.
- The worst-case credible spill scenario assessed in this EP is the highly unlikely event of a loss of well control from either the PER02, AP3, or TPA03 wells. Through review of hydrocarbon spill modelling, and with consideration of a 50 ppb dissolved and 100 ppb entrained hydrocarbon threshold, the following AMPs may be contacted in the event of a spill:
  - Montebello AMP
  - Ningaloo AMP
  - Gascoyne AMP

  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 on the values of the 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:

- 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

If you have feedback specific to the proposed activities described under the proposed EP, we welcome your feedback via email at Consultation@feedback.woodside.com, via phone call at 1800 442 977 or via the feedback form on our website by **30 October 2024**.

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 so that the information is not included when the EP is published on NOPSEMA's website.

The National Offshore Petroleum Safety and Environmental Management Authority (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 Consultation

6.1.20 Email sent to of Department of Defence – 21 November 2024

Woodside is planning to submit the North West Shelf (NWS) Phase 1 Well Plug and Abandonment and TPA03 Well Intervention Environment Plan (EP) which involves the permanent plug and abandonment (P&A) of five NWS production wells located in Production Licenses WA-1-L, WA-3-L and the well intervention of the TPA03 production well in WA-5-L. The activities are located in Commonwealth waters around Woodside's existing Angel and Goodwyn production facilities, with the closest well to shore approximately 125 kilometres (km) north of Dampier, Western Australia.

Overview
The activities under the NWS Phase 1 Well P&A and TPA03 Well Intervention EP will be undertaken using a moored or hybrid (mooring and Dynamic Positioning (DP) capability) semi-submersible mobile offshore drilling unit (MODU) and associated support vessels in water depths between approximately 77 metres (m) to 128 m.

The proposed activity includes:

- The P&A of the AP 2, AP 3, and AP 4 wells in the Angel field. These wells tie back to the Angel platform. Production from these wells has ceased and the wells have been shut in. Well infrastructure (Christmas trees and wellheads) above the mudline will be removed following plugging of these wells. Wellheads may either be recovered during the P&A activities or temporarily placed on the seabed for later recovery. If Angel wellheads are not removed by the MODU, removal will be conducted under the Angel Subsea Infrastructure Removal EP.

- The P&A of the PER02 and PER04 wells in the Perseus-over-Goodwyn (PoG) field. These wells tie back to the Goodwyn platform. Production from these wells has ceased and the wells have been shut in. The Christmas trees may be removed following plugging of these wells. The trees may either be removed during the P&A activities or temporarily placed on the seabed for recovery later. Removal of the PER02 and PER04 wellheads above the mudline will be included in a separate future approval.
- Well intervention activities at the TPA03 well in the Tidepole field to remediate a down-hole valve and restore production from the lower reservoir. The well is currently shut in. Well start-up and production following intervention activities will be managed under the Goodwyn Alpha (GWA) Operations EP.

These activities are planned to commence around Q2 2025 and are expected to be completed at the end of Q4 2026.

Environment that May Be Affected (EMBA)
The EMBA is the largest area where activities could potentially have a direct or indirect impact on the environment. The broadest extent of the EMBA takes into consideration planned and unplanned activities, and for this EP, is determined by modelling a release of hydrocarbons from a loss of well control from either the PER02, AP3, or TPA03 wells. A release of this kind is highly unlikely to occur.

The EMBA models the merged area of many possible paths that a hydrocarbon release could travel depending on factors including the weather and ocean conditions at the time of the release. This means in the highly unlikely event a loss of well control does occur, the whole EMBA will not be affected.

A **Consultation Information Sheet** is attached, which provides additional background on the proposed activities including summaries of potential key impacts and risks and associated management measures. This is also available on our website. Here you can also subscribe to our newsletter *Let's Talk – Our Plans, Your Say* and to receive updates on our consultation activities.

Please also find attached a defence area map in the areas surrounding the operational area.

Activity: North West Shelf (NWS) Phase 1 Well Plug and Abandonment (P&A) and TPA03 Well Intervention EP

North West Shelf (NWS) Phase 1 Well Plug and Abandonment (P&A) and TPA03 Well Intervention Environment Plan	
Summary	Permanent plugging and abandonment of five NWS production wells, and well intervention on the TPA03 production well
Permit Area	Production Licenses WA-1-L, WA-3-L and WA-5-L
Location	AP2 - 19° 29' 55" S, 116° 35' 53" E AP3 - 19° 29' 0" S, 116° 36' 37" E AP4 - 19° 30' 38" S, 116° 36' 19" E PER02 - 19° 31' 12" S, 116° 06' 39" E

	PER04 - 19° 31’ 07” S, 116° 05’ 54” E TPA03 - 19° 45’ 44” S, 115° 53’ 24” E
Approx. Water Depth (m)	77-128 m
Timing	Expected commencement date: Q2 2025 Expected finish date: Q4 2026
Duration	NWS Phase 1 Well P&A: • Preparatory activities: approximately 7–10 days per well • P&A: approximately 19–33 days per well • Removal of well infrastructure: approximately 1–5 days per well • Recovery of ancillary equipment (e.g. mooring recovery): approximately 1–2 days. TPA03 Well Intervention: • Approximately 5–14 days.
Operational Area/exclusion zones	• Operational area: 4000 m around each well • Temporary exclusion zone: 500 m around the MODU.
Infrastructure	• AP 2, AP 3, and AP 4 production wells in the Angel field • PER02 and PER04 production wells in the Perseus-over-Goodwyn (PoG) field • TPA03 production well in the Tidepole field.
Vessels	MODU, support vessels and helicopters.

Feedback

If you have feedback specific to the proposed activities described under the proposed EP, we welcome your feedback via email at consultation@feedback.woodside.com, via phone call at 1800 442 977 or via the feedback form on our website by **30 October 2024.**

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.

The National Offshore Petroleum Safety and Environmental Management Authority (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 Consultation

6.1.21 Email sent to Department of Primary Industries and Resource Development (DPIRD) – 27 September 2024

Woodside is planning to submit the North West Shelf (NWS) Phase 1 Well Plug and Abandonment and TPA03 Well Intervention Environment Plan (EP) which involves the permanent plug and abandonment (P&A) of five NWS production wells located in Production Licenses WA-1-L, WA-3-L and the well intervention of the TPA03 production well in WA-5-L. The activities are located in Commonwealth waters around Woodside's existing Angel and Goodwyn production facilities, with the closest well to shore approximately 125 kilometres (km) north of Dampier, Western Australia.

Overview
The activities under the NWS Phase 1 Well P&A and TPA03 Well Intervention EP will be undertaken using a moored or hybrid (mooring and Dynamic Positioning (DP) capability) semi-submersible mobile offshore drilling unit (MODU) and associated support vessels in water depths between approximately 78 metres (m) to 128 m.

The proposed activity includes:

- The P&A of the AP 2, AP 3, and AP 4 wells in the Angel field. These wells tie back to the Angel platform. Production from these wells has ceased and the wells have been shut in. Well infrastructure (Christmas trees and wellheads) above the mudline will be removed following plugging of these wells. Wellheads may either be recovered during the P&A activities or temporarily placed on the seabed for later recovery. If Angel wellheads are not removed by the MODU, removal will be conducted under the Angel Subsea Infrastructure Removal EP.
- The P&A of the PER02 and PER04 wells in the Perseus-over-Goodwyn (PoG) field. These wells tie back to the Goodwyn platform. Production from these wells has ceased and the wells have been shut in. The Christmas trees may be removed following plugging of these wells. The trees may either be removed during the P&A activities or temporarily placed on the seabed for recovery later. Removal of the PER02 and PER04 wellheads above the mudline will be included in a separate future approval.
- Well intervention activities at the TPA03 well in the Tidepole reservoir to remediate a down-hole valve and restore production from the lower reservoir. The well is currently shut in. Well start-up and production following intervention activities will be managed under the Goodwyn Alpha (GWA) Operations EP.

These activities are planned to commence around Q2 2025 and are expected to be completed at the end of Q4, 2026.

Operational area / exclusion zones

The activity Operational Area will consist of a 4000 m radius around each well. This area is where the MODU and activity vessels can be expected to be operating whilst undertaking P&A and well intervention activities There are no restrictions to other vessels within the Operational Area apart from being advised to take care. A temporary 500 m exclusion zone will be established around the MODU while undertaking activities at each well location. The exclusion zone is established for navigational safety and fishing vessels are not allowed to enter the exclusion zone.

An interactive map showing the location of the proposed activities will be available on the Woodside website and will be updated throughout the proposed activities.

Environment that May Be Affected (EMBA)
The EMBA is the largest area where activities could potentially have a direct or indirect impact on the environment. The broadest extent of the EMBA takes into consideration planned and unplanned activities, and for this EP, is determined by modelling a release of hydrocarbons from a loss of well control from either the PER02, AP3, or TPA03. A release of this kind is highly unlikely to occur.

The EMBA models the merged area of many possible paths that a hydrocarbon release could travel depending on factors including the weather and ocean conditions at the time of the release. This means in the highly unlikely event a loss of well control does occur, the whole EMBA will not be affected.

A **Consultation Information Sheet** is attached, which provides additional background on the proposed activities including summaries of potential key impacts and risks and associated management measures. This is also available on our website. Here you can also subscribe to our newsletter *Let's Talk – Our Plans, Your Say* and to receive updates on our consultation activities.

Please note that Woodside has provided consultation information to licence holders it has assessed as 'relevant persons' for this EP, as well as relevant fishery representative bodies.

Please let us know if you require notification prior to and on completion of the proposed activities.

Activity: North West Shelf (NWS) Phase 1 Well Plug and Abandonment (P&A) and TPA03 Well Intervention EP

North West Shelf (NWS) Phase 1 Well Plug and Abandonment (P&A) and TPA03 Well Intervention Environment Plan	
Summary	Permanent plugging and abandonment of five NWS production wells, and well intervention on the TPA03 production well
Permit Area	Production Licenses WA-1-L, WA-3-L and WA-5-L
Location	AP2 - 19° 29' 55" S, 116° 35' 53" E AP3 - 19° 29' 0" S, 116° 36' 37" E AP4 - 19° 30' 38" S, 116° 36' 19" E PER02 - 19° 31' 12" S, 116° 06' 39" E PER04 - 19° 31' 07" S, 116° 05' 54" E

	TPA03 - 19° 45’ 44” S, 115° 53’ 24” E
Approx. Water Depth (m)	77-128 m
Timing	Expected commencement date: Q2 2025 Expected finish date: Q4 2026
Duration	NWS Phase 1 Well P&A: • Preparatory activities: approximately 7–10 days per well • P&A: approximately 19–33 days per well • Removal of well infrastructure: approximately 1–5 days per well • Recovery of ancillary equipment (e.g. mooring recovery): approximately 1–2 days. TPA03 Well Intervention: Approximately 5–14 days.
Operational Area / exclusion zones	• Operational area: 4000 m around each well • Temporary exclusion zone: 500 m around the MODU.
Infrastructure	• AP 2, AP 3, and AP 4 production wells in the Angel field • PER02 and PER04 production wells in the Perseus-over-Goodwyn (PoG) field • TPA03 production well in the Tidepole field.
Vessels	MODU, support vessels and helicopters.
Fisheries	**State fisheries** Operational Areas: Mackerel Managed Fishery, Pilbara Fish Trawl Managed Fishery, Pilbara Trap Managed Fishery, Pilbara Line Fishery. EMBA: West Australian Sea Cucumber Fishery, Exmouth Gulf Prawn Managed Fishery, Gascoyne Demersal Scalefish Managed Fishery, Mackerel Managed Fishery, Marine Aquarium Fish Managed Fishery, Nickol Bay Prawn Managed Fishery, Northern Demersal Scalefish Managed Fishery, Onslow Prawn Managed Fishery

Feedback

If you have feedback specific to the proposed activities described under the proposed EP, we welcome your feedback via email at Consultation@feedback.woodside.com, via phone call at 1800 442 977 or via the feedback form on our website by **30 October 2024.**

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
Woodside Energy Consultation

6.1.22 Email sent to DPLH – 27 September 2024

Woodside is planning to submit the North West Shelf (NWS) Phase 1 Well Plug and Abandonment and TPA03 Well Intervention Environment Plan (EP) which involves the permanent plug and abandonment (P&A) of five NWS production wells located in Production Licenses WA-1-L, WA-3-L and the well intervention of the TPA03 production well in WA-5-L. The activities are located in Commonwealth waters around Woodside's existing Angel and Goodwyn production facilities, with the closest well to shore approximately 125 kilometres (km) north of Dampier, Western Australia.

Overview
The activities under the NWS Phase 1 Well P&A and TPA03 Well Intervention EP will be undertaken using a moored or hybrid (mooring and Dynamic Positioning (DP) capability) semi-submersible mobile offshore drilling unit (MODU) and associated support vessels in water depths between approximately 77 metres (m) to 128 m.

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activities or temporarily placed on the seabed for recovery later. Removal of the PER02 and PER04 wellheads above the mudline will be included in a separate future approval.
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A **Consultation Information Sheet** is attached, which provides additional background on the proposed activities including summaries of potential key impacts and risks and associated management measures. This is also available on our website. Here you can also subscribe to our newsletter *Let's Talk – Our Plans, Your Say* and to receive updates on our consultation activities.

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: North West Shelf (NWS) Phase 1 Well Plug and Abandonment (P&A) and TPA03 Well Intervention EP

North West Shelf (NWS) Phase 1 Well Plug and Abandonment (P&A) and TPA03 Well Intervention Environment Plan	
Summary	Permanent plugging and abandonment of five NWS production wells, and well intervention on the TPA03 production well
Permit Area	Production Licenses WA-1-L, WA-3-L and WA-5-L
Location	AP2 - 19° 29' 55" S, 116° 35' 53" E AP3 - 19° 29' 0" S, 116° 36' 37" E AP4 - 19° 30' 38" S, 116° 36' 19" E

	PER02 - 19° 31’ 12” S, 116° 06’ 39” E PER04 - 19° 31’ 07” S, 116° 05’ 54” E TPA03 - 19° 45’ 44” S, 115° 53’ 24” E
Approx. Water Depth (m)	77-128 m
Timing	Expected commencement date: Q2 2025 Expected finish date: Q4 2026
Duration	NWS Phase 1 Well P&A: • Preparatory activities: approximately 7–10 days per well • P&A: approximately 19–33 days per well • Removal of well infrastructure: approximately 1–5 days per well • Recovery of ancillary equipment (e.g. mooring recovery): approximately 1–2 days. TPA03 Well Intervention: • Approximately 5–14 days.
Operational Area/exclusion zones	• Operational area: 4000 m around each well • Temporary exclusion zone: 500 m around the MODU.
Infrastructure	• AP 2, AP 3, and AP 4 production wells in the Angel field • PER02 and PER04 production wells in the Perseus-over-Goodwyn (PoG) field • TPA03 production well in the Tidepole field.
Vessels	MODU, support vessels and helicopters.

Feedback

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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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Woodside Energy Consultation

6.1.23 Email sent to Longreach Capital Investment – 1 October 2024

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Overview
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planned and unplanned activities, and for this EP, is determined by modelling a release of hydrocarbons from a loss of well control from either the PER02, AP3, or TPA03 wells. A release of this kind is highly unlikely to occur.

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Activity: North West Shelf (NWS) Phase 1 Well Plug and Abandonment (P&A) and TPA03 Well Intervention EP

North West Shelf (NWS) Phase 1 Well Plug and Abandonment (P&A) and TPA03 Well Intervention Environment Plan	
Summary	Permanent plugging and abandonment of five NWS production wells, and well intervention on the TPA03 production well
Permit Area	Production Licenses WA-1-L, WA-3-L and WA-5-L
Location	AP2 - 19° 29' 55" S, 116° 35' 53" E AP3 - 19° 29' 0" S, 116° 36' 37" E AP4 - 19° 30' 38" S, 116° 36' 19" E PER02 - 19° 31' 12" S, 116° 06' 39" E PER04 - 19° 31' 07" S, 116° 05' 54" E TPA03 - 19° 45' 44" S, 115° 53' 24" E
Approx. Water Depth (m)	77-128 m
Timing	Expected commencement date: Q2 2025 Expected finish date: Q4 2026
Duration	NWS Phase 1 Well P&A: • Preparatory activities: approximately 7–10 days per well • P&A: approximately 19–33 days per well • Removal of well infrastructure: approximately 1–5 days per well • Recovery of ancillary equipment (e.g. mooring recovery): approximately 1–2 days. TPA03 Well Intervention: • Approximately 5–14 days.

Operational Area/exclusion zones	• Operational area: 4000 m around each well • Temporary exclusion zone: 500 m around the MODU.
Infrastructure	• AP 2, AP 3, and AP 4 production wells in the Angel field • PER02 and PER04 production wells in the Perseus-over-Goodwyn (PoG) field • TPA03 production well in the Tidepole field.
Vessels	MODU, support vessels and helicopters.

Feedback
If you have feedback specific to the proposed activities described under the proposed EP, we welcome your feedback via email at consultation@feedback.woodside.com, via phone call at 1800 442 977 or via the feedback form on our website by **30 October 2024.**

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
Woodside Energy Consultation

6.1.24 Email sent to Gascoyne and Pilbara/Kimberley recreational marine users – 27 September 2024

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Overview

The activities under the NWS Phase 1 Well P&A and TPA03 Well Intervention EP will be undertaken using a moored or hybrid (mooring and Dynamic Positioning (DP) capability) semi-submersible mobile offshore drilling unit (MODU) and associated support vessels in water depths between approximately 78 metres (m) to 128 m.

The proposed activity includes:

· The P&A of the AP 2, AP 3, and AP 4 wells in the Angel field. These wells tie back to the Angel platform. Production from these wells has ceased and the wells have been shut in. Well infrastructure (Christmas trees and wellheads) above the mudline will be removed following plugging of these wells. Wellheads may either be recovered during the P&A activities or temporarily placed on the seabed for later recovery. If Angel wellheads are not removed by the MODU, removal will be conducted under the Angel Subsea Infrastructure Removal EP.

· The P&A of the PER02 and PER04 wells in the Perseus-over-Goodwyn (PoG) field. These wells tie back to the Goodwyn platform. Production from these wells has ceased and the wells have been shut in. The Christmas trees may be removed following plugging of these wells. The trees may either be removed during the P&A activities or temporarily placed on the seabed for recovery later. Removal of the PER02 and PER04 wellheads above the mudline will be included in a separate future approval.

· Well intervention activities at the TPA03 well in the Tidepole reservoir to remediate a down-hole valve and restore production from the lower reservoir. The well is currently shut in. Well start-up and production following intervention activities will be managed under the Goodwyn Alpha (GWA) Operations EP.

These activities are planned to commence around Q2 2025 and are expected to be completed at the end of Q4, 2026.

Operational area / exclusion zones

The activity Operational Area will consist of a 4000 m radius around each well. This area is where the MODU and activity vessels can be expected to be operating whilst undertaking P&A and well intervention activities There are no restrictions to other vessels within the Operational Area apart from being advised to take care. A temporary 500 m exclusion zone will be established around the MODU while undertaking activities at each well location. The exclusion zone is established for navigational safety and fishing vessels are not allowed to enter the exclusion zone.

An interactive map showing the location of the proposed activities will be available on the Woodside website and will be updated throughout the proposed activities.

Environment that May Be Affected (EMBA)

The EMBA is the largest area where activities could potentially have a direct or indirect impact on the environment. The broadest extent of the EMBA takes into consideration planned and unplanned activities, and for this EP, is determined by modelling a release of hydrocarbons from a loss of well control from either the PER02, AP3, or TPA03. A release of this kind is highly unlikely to occur.

The EMBA models the merged area of many possible paths that a hydrocarbon release could travel depending on factors including the weather and ocean conditions at the time of the release. This means in the highly unlikely event a loss of well control does occur, the whole EMBA will not be affected.

A **Consultation Information Sheet** is attached, which provides additional background on the proposed activities including summaries of potential key impacts and risks and associated management measures. This is also available on our website. Here you can also subscribe to our newsletter *Let's Talk – Our Plans, Your Say* and to receive updates on our consultation activities.

Please note that Woodside has provided consultation information to licence holders it has assessed as 'relevant persons' for this EP, as well as relevant fishery representative bodies.

Please let us know if you require notification prior to and on completion of the proposed activities.

Activity: North West Shelf (NWS) Phase 1 Well Plug and Abandonment (P&A) and TPA03 Well Intervention EP

North West Shelf (NWS) Phase 1 Well Plug and Abandonment (P&A) and TPA03 Well Intervention Environment Plan	
Summary	Permanent plugging and abandonment of five NWS production wells, and well intervention on the TPA03 production well
Permit Area	Production Licenses WA-1-L, WA-3-L and WA-5-L
Location	AP2 - 19° 29' 55" S, 116° 35' 53" E AP3 - 19° 29' 0" S, 116° 36' 37" E AP4 - 19° 30' 38" S, 116° 36' 19" E PER02 - 19° 31' 12" S, 116° 06' 39" E PER04 - 19° 31' 07" S, 116° 05' 54" E TPA03 - 19° 45' 44" S, 115° 53' 24" E
Approx. Water Depth (m)	77-128 m
Timing	Expected commencement date: Q2 2025 Expected finish date: Q4 2026
Duration	NWS Phase 1 Well P&A:

	• Preparatory activities: approximately 7–10 days per well • P&A: approximately 19–33 days per well • Removal of well infrastructure: approximately 1–5 days per well • Recovery of ancillary equipment (e.g. mooring recovery): approximately 1–2 days. TPA03 Well Intervention: • Approximately 5–14 days.
Operational Area / exclusion zones	• Operational area: 4000 m around each well • Temporary exclusion zone: 500 m around the MODU.
Infrastructure	• AP 2, AP 3, and AP 4 production wells in the Angel field • PER02 and PER04 production wells in the Perseus-over-Goodwyn (PoG) field • TPA03 production well in the Tidepole field.
Vessels	MODU, support vessels and helicopters.

Feedback

If you have feedback specific to the proposed activities described under the proposed EP, we welcome your feedback via email at Consultation@feedback.woodside.com, via phone call at 1800 442 977 or via the feedback form on our website by **30 October 2024.**

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 so that the information is not included when the EP is published on NOPSEMA's website.

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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
Woodside Energy Consultation

6.1.25 Letter sent to Gascoyne and Pilbara/Kimberley recreational marine users – 1 October 2024

Please direct all responses/queries to:
Woodside Energy Feedback
T: 1800 442 977
E: feedback@woodside.com

Woodside Energy (Australia) Pty Ltd
ACN 006 923 879
Mia Yellagonga
11 Mount Street
Perth WA 6000
Australia
T +61 8 9348 4000
www.woodside.com

1 October 2024

1
[redacted]

Dear Recreational Marine User,

Woodside is planning to submit the North West Shelf (NWS) Phase 1 Well Plug and Abandonment and TPA03 Well Intervention Environmental Plan (EP) which involves the permanent plug and abandonment (P&A) of five NWS production wells located in Production Licenses WA-1-L, WA-3-L and the well intervention of the TPA03 production well in WA-5-L. The activities are located in Commonwealth waters around Woodside's existing Angel and Goodwyn production facilities, with the closest well to shore approximately 125 kilometres (km) north of Dampier, Western Australia.

Overview
The activities under the NWS Phase 1 Well P&A and TPA03 Well Intervention EP will be undertaken using a moored or hybrid (mooring and Dynamic Positioning (DP) capability) semi-submersible mobile offshore drilling unit (MODU) and associated support vessels in water depths between approximately 77 metres (m) to 128 m.

The proposed activity includes:

- The P&A of the AP 2, AP 3, and AP 4 wells in the Angel field. These wells tie back to the Angel platform. Production from these wells has ceased and the wells have been shut in. Well infrastructure (Christmas trees and wellheads) above the mudline will be removed following plugging of these wells. Wellheads may either be recovered during the P&A activities or temporarily placed on the seabed for later recovery. If Angel wellheads are not removed by the MODU, removal will be conducted under the Angel Subsea Infrastructure Removal EP.

- The P&A of the PER02 and PER04 wells in the Perseus-over-Goodwyn (PoG) field. These wells tie back to the Goodwyn platform. Production from these wells has ceased and the wells have been shut in. The Christmas trees may be removed following plugging of these wells. The trees may either be removed during the P&A activities or temporarily placed on the seabed for recovery later. Removal of the PER02 and PER04 wellheads above the mudline will be included in a separate future approval.

- Well intervention activities at the TPA03 well in the Tidepole field to remediate a down-hole valve and restore production from the lower reservoir. The well is currently shut in. Well start-up and production following intervention activities will be managed under the Goodwyn Alpha (GWA) Operations EP.

These activities are planned to commence around Q2 2025 and are expected to be completed at the end of Q4, 2026.

Operational area / exclusion zones

The activity Operational Area will consist of a 4000 m radius around each well. This area is where the MODU and activity vessels can be expected to be operating whilst undertaking P&A and well intervention activity. There are no restrictions to other vessels within the Operational Area apart from being advised to take care. A temporary 500 m exclusion zone will be established around the MODU while undertaking activities at each well location. The exclusion zone is established for navigational safety and fishing vessels are not allowed to enter the exclusion zone.

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The EMBA is the largest area where activities could potentially have a direct or indirect impact on the environment. The broadest extent of the EMBA takes into consideration planned and unplanned activities, and for this EP, is determined by modelling a release of hydrocarbons from a loss of well control from either the PER02, AP3, or TPA03 wells. A release of this kind is highly unlikely to occur.

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A **Consultation Information Sheet** is enclosed, which provides additional background on the proposed activities including summaries of potential key impacts and risks and associated management measures. This is also available on our website at www.woodside.com/what-we-do/consultation-activities. Here you can also subscribe to our newsletter *Let's Talk – Our Plans, Your Say* and to receive updates on our consultation activities.

Activity: North West Shelf (NWS) Phase 1 Well Plug and Abandonment (P&A) and TPA03 Well Intervention EP

North West Shelf (NWS) Phase 1 Well Plug and Abandonment (P&A) and TPA03 Well Intervention Environment Plan	
Summary	Permanent plugging and abandonment of five NWS production wells, and well intervention on the TPA03 production well
Permit Area	Production Licenses WA-1-L, WA-3-L and WA-5-L
Location	AP2 - 19° 29' 55" S, 116° 35' 53" E AP3 - 19° 29' 0" S, 116° 36' 37" E AP4 - 19° 30' 38" S, 116° 36' 19" E PER02 - 19° 31' 12" S, 116° 06' 39" E PER04 - 19° 31' 07" S, 116° 05' 54" E TPA03 - 19° 45' 44" S, 115° 53' 24" E
Approx. Water Depth (m)	77-128 m
Timing	Expected commencement date: Q2 2025 Expected finish date: Q4 2026
Duration	NWS Phase 1 Well P&A: • Preparatory activities: approximately 7–10 days per well

	• P&A: approximately 19–33 days per well • Removal of well infrastructure: approximately 1–5 days per well • Recovery of ancillary equipment (e.g. mooring recovery): approximately 1–2 days. TPA03 Well Intervention: • Approximately 5–14 days.
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Infrastructure	• AP 2, AP 3, and AP 4 production wells in the Angel field • PER02 and PER04 production wells in the Perseus-over-Goodwyn (PoG) field • TPA03 production well in the Tidepole field.
Vessels	MODU, support vessels and helicopters.

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Feedback

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Regards

Woodside Energy Consultation

Woodside Energy
Mia Yellagonga
Karlak, 11 Mount Street
Perth WA 6000
Australia

T: 1800 442 977
E: consultation@feedback.woodside.com
www.woodside.com

6.1.26 Email sent to University of Western Australia, Murdoch University, Edith Cowan University, Curtin University, Australian Institute of Marine Science, Commonwealth Scientific and Industrial Research Organisation – 27 September 2024

Woodside is planning to submit the North West Shelf (NWS) Phase 1 Well Plug and Abandonment and TPA03 Well Intervention Environment Plan (EP) which involves the permanent plug and abandonment (P&A) of five NWS production wells located in Production Licenses WA-1-L, WA-3-L and the well intervention of the TPA03 production well in WA-5-L. The activities are located in Commonwealth waters around Woodside's existing Angel and Goodwyn production facilities, with the closest well to shore approximately 125 kilometres (km) north of Dampier, Western Australia.

Overview
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The proposed activity includes:

- The P&A of the AP 2, AP 3, and AP 4 wells in the Angel field. These wells tie back to the Angel platform. Production from these wells has ceased and the wells have been shut in. Well infrastructure (Christmas trees and wellheads) above the mudline will be removed following plugging of these wells. Wellheads may either be recovered during the P&A activities or temporarily placed on the seabed for later recovery. If Angel wellheads are not removed by the MODU, removal will be conducted under the Angel Subsea Infrastructure Removal EP.
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A **Consultation Information Sheet** is attached, which provides additional background on the proposed activities including summaries of potential key impacts and risks and associated management measures. This is also available on our website. Here you can also subscribe to our newsletter *Let's Talk – Our Plans, Your Say* and to receive updates on our consultation activities.

Woodside is seeking your advice regarding any research activities that your institution may be undertaking that may overlap with our proposed activities.

Activity: North West Shelf (NWS) Phase 1 Well Plug and Abandonment (P&A) and TPA03 Well Intervention EP

North West Shelf (NWS) Phase 1 Well Plug and Abandonment (P&A) and TPA03 Well Intervention Environment Plan	
Summary	Permanent plugging and abandonment of five NWS production wells, and well intervention on the TPA03 production well
Permit Area	Production Licenses WA-1-L, WA-3-L and WA-5-L
Location	AP2 - 19° 29' 55" S, 116° 35' 53" E AP3 - 19° 29' 0" S, 116° 36' 37" E AP4 - 19° 30' 38" S, 116° 36' 19" E PER02 - 19° 31' 12" S, 116° 06' 39" E PER04 - 19° 31' 07" S, 116° 05' 54" E TPA03 - 19° 45' 44" S, 115° 53' 24" E
Approx. Water Depth (m)	77-128 m
Timing	Expected commencement date: Q2 2025 Expected finish date: Q4 2026
Duration	NWS Phase 1 Well P&A: • Preparatory activities: approximately 7–10 days per well • P&A: approximately 19–33 days per well • Removal of well infrastructure: approximately 1–5 days per well • Recovery of ancillary equipment (e.g. mooring recovery): approximately 1–2 days. TPA03 Well Intervention: • Approximately 5–14 days.

Operational Area/exclusion zones	• Operational area: 4000 m around each well • Temporary exclusion zone: 500 m around the MODU.
Infrastructure	• AP 2, AP 3, and AP 4 production wells in the Angel field • PER02 and PER04 production wells in the Perseus-over-Goodwyn (PoG) field • TPA03 production well in the Tidepole field.
Vessels	MODU, support vessels and helicopters.

Feedback
If you have feedback specific to the proposed activities described under the proposed EP, we welcome your feedback via email at consultation@feedback.woodside.com, via phone call at 1800 442 977 or via the feedback form on our website by **30 October 2024.**

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
Woodside Energy Consultation

6.1.27 Email sent to Shell – 16 December 2024

Woodside is planning to submit the North West Shelf (NWS) Phase 1 Well Plug and Abandonment and TPA03 Well Intervention Environment Plan (EP) which involves the permanent plug and abandonment (P&A) of five NWS production wells located in proposed activities in Production Licenses WA-1-L, WA-3-L and the well intervention of the TPA03 production well in WA-5-L. The activities are located in Commonwealth waters around Woodside's existing Angel and Goodwyn production facilities, with the closest well to shore approximately 125 kilometres (km) north of Dampier, Western Australia.

Overview
The activities under the NWS Phase 1 Well P&A and TPA03 Well Intervention EP will be undertaken using a moored or hybrid (mooring and Dynamic Positioning (DP) capability)

semi-submersible mobile offshore drilling unit (MODU) and associated support vessels in water depths between approximately 80 metres (m) to 128 m.

The proposed activity includes:

- The P&A of the AP 2, AP 3, and AP 4 wells in the Angel field. These wells tie back to the Angel platform. Production from these wells has ceased and the wells have been shut in. Well infrastructure (Christmas trees and wellheads) above the mudline will be removed following plugging of these wells. Wellheads may either be recovered during the P&A activities or temporarily placed on the seabed for later recovery. If Angel wellheads are not removed by the MODU, removal will be conducted under the Angel Subsea Infrastructure Removal EP.
- The P&A of the PER02 and PER04 wells in the Perseus-over-Goodwyn (PoG) field. These wells tie back to the Goodwyn platform. Production from these wells has ceased and the wells have been shut in. The Christmas trees may be removed following plugging of these wells. The trees may either be removed during the P&A activities or temporarily placed on the seabed for recovery later. Removal of the PER02 and PER04 wellheads above the mudline will be included in a separate future approval.
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Activity: North West Shelf (NWS) Phase 1 Well Plug and Abandonment (P&A) and TPA03 Well Intervention EP

North West Shelf (NWS) Phase 1 Well Plug and Abandonment (P&A) and TPA03 Well Intervention Environment Plan

Summary	Permanent plugging and abandonment of five NWS production wells, and well intervention on the TPA03 production well
Permit Area	Production Licenses WA-1-L, WA-3-L and WA-5-L
Location	AP2 - 19° 28’ 59” S, 116° 36’ 37” E AP3 - 19° 30’ 38” S, 116° 36’ 18” E AP4 - 19° 31’ 18” S, 116° 35’ 13” E PER02 - 19° 31’ 11” S, 116° 6’ 39” E PER 04 - 19° 31’ 26” S, 116° 5’ 53” E TPA03 - 19° 45’ 43” S, 115° 53’ 23” E
Approx. Water Depth (m)	80-128 m
Timing	Expected commencement date: Q2 2025 Expected finish date: Q4 2026
Duration	NWS Phase 1 Well P&A: • Preparatory activities: approximately 7–10 days per well • P&A: approximately 19–33 days per well • Removal of well infrastructure: approximately 1–5 days per well • Recovery of ancillary equipment (e.g. mooring recovery): approximately 1–2 days. TPA03 Well Intervention: • Approximately 5–14 days.
Operational Area/exclusion zones	• Operational area: 4000 m around each well • Temporary exclusion zone: 500 m around the MODU.
Infrastructure	• AP 2, AP 3, and AP 4 production wells in the Angel field • PER02 and PER04 production wells in the Perseus-over-Goodwyn (PoG) field • TPA03 production well in the Tidepole field.
Vessels	MODU, support vessels and helicopters.

Feedback

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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)

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Regards
Woodside Energy Consultation

6.1.28 Email sent to Shire of Ashburton – 27 September 2024

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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 (DoT), 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.

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.

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Timing	Expected commencement date: Q2 2025 Expected finish date: Q4 2026
Duration	NWS Phase 1 Well P&A: • Preparatory activities: approximately 7–10 days per well • P&A: approximately 19–33 days per well • Removal of well infrastructure: approximately 1–5 days per well • Recovery of ancillary equipment (e.g. mooring recovery): approximately 1–2 days. TPA03 Well Intervention: • Approximately 5–14 days.
Operational Area/exclusion zones	• Operational area: 4000 m around each well • Temporary exclusion zone: 500 m around the MODU.
Infrastructure	• AP 2, AP 3, and AP 4 production wells in the Angel field • PER02 and PER04 production wells in the Perseus-over-Goodwyn (PoG) field • TPA03 production well in the Tidepole field.
Vessels	MODU, support vessels and helicopters.

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Regards
Woodside Energy Consultation

6.1.29 Email sent to Town of Port Hedland – 15 November 2024

Woodside is planning to submit the North West Shelf (NWS) Phase 1 Well Plug and Abandonment and TPA03 Well Intervention Environment Plan (EP) which involves the permanent plug and abandonment (P&A) of five NWS production wells located in proposed activities in Production Licenses WA-1-L, WA-3-L and the well intervention of the TPA03 production well in WA-5-L. The activities are located in Commonwealth waters around Woodside's existing Angel and Goodwyn production facilities, with the closest well to shore approximately 125 kilometres (km) north of Dampier, Western Australia.

Overview
The activities under the NWS Phase 1 Well P&A and TPA03 Well Intervention EP will be undertaken using a moored or hybrid (mooring and Dynamic Positioning (DP) capability) semi-submersible mobile offshore drilling unit (MODU) and associated support vessels in water depths between approximately 80 metres (m) to 128 m.

The proposed activity includes:

- The P&A of the AP 2, AP 3, and AP 4 wells in the Angel field. These wells tie back to the Angel platform. Production from these wells has ceased and the wells have been shut in. Well infrastructure (Christmas trees and wellheads) above the mudline will be removed following plugging of these wells. Wellheads may either be recovered during the P&A activities or temporarily placed on the seabed for later recovery. If Angel wellheads are not removed by the MODU, removal will be conducted under the Angel Subsea Infrastructure Removal EP.

- The P&A of the PER02 and PER04 wells in the Perseus-over-Goodwyn (PoG) field. These wells tie back to the Goodwyn platform. Production from these wells has ceased and the wells have been shut in. The Christmas trees may be removed following plugging of these wells. The trees may either be removed during the P&A activities or temporarily placed on the seabed for recovery later. Removal of the PER02 and PER04 wellheads above the mudline will be included in a separate future approval.
- Well intervention activities at the TPA03 well in the Tidepole field to remediate a down-hole valve and restore production from the lower reservoir. The well is currently shut in. Well start-up and production following intervention activities will be managed under the Goodwyn Alpha (GWA) Operations EP.

These activities are planned to commence around Q2 2025 and are expected to be completed at the end of Q4 2026.

Environment that May Be Affected (EMBA)
The EMBA is the largest area where activities could potentially have a direct or indirect impact on the environment. The broadest extent of the EMBA takes into consideration planned and unplanned activities, and for this EP, is determined by modelling a release of hydrocarbons from a loss of well control from either the PER02, AP3, or TPA03 wells. A release of this kind is highly unlikely to occur.

The EMBA models the merged area of many possible paths that a hydrocarbon release could travel depending on factors including the weather and ocean conditions at the time of the release. This means in the highly unlikely event a loss of well control does occur, the whole EMBA will not be affected.

A **Consultation Information Sheet** is attached, which provides additional background on the proposed activities including summaries of potential key impacts and risks and associated management measures. This is also available on our website. Here you can also subscribe to our newsletter *Let's Talk – Our Plans, Your Say* and to receive updates on our consultation activities.

Activity: North West Shelf (NWS) Phase 1 Well Plug and Abandonment (P&A) and TPA03 Well Intervention EP

North West Shelf (NWS) Phase 1 Well Plug and Abandonment (P&A) and TPA03 Well Intervention Environment Plan	
Summary	Permanent plugging and abandonment of five NWS production wells, and well intervention on the TPA03 production well
Permit Area	Production Licenses WA-1-L, WA-3-L and WA-5-L
Location	AP2 - 19° 28' 59" S, 116° 36' 37" E AP3 - 19° 30' 38" S, 116° 36' 18" E AP4 - 19° 31' 18" S, 116° 35' 13" E PER02 - 19° 31' 11" S, 116° 6' 39" E PER 04 - 19° 31' 26" S, 116° 5' 53" E

	TPA03 - 19° 45’ 43” S, 115° 53’ 23” E
Approx. Water Depth (m)	80-128 m
Timing	Expected commencement date: Q2 2025 Expected finish date: Q4 2026
Duration	NWS Phase 1 Well P&A: • Preparatory activities: approximately 7–10 days per well • P&A: approximately 19–33 days per well • Removal of well infrastructure: approximately 1–5 days per well • Recovery of ancillary equipment (e.g. mooring recovery): approximately 1–2 days. TPA03 Well Intervention: • Approximately 5–14 days.
Operational Area/exclusion zones	• Operational area: 4000 m around each well • Temporary exclusion zone: 500 m around the MODU.
Infrastructure	• AP 2, AP 3, and AP 4 production wells in the Angel field • PER02 and PER04 production wells in the Perseus-over-Goodwyn (PoG) field • TPA03 production well in the Tidepole field.
Vessels	MODU, support vessels and helicopters.

Feedback

If you have feedback specific to the proposed activities described under the proposed EP, we welcome your feedback via email at consultation@feedback.woodside.com, via phone call at 1800 442 977 or via the feedback form on our website by **15 December 2024.**

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.

The National Offshore Petroleum Safety and Environmental Management Authority (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 Consultation

6.1.30 Email sent to Western Australian Fishing Industry Council (WAFIC) – 27 September 2024

Please see below consultation information for the North West Shelf (NWS) Phase 1 Well Plug and Abandonment and TPA03 Well Intervention Environment Plan (EP). The consultation period is due to close on 30 October 2024.

A Consultation Information Sheet is also attached.

Under the fee-for-service agreement, can WAFIC please provide the consultation information to (based on active fishing (Fishcube) over the operational area):

- Mackerel Managed Fishery
- Pilbara Fish Trawl Managed Fishery
- Pilbara Trap Managed Fishery
- Pilbara Line Fishery

Kind regards,
Woodside Energy Feedback

Dear Licence Holders

Woodside is planning to submit the North West Shelf (NWS) Phase 1 Well Plug and Abandonment and TPA03 Well Intervention Environment Plan (EP) which involves the permanent plug and abandonment (P&A) of five NWS production wells located in Production Licenses WA-1-L, WA-3-L and the well intervention of the TPA03 production well in WA-5-L. The activities are located in Commonwealth waters around Woodside's existing Angel and Goodwyn production facilities, with the closest well to shore approximately 125 kilometres (km) north of Dampier, Western Australia.

Overview
The activities under the NWS Phase 1 Well P&A and TPA03 Well Intervention EP will be undertaken using a moored or hybrid (mooring and Dynamic Positioning (DP) capability) semi-submersible mobile offshore drilling unit (MODU) and associated support vessels in water depths between approximately 77 metres (m) to 128 m.

The proposed activity includes:

- The P&A of the AP 2, AP 3, and AP 4 wells in the Angel field. These wells tie back to the Angel platform. Production from these wells has ceased and the wells have been

shut in. Well infrastructure (Christmas trees and wellheads) above the mudline will be removed following plugging of these wells. Wellheads may either be recovered during the P&A activities or temporarily placed on the seabed for later recovery. If Angel wellheads are not removed by the MODU, removal will be conducted under the Angel Subsea Infrastructure Removal EP.

- The P&A of the PER02 and PER04 wells in the Perseus-over-Goodwyn (PoG) field. These wells tie back to the Goodwyn platform. Production from these wells has ceased and the wells have been shut in. The Christmas trees may be removed following plugging of these wells. The trees may either be removed during the P&A activities or temporarily placed on the seabed for recovery later. Removal of the PER02 and PER04 wellheads above the mudline will be included in a separate future approval.
- Well intervention activities at the TPA03 well in the Tidepole field to remediate a down-hole valve and restore production from the lower reservoir. The well is currently shut in. Well start-up and production following intervention activities will be managed under the Goodwyn Alpha (GWA) Operations EP.

These activities are planned to commence around Q2 2025 and are expected to be completed at the end of Q4 2026.

The table below provides a summary of the proposed activities under this EP. The attached Consultation Information Sheet provides additional information including a map of impacted areas, summaries of potential impacts and risks relating to the proposed activities, and associated management measures. This is also available on Woodside's website.

If you would like to receive notifications prior to and on completion of activities, please let us know. Woodside will notify WAFIC where relevant.

Activity: North West Shelf (NWS) Phase 1 Well Plug and Abandonment (P&A) and TPA03 Well Intervention EP

North West Shelf (NWS) Phase 1 Well Plug and Abandonment (P&A) and TPA03 Well Intervention Environment Plan	
Summary	Permanent plugging and abandonment of five NWS production wells, and well intervention on the TPA03 production well
Permit Area	Production Licenses WA-1-L, WA-3-L and WA-5-L
Location	AP2 - 19° 29' 55" S, 116° 35' 53" E AP3 - 19° 29' 0" S, 116° 36' 37" E AP4 - 19° 30' 38" S, 116° 36' 19" E PER02 - 19° 31' 12" S, 116° 06' 39" E PER04 - 19° 31' 07" S, 116° 05' 54" E TPA03 - 19° 45' 44" S, 115° 53' 24" E
Approx. Water Depth (m)	77-128 m

Timing	Expected commencement date: Q2 2025 Expected finish date: Q4 2026
Duration	NWS Phase 1 Well P&A: • Preparatory activities: approximately 7–10 days per well • P&A: approximately 19–33 days per well • Removal of well infrastructure: approximately 1–5 days per well • Recovery of ancillary equipment (e.g. mooring recovery): approximately 1–2 days. TPA03 Well Intervention: • Approximately 5–14 days.
Operational Area/exclusion zones	• Operational area: 4000 m around each well • Temporary exclusion zone: 500 m around the MODU.
Infrastructure	• AP 2, AP 3, and AP 4 production wells in the Angel field • PER02 and PER04 production wells in the Perseus-over-Goodwyn (PoG) field • TPA03 production well in the Tidepole field.
Vessels	MODU, support vessels and helicopters.

Feedback:
Please provide feedback specific to the proposed activities described to olivia.mickle@wafic.org.au by **30 October 2024.**

Your feedback and Woodside's response will be included in the 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, Woodside will make your request known to NOPSEMA.

To receive updates on Woodside's consultation activities and our newsletter *Let's Talk – Our Plans, Your Say*, please subscribe here.

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.

Best regards
Woodside Energy Consultation

6.1.31 Email sent to WA Museum – 27 September 2024

Woodside is planning to submit the North West Shelf (NWS) Phase 1 Well Plug and Abandonment and TPA03 Well Intervention Environment Plan (EP) which involves the permanent plug and abandonment (P&A) of five NWS production wells located in Production Licenses WA-1-L, WA-3-L and the well intervention of the TPA03 production well in WA-5-L. The activities are located in Commonwealth waters around Woodside's existing Angel and Goodwyn production facilities, with the closest well to shore approximately 125 kilometres (km) north of Dampier, Western Australia.

Overview
The activities under the NWS Phase 1 Well P&A and TPA03 Well Intervention EP will be undertaken using a moored or hybrid (mooring and Dynamic Positioning (DP) capability) semi-submersible mobile offshore drilling unit (MODU) and associated support vessels in water depths between approximately 77 metres (m) to 128 m.

The proposed activity includes:

- The P&A of the AP 2, AP 3, and AP 4 wells in the Angel field. These wells tie back to the Angel platform. Production from these wells has ceased and the wells have been shut in. Well infrastructure (Christmas trees and wellheads) above the mudline will be removed following plugging of these wells. Wellheads may either be recovered during the P&A activities or temporarily placed on the seabed for later recovery. If Angel wellheads are not removed by the MODU, removal will be conducted under the Angel Subsea Infrastructure Removal EP.
- The P&A of the PER02 and PER04 wells in the Perseus-over-Goodwyn (PoG) field. These wells tie back to the Goodwyn platform. Production from these wells has ceased and the wells have been shut in. The Christmas trees may be removed following plugging of these wells. The trees may either be removed during the P&A activities or temporarily placed on the seabed for recovery later. Removal of the PER02 and PER04 wellheads above the mudline will be included in a separate future approval.
- Well intervention activities at the TPA03 well in the Tidepole field to remediate a down-hole valve and restore production from the lower reservoir. The well is currently shut in. Well start-up and production following intervention activities will be managed under the Goodwyn Alpha (GWA) Operations EP.

These activities are planned to commence around Q2 2025 and are expected to be completed at the end of Q4 2026.

Environment that May Be Affected (EMBA)
The EMBA is the largest area where activities could potentially have a direct or indirect impact on the environment. The broadest extent of the EMBA takes into consideration planned and unplanned activities, and for this EP, is determined by modelling a release of hydrocarbons from a loss of well control from either the PER02, AP3, or TPA03 wells. A release of this kind is highly unlikely to occur.

The EMBA models the merged area of many possible paths that a hydrocarbon release could travel depending on factors including the weather and ocean conditions at the time of the release. This means in the highly unlikely event a loss of well control does occur, the whole EMBA will not be affected.

A **Consultation Information Sheet** is attached, which provides additional background on the proposed activities including summaries of potential key impacts and risks and associated management measures. This is also available on our website. Here you can also subscribe to our newsletter *Let's Talk – Our Plans, Your Say* and to receive updates on our consultation activities.

Please also find attached the details of WA shipwrecks that are relevant for this EP.

As per the *Underwater Cultural Heritage Act 2018 (Cwth),* Woodside will contact the Commonwealth regulator, the Department of Climate Change, Energy, the Environment and Water (DCCEEW), regarding this EP.

Woodside also refers to the Commonwealth Government's Underwater Cultural Heritage (UCH) Guidance document regarding assessments and the draft Guidelines for Working in Near and Offshore Environment to Protect Underwater Cultural Heritage.

Activity: North West Shelf (NWS) Phase 1 Well Plug and Abandonment (P&A) and TPA03 Well Intervention EP

North West Shelf (NWS) Phase 1 Well Plug and Abandonment (P&A) and TPA03 Well Intervention E	
Summary	Permanent plugging and abandonment of five NWS production wells, and well interve
Permit Area	Production Licenses WA-1-L, WA-3-L and WA-5-L
Location	AP2 - 19° 29' 55" S, 116° 35' 53" E AP3 - 19° 29' 0" S, 116° 36' 37" E AP4 - 19° 30' 38" S, 116° 36' 19" E PER02 - 19° 31' 12" S, 116° 06' 39" E PER04 - 19° 31' 07" S, 116° 05' 54" E TPA03 - 19° 45' 44" S, 115° 53' 24" E
Approx. Water Depth (m)	77-128 m
Timing	Expected commencement date: Q2 2025 Expected finish date: Q4 2026
Duration	NWS Phase 1 Well P&A: • Preparatory activities: approximately 7–10 days per well • P&A: approximately 19–33 days per well • Removal of well infrastructure: approximately 1–5 days per well • Recovery of ancillary equipment (e.g. mooring recovery): approximately 1–2 d TPA03 Well Intervention: • Approximately 5–14 days.

Operational Area/exclusion zones	• Operational area: 4000 m around each well • Temporary exclusion zone: 500 m around the MODU.
Infrastructure	• AP 2, AP 3, and AP 4 production wells in the Angel field • PER02 and PER04 production wells in the Perseus-over-Goodwyn (PoG) fiel • TPA03 production well in the Tidepole field.
Vessels	MODU, support vessels and helicopters.

Feedback
If you have feedback specific to the proposed activities described under the proposed EP, we welcome your feedback via email at consultation@feedback.woodside.com, via phone call at 1800 442 977 or via the feedback form on our website by **30 October 2024.**

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.

The National Offshore Petroleum Safety and Environmental Management Authority (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 Consultation

6.1.32 Email sent to Buurabalyyji Thalanyi Aboriginal Corporation – 30 September 2024

Hi [Individual 4]

I hope all is well.

We are contacting you as the delegated representative for Buurabalayji Thalanyji Aboriginal Corporation (BTAC).

Woodside would like to consult with Buurabalayji Thalanyji Aboriginal Corporation (BTAC) as a relevant stakeholder that may be affected by the **North West Shelf Phase 1 Well Plug and Abandonment and TPA03 Well Intervention** (the activity).

Consultation for this activity closes on **Wednesday 30 October 2024**. Your feedback, opinions and comments provided by this date will be reflected in the Environment Plan and considered by 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 also attached a Consultation Information Sheet 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 Environment Plan
5. Any other individuals, groups, or organisations we should talk to about this activity

We have considered the information you have already provided Woodside in relation to BTAC's cultural values that we consider relevant to this activity, which is outlined in Attachment A. Please let us know by **Wednesday 30 October 2024** if there are any changes or additional information you would like Woodside to consider.

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.

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.

Information can be sent to feedback@woodside.com, via the feedback form on our website, call us on 1800 442 977 or directly to me.

Further information about NOPSEMA

Feedback can also be submitted directly to NOPSEMA by phoning (08) 6188 8700 or via email communications@nopsema.gov.au.

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.pdf (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 PL2098.pdf (nopsema.gov.au).

Ongoing Feedback

Feedback can continue to be provided 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 continues to receive, assess and respond to claims and objections from relevant persons throughout the life of the EP. Should a claim or objection be received following the acceptance of an EP 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 of BTAC, 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 and send through guidance on next steps.

Kind regards,

[Attachments: Consultation Information Sheet, Summary Consultation Sheet and Attachment A]

ATTACHMENT A

Previously Provided Information
Buurabalayji Thalanyji Aboriginal Corporation (BTAC) has advised that it has a cultural obligation to care for the environmental values of Sea Country. BTAC's interests include archaeological sites identified on nearshore islands including the Montebello Islands, Barrow Island and the Mackerel Islands. Woodside will record BTAC's interests and cultural values in the proposed EP in the following sections: - Description of Existing Environment (this includes assessing potential impact and controls)

- Cultural Features and Heritage Values
- Environmental Impact and Risk Assessment, Performance Outcomes, Standards, and Measurement Criteria.

6.1.33 Email sent to Gogolanyngor Aboriginal Corporation – 30 September 2024

Hi [Individual 5]

I hope you are well mate. I was up your way last month for the KALACC Festival and kept an eye out for you, I guess you are too busy to attend these functions.

Woodside would like to consult with Gogolanyngor Aboriginal Corporation as a relevant stakeholder and EMBA relevant for **North West Shelf Phase 1 Well Plug and Abandonment and TPA03 Well Intervention** (the activity).

Consultation for this activity closes on **Wednesday 30 October 2024**. Your feedback, opinions and comments provided by this date will be reflected in the Environment Plan and considered by 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 also attached a Consultation Information Sheet 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:

6. How the activity could impact your cultural values, interests, and activities
7. Protection of the environment and its relationship to your cultural values
8. Your concerns about the proposed activity
9. Other elements we should consider in the Environment Plan
10. Any other individuals, groups, or organisations we should talk to about this activity

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.

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.

Information can be sent to feedback@woodside.com, via the feedback form on our website, call us on 1800 442 977 or directly to me.

Further information about NOPSEMA

Feedback can also be submitted directly to NOPSEMA by phoning (08) 6188 8700 or via email communications@nopsema.gov.au.

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.pdf (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 PL2098.pdf (nopsema.gov.au).

Ongoing Feedback

Feedback can continue to be provided 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 continues to receive, assess and respond to claims and objections from relevant persons throughout the life of the EP. Should a claim or objection be received following the acceptance of an EP 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 of Gogolanyngor Aboriginal Corporation, Traditional Owners and other people and organisations who may be interested.

I will give you a call later today.

Kind regards,

[Attachments: Consultation Information Sheet and Summary Consultation Sheet]

6.1.34 Email sent to Karajarri Traditional Lands Association (Aboriginal Corporation) – 30 September 2024

Dear Karajarri Traditional Lands Association

We are contacting you as the representative for Karajarri Traditional Lands Association (Aboriginal Corporation).

Woodside would like to consult with Karajarri Traditional Lands Association (Aboriginal Corporation) as a relevant stakeholder and EMBA relevant for the **North West Shelf Phase 1 Well Plug and Abandonment and TPA03 Well Intervention** (the activity).

Consultation for this activity closes on **Wednesday 30 October 2024**. Your feedback, opinions and comments provided by this date will be reflected in the Environment Plan and considered by 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 also attached a Consultation Information Sheet 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:

11. How the activity could impact your cultural values, interests, and activities
12. Protection of the environment and its relationship to your cultural values
13. Your concerns about the proposed activity
14. Other elements we should consider in the Environment Plan
15. Any other individuals, groups, or organisations we should talk to about this activity

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.

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.

Information can be sent to feedback@woodside.com, via the feedback form on our website, call us on 1800 442 977 or directly to me.

Further information about NOPSEMA

Feedback can also be submitted directly to NOPSEMA by phoning (08) 6188 8700 or via email communications@nopsema.gov.au.

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.pdf (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 PL2098.pdf (nopsema.gov.au).

Ongoing Feedback

Feedback can continue to be provided 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 continues to receive, assess and respond to claims and objections from relevant persons throughout the life of the EP. Should a claim or objection be received following the acceptance of an EP 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 of the Karajarri Traditional Lands Association (Aboriginal Corporation), Traditional Owners and other people and organisations who may be interested.

I look forward to your response and please feel free to call and send through guidance on next steps.

Kind regards,

[Attachments: Consultation Information Sheet and Summary Consultation Sheet]

6.1.35 Email sent to Kariyarra Aboriginal Corporation – 27 September 2024

Good afternoon [Individual 6] & [Individual 7],

I hope you are both well.

We are contacting you as the representative for Kariyarra Aboriginal Corporation.

Woodside would like to consult with Kariyarra Aboriginal Corporation as a relevant stakeholder that may be affected by the **North West Shelf Phase 1 Well Plug and Abandonment and TPA03 Well Intervention** (the activity).

Consultation for this activity closes on **Wednesday 30 October 2024**. Your feedback, opinions and comments provided by this date will be reflected in the Environment Plan and considered by 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 also attached a Consultation Information Sheet 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:

16. How the activity could impact your cultural values, interests, and activities
17. Protection of the environment and its relationship to your cultural values
18. Your concerns about the proposed activity
19. Other elements we should consider in the Environment Plan
20. Any other individuals, groups, or organisations we should talk to about this activity

We have considered the information you have already provided Woodside in relation to Kariyarra Aboriginal Corporation's cultural values that we consider relevant to this activity, which is outlined in Attachment A. Please let us know by **Wednesday 30 October 2024** if there are any changes or additional information you would like Woodside to consider.

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.

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.

Information can be sent to feedback@woodside.com, via the feedback form on our website, call us on 1800 442 977 or directly to me.

Further information about NOPSEMA

Feedback can also be submitted directly to NOPSEMA by phoning (08) 6188 8700 or via email communications@nopsema.gov.au.

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.pdf (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 PL2098.pdf (nopsema.gov.au).

Ongoing Feedback

Feedback can continue to be provided 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 continues to receive, assess and respond to claims and objections from relevant persons throughout the life of the EP. Should a claim or objection be received following the acceptance of an EP 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 of the Kariyarra Aboriginal Corporation, 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 and send through guidance on next steps.

Kind regards

[Attachments: Consultation Information Sheet, Summary Consultation Sheet and Attachment A]

ATTACHMENT A

Previously Provided Information
Kariyarra Aboriginal Corporation (Kariyarra) has outlined its Sea Country rights and duties, including: - looking after and protecting Sea Country - fishing, trapping and crabbing - catching turtle - hunting dugong - using stingray barbs for spears

- collecting shellfish - the protection of Sea Country and totems such as mythic snakes. Woodside will record Kariyarra's interests and cultural values in the proposed EP in the following sections: - Description of Existing Environment (this includes assessing potential impact and controls) - Cultural Features and Heritage Values (this includes cultural features and heritage values, marine species and habitats) - Environmental Impact and Risk Assessment, Performance Outcomes, Standards, and Measurement Criteria.
Kariyarra has noted that there are potential impacts on coastal landforms and coastal native vegetation. Woodside will record Kariyarra's interests and cultural values in the proposed EP in the following sections: - Description of Existing Environment (this includes assessing potential impact and controls) - Cultural Features and Heritage Values (this includes cultural features and heritage values, marine species and habitats) - Environmental Impact and Risk Assessment, Performance Outcomes, Standards, and Measurement Criteria.
Kariyarra has noted there is tangible and intangible heritage associated with the coast and the ocean. Woodside will record Kariyarra's cultural and environmental values in the proposed EP in the following sections: - Description of Existing Environment (this includes assessing potential impact and controls) - Cultural Features and Heritage Values (this includes cultural features and heritage values, marine species and habitats) - Environmental Impact and Risk Assessment, Performance Outcomes, Standards, and Measurement Criteria.

6.1.36 Email sent to Murujuga Aboriginal Corporation – 30 September 2024

Hi [Individual 8]

We are contacting you as the delegated representative for Murujuga Aboriginal Corporation (MAC).

Woodside would like to consult with Murujuga Aboriginal Corporation (MAC) as a relevant stakeholder that may be affected by the **North West Shelf Phase 1 Well Plug and Abandonment and TPA03 Well Intervention** (the activity).

Consultation for this activity closes on **Wednesday 30 October 2024**. Your feedback, opinions and comments provided by this date will be reflected in the Environment Plan and considered by 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 also attached a Consultation Information Sheet 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:

21. How the activity could impact your cultural values, interests, and activities
22. Protection of the environment and its relationship to your cultural values
23. Your concerns about the proposed activity
24. Other elements we should consider in the Environment Plan
25. Any other individuals, groups, or organisations we should talk to about this activity

We have considered the information you have already provided Woodside in relation to MAC's cultural values that we consider relevant to this activity, which is outlined in Attachment A. Please let us know by **Wednesday 30 October 2024** if there are any changes or additional information you would like Woodside to consider.

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.

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.

Information can be sent to feedback@woodside.com, via the feedback form on our website, call us on 1800 442 977 or directly to me.

Further information about NOPSEMA

Feedback can also be submitted directly to NOPSEMA by phoning (08) 6188 8700 or via email communications@nopsema.gov.au.

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.pdf (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 PL2098.pdf (nopsema.gov.au).

Ongoing Feedback

Feedback can continue to be provided 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 continues to receive, assess and respond to claims and objections from relevant persons throughout the life of the EP. Should a claim or objection be received following the acceptance of an EP 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 of MAC, Traditional Owners and other people and organisations who may be interested.

I look forward to your response and please feel free to call and send through guidance on next steps.

Kind regards,

[Attachments: Consultation Information Sheet, Summary Consultation Sheet and Attachment A]

ATTACHMENT A

Previously Provided Information
Murujuga Aboriginal Corporation (Murujuga) has noted there is a potential impact on Jinna (Songlines). Woodside will record Murujuga's cultural and environmental values in the proposed EP in the following sections: - Description of Existing Environment (this includes assessing potential impact and controls) - Cultural Features and Heritage Values (this includes cultural features and heritage values, marine species and habitats) - Environmental Impact and Risk Assessment, Performance Outcomes, Standards, and Measurement Criteria.

Murujuga has stated that any development could potentially affect the natural movement, migration and/or other behaviour of marine species, and may have an impact on the cultural interpretation of the seasonal landscape, seascape and associated cultural behaviours.

Woodside will record Murujuga's cultural and environmental values in the proposed EP in the following sections:

- Description of Existing Environment (this includes assessing potential impact and controls)
- Cultural Features and Heritage Values (this includes cultural features and heritage values, marine species and habitats)
- Environmental Impact and Risk Assessment, Performance Outcomes, Standards, and Measurement Criteria.

6.1.37 Email sent to Nganhurra Thanardi Garrbu Aboriginal Corporation – 27 September 2024

Good afternoon [Individual 9],

We are contacting you as the delegated representative for Nganhurra Thanardi Garrbu Aboriginal Corporation (NTGAC).

As discussed last week. Woodside would like to consult with Nganhurra Thanardi Garrbu Aboriginal Corporation (NTGAC) as a relevant stakeholder that may be affected by the **North West Shelf Phase 1 Well Plug and Abandonment and TPA03 Well Intervention** (the activity).

Consultation for this activity closes on **Wednesday 30 October 2024**. Your feedback, opinions and comments provided by this date will be reflected in the Environment Plan and considered by 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 also attached a Consultation Information Sheet 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:

26. How the activity could impact your cultural values, interests, and activities
27. Protection of the environment and its relationship to your cultural values
28. Your concerns about the proposed activity
29. Other elements we should consider in the Environment Plan
30. Any other individuals, groups, or organisations we should talk to about this activity

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.

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.

Information can be sent to feedback@woodside.com, via the feedback form on our website, call us on 1800 442 977 or directly to me.

Further information about NOPSEMA

Feedback can also be submitted directly to NOPSEMA by phoning (08) 6188 8700 or via email communications@nopsema.gov.au.

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.pdf (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 PL2098.pdf (nopsema.gov.au).

Ongoing Feedback

Feedback can continue to be provided 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 continues to receive, assess and respond to claims and objections from relevant persons throughout the life of the EP. Should a claim or objection be received following the acceptance of an EP 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 of NTGAC, 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 and send through guidance on next steps.

Kind regards

[Attachments: Consultation Information Sheet and Summary Consultation Sheet]

6.1.38 Email sent to Ngarluma Aboriginal Corporation – 27 September 2024

Hello [Individual 10] and [Individual 11]

Woodside is seeking to consult with Ngarluma Aboriginal Corporation (NAC) as a relevant stakeholder that may be affected by the **North West Shelf Phase 1 Well Plug and Abandonment and TPA03 Well Intervention** (the activity).

Consultation for this activity closes on **Wednesday 30 October 2024**. NAC's feedback, opinions and comments provided by this date will be reflected in the Environment Plan and considered by 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 also attached a Consultation Information Sheet 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 NAC's feedback about:

31. How the activity could impact your cultural values, interests, and activities
32. Protection of the environment and its relationship to your cultural values
33. Your concerns about the proposed activity
34. Other elements we should consider in the Environment Plan
35. Any other individuals, groups, or organisations we should talk to about this activity

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. As you're aware, 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.

Information can be sent to feedback@woodside.com, via the feedback form on our website, call us on 1800 442 977 or directly to me.

Further information about NOPSEMA

Feedback can also be submitted directly to NOPSEMA by phoning (08) 6188 8700 or via email communications@nopsema.gov.au.

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.pdf (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 PL2098.pdf (nopsema.gov.au).

Ongoing Feedback

Feedback can continue to be provided 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 continues to receive, assess and respond to claims and objections from relevant persons throughout the life of the EP. Should a claim or objection be received following the acceptance of an EP 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 of NAC, 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 and send through guidance on next steps.

Kind regards,

[Attachments: Consultation Information Sheet and Summary Consultation Sheet]

6.1.39 Email sent to Nimanburr Aboriginal Corporation – 30 September 2024

Hi [Individual 12]

I hope you are well.

I have been staying connected with Eric and was hoping you may have been at the KALACC AGM's so as we could touch base. I will telephone before I am in Broome next and hopefully call into La Djardarr Bay to say hello.

We are contacting you as the representative for Nimanburr Aboriginal Corporation.

Woodside would like to consult with Nimanburr Aboriginal Corporation as a relevant stakeholder and EMBA relevant for the **North West Shelf Phase 1 Well Plug and Abandonment and TPA03 Well Intervention** (the activity).

Consultation for this activity closes on **Wednesday 30 October 2024**. Your feedback, opinions and comments provided by this date will be reflected in the Environment Plan and considered by 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 also attached a Consultation Information Sheet 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:

36. How the activity could impact your cultural values, interests, and activities
37. Protection of the environment and its relationship to your cultural values
38. Your concerns about the proposed activity
39. Other elements we should consider in the Environment Plan
40. Any other individuals, groups, or organisations we should talk to about this activity

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.

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.

Information can be sent to feedback@woodside.com, via the feedback form on our website, call us on 1800 442 977 or directly to me.

Further information about NOPSEMA

Feedback can also be submitted directly to NOPSEMA by phoning (08) 6188 8700 or via email communications@nopsema.gov.au.

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.pdf (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 PL2098.pdf (nopsema.gov.au).

Ongoing Feedback

Feedback can continue to be provided 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 continues to receive, assess and respond to claims and objections from relevant persons throughout the life of the EP. Should a claim or objection be received following the acceptance of an EP 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 of the Nimanburr Aboriginal Corporation, Traditional Owners and other people and organisations who may be interested.

I look forward to your response and please feel free to call and send through guidance on next steps.

Kind regards,

[Attachments: Consultation Information Sheet and Summary Consultation Sheet]

6.1.40 Email sent to Nyangumarta Karajarri Aboriginal Corporation – 30 September 2024

Dear Nyangumarta Karajarri Aboriginal Corporation

Woodside would like to consult with Nyangumarta Karajarri Aboriginal Corporation as a relevant stakeholder and EMBA relevant for the **North West Shelf Phase 1 Well Plug and Abandonment and TPA03 Well Intervention** (the activity).

Consultation for this activity closes on **Wednesday 30 October 2024**. Your feedback, opinions and comments provided by this date will be reflected in the Environment Plan and considered by 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 also attached a Consultation Information Sheet 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:

41. How the activity could impact your cultural values, interests, and activities
42. Protection of the environment and its relationship to your cultural values
43. Your concerns about the proposed activity
44. Other elements we should consider in the Environment Plan
45. Any other individuals, groups, or organisations we should talk to about this activity

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.

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.

Information can be sent to feedback@woodside.com, via the feedback form on our website, call us on 1800 442 977 or directly to me.

Further information about NOPSEMA

Feedback can also be submitted directly to NOPSEMA by phoning (08) 6188 8700 or via email communications@nopsema.gov.au.

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.pdf (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 PL2098.pdf (nopsema.gov.au).

Ongoing Feedback

Feedback can continue to be provided 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 continues to receive, assess and respond to claims and objections from relevant persons throughout the life of the EP. Should a claim or objection be received following the acceptance of an EP 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 of the Nyangumarta Karajarri Aboriginal Corporation, Traditional Owners and other people and organisations who may be interested.

I look forward to your response and please feel free to call and send through guidance on next steps.

Kind regards,

[Attachments: Consultation Information Sheet and Summary Consultation Sheet]

6.1.41 Email sent to Nyangumarta Warrarn Aboriginal Corporation – 30 September 2024

Hi [Individual 13]

I hope you are well.

We are contacting you as the representative for Nyangumarta Warrarn Aboriginal Corporation.

Woodside would like to consult with Nyangumarta Warrarn Aboriginal Corporation as a relevant stakeholder and EMBA relevant for the **North West Shelf Phase 1 Well Plug and Abandonment and TPA03 Well Intervention** (the activity).

Consultation for this activity closes on **Wednesday 30 October 2024**. Your feedback, opinions and comments provided by this date will be reflected in the Environment Plan and considered by 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 also attached a Consultation Information Sheet 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:

46. How the activity could impact your cultural values, interests, and activities
47. Protection of the environment and its relationship to your cultural values
48. Your concerns about the proposed activity
49. Other elements we should consider in the Environment Plan
50. Any other individuals, groups, or organisations we should talk to about this activity

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.

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.

Information can be sent to feedback@woodside.com, via the feedback form on our website, call us on 1800 442 977 or directly to me.

Further information about NOPSEMA

Feedback can also be submitted directly to NOPSEMA by phoning (08) 6188 8700 or via email communications@nopsema.gov.au.

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.pdf (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 PL2098.pdf (nopsema.gov.au).

Ongoing Feedback

Feedback can continue to be provided 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 continues to receive, assess and respond to claims and objections from relevant persons throughout the life of the EP. Should a claim or objection be received following the acceptance of an EP 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 of the Nyangumarta Warrarn Aboriginal Corporation, 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 and send through guidance on next steps.

Kind regards,

[Attachments: Consultation Information Sheet and Summary Consultation Sheet]

6.1.42 Email sent to Nyul Nyul Aboriginal Corporation – 30 September 2024

Hi [Individual 14]

I trust you had a fabulous time on your travel to Europe. I did briefly see you at the KALACC festival but did not get a chance to say hello as it was during [Individual 15] and [Individual 16] session.

We are contacting you as the representative for Nyul Nyul PBC Aboriginal Corporation and ask if you could please forward to the Chairperson.

Woodside would like to consult with Nyul Nyul PBC Aboriginal Corporation as a relevant stakeholder and EMBA relevant for the **North West Shelf Phase 1 Well Plug and Abandonment and TPA03 Well Intervention** (the activity).

Consultation for this activity closes on **Wednesday 30 October 2024**. Your feedback, opinions and comments provided by this date will be reflected in the Environment Plan and considered by 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 also attached a Consultation Information Sheet 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:

51. How the activity could impact your cultural values, interests, and activities
52. Protection of the environment and its relationship to your cultural values
53. Your concerns about the proposed activity
54. Other elements we should consider in the Environment Plan
55. Any other individuals, groups, or organisations we should talk to about this activity

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.

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.

Information can be sent to feedback@woodside.com, via the feedback form on our website, call us on 1800 442 977 or directly to me.

Further information about NOPSEMA

Feedback can also be submitted directly to NOPSEMA by phoning (08) 6188 8700 or via email communications@nopsema.gov.au.

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.pdf (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 PL2098.pdf (nopsema.gov.au).

Ongoing Feedback

Feedback can continue to be provided 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 continues to receive, assess and respond to claims and objections from relevant persons throughout the life of the EP. Should a claim or objection be received following the acceptance of an EP 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 of the Nyul Nyul PBC Aboriginal Corporation, Traditional Owners and other people and organisations who may be interested.

I look forward to your response and please feel free to call and send through guidance on next steps.

Kind regards,

[Attachments: Consultation Information Sheet and Summary Consultation Sheet]

6.1.43 Email sent to Robe River Kuruma Aboriginal Corporation – 27 September 2024

Good afternoon [Individual 17] & [Individual 18],

I hope you are both well!

We are contacting you as the representative for Robe River Kuruma Aboriginal Corporation.

Woodside would like to consult with Robe River Kuruma Aboriginal Corporation as a relevant stakeholder that may be affected by the **North West Shelf Phase 1 Well Plug and Abandonment and TPA03 Well Intervention** (the activity).

Consultation for this activity closes on **Wednesday 30 October 2024**. Your feedback, opinions and comments provided by this date will be reflected in the Environment Plan and considered by 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 also attached a Consultation Information Sheet 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:

56. How the activity could impact your cultural values, interests, and activities
57. Protection of the environment and its relationship to your cultural values
58. Your concerns about the proposed activity
59. Other elements we should consider in the Environment Plan
60. Any other individuals, groups, or organisations we should talk to about this activity

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.

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.

Information can be sent to feedback@woodside.com, via the feedback form on our website, call us on 1800 442 977 or directly to me.

Further information about NOPSEMA

Feedback can also be submitted directly to NOPSEMA by phoning (08) 6188 8700 or via email communications@nopsema.gov.au.

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.pdf (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 PL2098.pdf (nopsema.gov.au).

Ongoing Feedback

Feedback can continue to be provided 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 continues to receive, assess and respond to claims and objections from relevant persons throughout the life of the EP. Should a claim or objection be received following the acceptance of an EP 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 of the Robe River Kuruma Aboriginal Corporation, 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 and send through guidance on next steps.

Kind regards

[Attachments: Consultation Information Sheet and Summary Information Sheet]

6.1.44 Email sent to Wanparta Aboriginal Corporation – 30 September 2024

Hi [Individual 19]

I called earlier and left a long-winded message in relation to an update on our proposed ranger assistance program. I will call again today or tomorrow.

We are contacting you as the representative for Wanparta Aboriginal Corporation.

Woodside would like to consult with Wanparta Aboriginal Corporation as a relevant stakeholder and EMBA relevant for the **North West Shelf Phase 1 Well Plug and Abandonment and TPA03 Well Intervention** (the activity).

Consultation for this activity closes on **Wednesday 30 October 2024**. Your feedback, opinions and comments provided by this date will be reflected in the Environment Plan and considered by 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 also attached a Consultation Information Sheet 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:

61. How the activity could impact your cultural values, interests, and activities
62. Protection of the environment and its relationship to your cultural values
63. Your concerns about the proposed activity
64. Other elements we should consider in the Environment Plan
65. Any other individuals, groups, or organisations we should talk to about this activity

We have considered the information you have already provided Woodside in relation to Wanparta Aboriginal Corporation's cultural values that we consider relevant to this activity, which is outlined in Attachment A. Please let us know by **Wednesday 30 October 2024** if there are any changes or additional information you would like Woodside to consider.

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.

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.

Information can be sent to feedback@woodside.com, via the feedback form on our website, call us on 1800 442 977 or directly to me.

Further information about NOPSEMA

Feedback can also be submitted directly to NOPSEMA by phoning (08) 6188 8700 or via email communications@nopsema.gov.au.

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.pdf (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 PL2098.pdf (nopsema.gov.au).

Ongoing Feedback

Feedback can continue to be provided 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 continues to receive, assess and respond to claims and objections from relevant persons throughout the life of the EP. Should a claim or objection be received following the acceptance of an EP 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 of the Wanparta Aboriginal Corporation, Traditional Owners and other people and organisations who may be interested.

I look forward to your response and please feel free to call and send through guidance on next steps.

Kind regards,

[Attachments: Consultation Information Sheet, Summary Consultation Sheet and Attachment A]

ATTACHMENT A

Previously Provided Information
Wanparta Aboriginal Corporation (Wanparta) has noted that Ngarla people have a deep spiritual connection to Sea Country and a responsibility to look after and protect it. Woodside will record Wanparta's cultural and environmental values in the proposed EP in the following sections: - Description of Existing Environment (this includes assessing potential impact and controls) - Cultural Features and Heritage Values (this includes cultural features and heritage values, marine species and habitats) - Environmental Impact and Risk Assessment, Performance Outcomes, Standards, and Measurement Criteria.
Wanparta has noted the significance of its totem species including the octopus, stingray, spiny bream fish and kestrel. Woodside will record Wanparta's cultural and environmental values in the proposed EP in the following sections: - Description of Existing Environment (this includes assessing potential impact and controls) - Cultural Features and Heritage Values (this includes cultural features and heritage values, marine species and habitats).

6.1.45 Email sent to Wirrawandi Aboriginal Corporation – 27 September 2024

Good afternoon [Individual 20],

Happy Friday!

We are contacting you as the representative for WAC.

Woodside would like to consult with WAC as a relevant stakeholder that may be affected by the **North West Shelf Phase 1 Well Plug and Abandonment and TPA03 Well Intervention** (the activity).

Consultation for this activity closes on **Wednesday 30 October 2024**. Your feedback, opinions and comments provided by this date will be reflected in the Environment Plan and considered by 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 also attached a Consultation Information Sheet 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:

66. How the activity could impact your cultural values, interests, and activities
67. Protection of the environment and its relationship to your cultural values
68. Your concerns about the proposed activity
69. Other elements we should consider in the Environment Plan
70. Any other individuals, groups, or organisations we should talk to about this activity

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.

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.

Information can be sent to feedback@woodside.com, via the feedback form on our website, call us on 1800 442 977 or directly to me.

Further information about NOPSEMA

Feedback can also be submitted directly to NOPSEMA by phoning (08) 6188 8700 or via email communications@nopsema.gov.au.

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.pdf (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 PL2098.pdf (nopsema.gov.au).

Ongoing Feedback

Feedback can continue to be provided 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 continues to receive, assess and respond to claims and objections from relevant persons throughout the life of the EP. Should a claim or objection be received following the acceptance of an EP 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 of WAC, 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 and send through guidance on next steps.

Kind regards

[Attachments: Consultation Information Sheet and Summary Consultation Sheet]

6.1.46 Email sent to Yawuru Native Title Holders Aboriginal Corporation – 30 September 2024

Hi [Individual 21]

I hope you are well.

Sending through information on another environment plan where the EMBA includes Yawuru as being relevant.

Woodside would like to consult with Yawuru Native Title Holders Aboriginal Corporation as a relevant stakeholder and EMBA relevant for the **North West Shelf Phase 1 Well Plug and Abandonment and TPA03 Well Intervention** (the activity).

Consultation for this activity closes on **Wednesday 30 October 2024**. Your feedback, opinions and comments provided by this date will be reflected in the Environment Plan and considered by 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 also attached a Consultation Information Sheet 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:

71. How the activity could impact your cultural values, interests, and activities
72. Protection of the environment and its relationship to your cultural values
73. Your concerns about the proposed activity
74. Other elements we should consider in the Environment Plan
75. Any other individuals, groups, or organisations we should talk to about this activity

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.

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.

Information can be sent to feedback@woodside.com, via the feedback form on our website, call us on 1800 442 977 or directly to me.

Further information about NOPSEMA

Feedback can also be submitted directly to NOPSEMA by phoning (08) 6188 8700 or via email communications@nopsema.gov.au.

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.pdf (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 PL2098.pdf (nopsema.gov.au).

Ongoing Feedback

Feedback can continue to be provided 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 continues to receive, assess and respond to claims and objections from relevant persons throughout the life of the EP. Should a claim or objection be received following the acceptance of an EP 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 of the Yawuru Native Title Holders Aboriginal Corporation, Traditional Owners and other people and organisations who may be interested.

I look forward to your response and please feel free to call and send through guidance on next steps.

Kind regards,

[Attachments: Consultation Information Sheet and Summary Consultation Sheet]

6.1.47 Email sent to Yindjibarndi Aboriginal Corporation – 27 September 2024

Hi [Individual 22],

I hope you and your family are well!

We are contacting NYFL as the delegated representative for Yindjibarndi Aboriginal Corporation.

Woodside would like to consult with Yindjibarndi Aboriginal Corporation as a relevant stakeholder that may be affected by the **North West Shelf Phase 1 Well Plug and Abandonment and TPA03 Well Intervention** (the activity).

Consultation for this activity closes on **Wednesday 30 October 2024**. Your feedback, opinions and comments provided by this date will be reflected in the Environment Plan and considered by 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 also attached a Consultation Information Sheet 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:

76. How the activity could impact your cultural values, interests, and activities
77. Protection of the environment and its relationship to your cultural values
78. Your concerns about the proposed activity
79. Other elements we should consider in the Environment Plan
80. Any other individuals, groups, or organisations we should talk to about this activity

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.

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.

Information can be sent to feedback@woodside.com, via the feedback form on our website, call us on 1800 442 977 or directly to me.

Further information about NOPSEMA

Feedback can also be submitted directly to NOPSEMA by phoning (08) 6188 8700 or via email communications@nopsema.gov.au.

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 PL2098.pdf (nopsema.gov.au).

Ongoing Feedback

Feedback can continue to be provided 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 continues to receive, assess and respond to claims and objections from relevant persons throughout the life of the EP. Should a claim or objection be received following the acceptance of an EP 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 of the Yindjibarndi Aboriginal Corporation, Traditional Owners and other people and organisations who may be interested.

I look forward to your response and please feel free to call and send through guidance on next steps.

Kind regards

[Attachments: Consultation Information Sheet and Summary Consultation Sheet]

6.1.48 Email sent to Yinggarda Aboriginal Corporation – 30 September 2024

Dear [Individual 23], I hope this message finds you well.

Woodside would like to consult with Yinggarda Aboriginal Corporation as a relevant stakeholder that may be affected by the **North West Shelf Phase 1 Well Plug and Abandonment and TPA03 Well Intervention** (the activity).

Consultation for the activity closes on **Wednesday 30 October 2024**. Your feedback, opinions and comments provided by this date will be reflected in the Environment Plan and considered by 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 provides a high-level overview of the activity, including the Environment that May Be Affected (EMBA) map. We have also attached a Consultation Information Sheet 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:

81. How the activity could impact your cultural values, interests, and activities
82. Protection of the environment and its relationship to your cultural values
83. Your concerns about the proposed activity
84. Other elements we should consider in the Environment Plan
85. Any other individuals, groups, or organisations we should talk to about this activity

We have considered the information you have already provided Woodside in relation to Yinggarda Aboriginal Corporation's cultural values that we consider relevant to this activity, which is outlined in **Attachment A**. Please let us know by **Wednesday 30 October 2024** if there are any changes or additional information you would like Woodside to consider.

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.

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.

Information can be sent to feedback@woodside.com, via the feedback form on our website, call us on 1800 442 977, or directly to me.

Further information about NOPSEMA

Feedback can also be submitted directly to NOPSEMA by phoning (08) 6188 8700 or via email communications@nopsema.gov.au.

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.pdf (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 PL2098.pdf (nopsema.gov.au).

Ongoing Feedback

Feedback can continue to be provided 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 continues to receive, assess and respond to claims and objections from relevant persons throughout the life of the EP. Should a claim or objection be received following the acceptance of an EP 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 of the Yinggarda Aboriginal Corporation, 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 and send through guidance on next steps.

Kind regards

[Attachments: Consultation Information Sheet, Summary Consultation Sheet and Attachment A]

ATTACHMENT A

Previously Provided Information
Yinggarda Aboriginal Corporation (Yinggarda) has noted that there are potential impacts to the environment, and that marine plants and animals (including whales and turtles), and the environment generally, are inexorably linked to their culture. Woodside will record Yinggarda's cultural and environmental values in the proposed EP in the following sections: - Description of Existing Environment (this includes assessing potential impact and controls) - Cultural Features and Heritage Values (this includes cultural features and heritage values, marine species and habitats) - Environmental Impact and Risk Assessment, Performance Outcomes, Standards, and Measurement Criteria.

6.1.49 Email sent to Kimberley Land Council – 30 September 2024

Hi [Individual 24]

I hope you are well. It was great to spend some time with yourself and other KLC representatives at this years, well-coordinated KALACC Festive.

Woodside would like to consult with Kimberley Land Council (KLC) as a relevant stakeholder and EMBA relevant for the **North West Shelf Phase 1 Well Plug and Abandonment and TPA03 Well Intervention** (the activity).

Consultation for this activity closes on **Wednesday 30 October 2024**. Your feedback, opinions and comments provided by this date will be reflected in the Environment Plan and considered by 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 also attached a Consultation Information Sheet 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:

86. How the activity could impact your cultural values, interests, and activities
87. Protection of the environment and its relationship to your cultural values
88. Your concerns about the proposed activity
89. Other elements we should consider in the Environment Plan
90. Any other individuals, groups, or organisations we should talk to about this activity

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.

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.

Information can be sent to feedback@woodside.com, via the feedback form on our website, call us on 1800 442 977 or directly to me.

Further information about NOPSEMA

Feedback can also be submitted directly to NOPSEMA by phoning (08) 6188 8700 or via email communications@nopsema.gov.au.

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.pdf (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 PL2098.pdf (nopsema.gov.au).

Ongoing Feedback

Feedback can continue to be provided 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 continues to receive, assess and respond to claims and objections from relevant persons throughout the life of the EP. Should a claim or objection be received following the acceptance of an EP 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 of KLC, Traditional Owners and other people and organisations who may be interested.

I look forward to your response and please feel free to call and send through guidance on next steps.

Kind regards,

[Attachments: Consultation Information Sheet and Summary Consultation Sheet]

6.1.50 Email sent to Yamatji Marlpa Aboriginal Corporation – 27 September 2024

Good afternoon,

Woodside would like to consult with Yamatji Marlpa Aboriginal Corporation (YMAC) as a relevant stakeholder that may be affected by the **North West Shelf Phase 1 Well Plug and Abandonment and TPA03 Well Intervention** (the activity).

Consultation for this activity closes on **Wednesday 30 October 2024**. Your feedback, opinions and comments provided by this date will be reflected in the Environment Plan and considered by 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 also attached a Consultation Information Sheet 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:

91. How the activity could impact your cultural values, interests, and activities
92. Protection of the environment and its relationship to your cultural values
93. Your concerns about the proposed activity
94. Other elements we should consider in the Environment Plan
95. Any other individuals, groups, or organisations we should talk to about this activity

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.

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.

Information can be sent to feedback@woodside.com, via the feedback form on our website, call us on 1800 442 977 or directly to me.

Further information about NOPSEMA

Feedback can also be submitted directly to NOPSEMA by phoning (08) 6188 8700 or via email communications@nopsema.gov.au.

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 PL2098.pdf (nopsema.gov.au).

Ongoing Feedback

Feedback can continue to be provided 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 continues to receive, assess and respond to claims and objections from relevant persons throughout the life of the EP. Should a claim or objection be received following the acceptance of an EP 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 of YMAC, Traditional Owners and other people and organisations who may be interested.

I look forward to your response and please feel free to call and send through guidance on next steps.

Kind regards

[Attachments: Consultation Information Sheet and Summary Consultation Sheet]

6.1.51 Email sent to Ngarluma Yindjibarndi Foundtion Ltd – 27 September 2024

Hello [Individual 22] and [Individual 25]

Woodside is seeking to consult with Ngarluma Yindjibarndi Foundation Ltd (NYFL) as a relevant stakeholder that may be affected by the **North West Shelf Phase 1 Well Plug and Abandonment and TPA03 Well Intervention** (the activity).

Consultation for this activity closes on **Wednesday 30 October 2024**. NYFL's feedback, opinions and comments provided by this date will be reflected in the Environment Plan and considered by 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 also attached a Consultation Information Sheet 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 NYFL's feedback about:

96. How the activity could impact your cultural values, interests, and activities
97. Protection of the environment and its relationship to your cultural values
98. Your concerns about the proposed activity

99. Other elements we should consider in the Environment Plan
100. Any other individuals, groups, or organisations we should talk to about this activity

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. As you're aware, 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.

Information can be sent to feedback@woodside.com, via the feedback form on our website, call us on 1800 442 977 or directly to me.

Further information about NOPSEMA

Feedback can also be submitted directly to NOPSEMA by phoning (08) 6188 8700 or via email communications@nopsema.gov.au.

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 PL2098.pdf (nopsema.gov.au).

Ongoing Feedback

Feedback can continue to be provided 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 continues to receive, assess and respond to claims and objections from relevant persons throughout the life of the EP. Should a claim or objection be received following the acceptance of an EP 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 of NYFL, 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 and send through guidance on next steps.

Kind regards,

[Attachments: Consultation Information Sheet and Summary Consultation Sheet]

6.1.52 Email sent to Save Our Songlines – 27 September 2024

Dear [Individual 3],

Woodside understands all communication to [Individual 2] and Save Our Songlines should be directed to you. Please see below for [Individual 2] attention.

Dear [Individual 2],

Woodside would like to consult with Save Our Songlines as a relevant stakeholder that may be affected by the **North West Shelf Phase 1 Well Plug and Abandonment and TPA03 Well Intervention** (the activity).

Consultation for this activity closes on **Wednesday 30 October 2024**. Your feedback, opinions and comments provided by this date will be reflected in the Environment Plan and considered by 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 also attached a Consultation Information Sheet 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:

101. How the activity could impact your cultural values, interests, and activities
102. Protection of the environment and its relationship to your cultural values
103. Your concerns about the proposed activity
104. Other elements we should consider in the Environment Plan
105. Any other individuals, groups, or organisations we should talk to about this activity

We have considered the information you have already provided Woodside in relation to Save Our Songlines' cultural values that we consider relevant to this activity, which is outlined in **Attachment A**. Please let us know by **Wednesday 30 October 2024** if there are any changes or additional information you would like Woodside to consider.

We note your previously stated preference for consultation to occur in written format (as set out in an email dated 10 April 2024). Woodside also welcomes the opportunity to meet face to face.

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.

Information can be sent to feedback@woodside.com, via the feedback form on our website, or call us on 1800 442 977.

Further information about NOPSEMA

Feedback can also be submitted directly to NOPSEMA by phoning (08) 6188 8700 or via email communications@nopsema.gov.au.

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.pdf (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 PL2098.pdf (nopsema.gov.au).

Ongoing Feedback

Feedback can continue to be provided 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 continues to receive, assess and respond to claims and objections from relevant persons throughout the life of the EP. Should a claim or objection be received following the acceptance of an EP 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 of Save Our Songlines, Traditional Owners and other people and organisations who may be interested.

We look forward to your response and please feel free to call and send through guidance on next steps.

Kind regards

[Attachments: Consultation Information Sheet, Summary Consultation Sheet and Attachment A]

ATTACHMENT A

Previously Provided Information
Save Our Songlines has noted cultural features associated with whales, as well as marine mammals, seagrass, and the meeting of freshwater and saltwater was demonstrated. Woodside will record Save Our Songlines' cultural and environmental values in the proposed EP in the following sections: - Description of Existing Environment (this includes assessing potential impact and controls) - Cultural Features and Heritage Values (this includes cultural features and heritage values, marine species and habitats) - Environmental Impact and Risk Assessment, Performance Outcomes, Standards, and Measurement Criteria.
Save Our Songlines has noted there are cultural features associated with Songlines, dreaming and energy lines. Woodside will record Save Our Songlines' cultural and environmental values in the proposed EP in the following sections: - Description of Existing Environment (this includes assessing potential impact and controls) - Cultural Features and Heritage Values (this includes cultural features and heritage values, marine species and habitats) - Environmental Impact and Risk Assessment, Performance Outcomes, Standards, and Measurement Criteria.

6.1.53 Email sent to DAFF – Fisheries – 4 October 2024

Dear DAFF - Fisheries

Woodside is planning to submit the North West Shelf (NWS) Phase 1 Well Plug and Abandonment and TPA03 Well Intervention Environmental Plan (EP) which involves the permanent plug and abandonment (P&A) of five NWS production wells located in Production Licenses WA-1-L, WA-3-L and the well intervention of the TPA03 production well in WA-5-L. The activities are located in Commonwealth waters around Woodside's existing Angel and Goodwyn production facilities, with the closest well to shore approximately 125 kilometres (km) north of Dampier, Western Australia.

Overview

The activities under the NWS Phase 1 Well P&A and TPA03 Well Intervention EP will be undertaken using a moored or hybrid (mooring and Dynamic Positioning (DP) capability) semi-submersible mobile offshore drilling unit (MODU) and associated support vessels in water depths between approximately 78 metres (m) to 128 m.

The proposed activity includes:

- The P&A of the AP 2, AP 3, and AP 4 wells in the Angel reservoir. These wells tie back to the Angel platform. Production from these wells has ceased and the wells have been shut in. Well infrastructure (Christmas trees and wellheads) above the mudline will be removed following plugging of these wells. Wellheads may either be recovered during the P&A activities or temporarily placed on the seabed for later

recovery. If Angel wellheads are not removed by the MODU, removal will be conducted under the Angel Subsea Infrastructure Removal EP.
- The P&A of the PER02 and PER04 wells in the Perseus-over-Goodwyn (PoG) field. These wells tie back to the Goodwyn platform. Production from these wells has ceased and the wells have been shut in. The Christmas trees may be removed following plugging of these wells. The trees may either be removed during the P&A activities or temporarily placed on the seabed for recovery later. Removal of the PER02 and PER04 wellheads above the mudline will be included in a separate future approval.
- Well intervention activities at the TPA03 well in the Tidepole reservoir to remediate a down-hole valve and restore production from the lower reservoir. The well is currently shut in. Well start-up and production following intervention activities will be managed under the Goodwyn Alpha (GWA) Operations EP.

These activities are planned to commence around Q2 2025 and are expected to be completed at the end of Q4, 2026.

Operational area / exclusion zones

The activity Operational Area will consist of a 4000 m radius around each well. This area is where the MODU and activity vessels can be expected to be operating whilst undertaking P&A and well intervention activities. There are no restrictions to other vessels within the Operational Area apart from being advised to take care. A temporary 500 m exclusion zone will be established around the MODU while undertaking activities at each well location. The exclusion zone is established for navigational safety and fishing vessels are not allowed to enter.

Environment that May Be Affected (EMBA)

The EMBA is the largest area where activities could potentially have a direct or indirect impact on the environment. The broadest extent of the EMBA takes into consideration planned and unplanned activities, and for this EP, is determined by modelling a release of hydrocarbons from a loss of well control from either the PER02, AP 3, or TPA03 wells. A release of this kind is highly unlikely to occur.

The EMBA models the merged area of many possible paths that a hydrocarbon release could travel depending on factors including the weather and ocean conditions at the time of the release. This means in the highly unlikely event a loss of well control does occur, the whole EMBA will not be affected.

A **Consultation Information Sheet** is attached, which provides additional background on the proposed activities including summaries of potential key impacts and risks and associated management measures. This is also available on our website. Here you can also subscribe to our newsletter *Let's Talk – Our Plans, Your Say* and to receive updates on our consultation activities.

Activity: North West Shelf (NWS) Phase 1 Well Plug and Abandonment (P&A) and TPA03 Well Intervention EP

North West Shelf (NWS) Phase 1 Well Plug and Abandonment (P&A) and TPA03 Well Intervention Environment Plan	
Summary	Permanent plugging and abandonment of five NWS production wells, and well intervention on the TPA03 production well

Permit Area	Production Licenses WA-1-L, WA-3-L and WA-5-L
Location	AP2 - 19° 29’ 55” S, 116° 35’ 53” E AP3 - 19° 29’ 0” S, 116° 36’ 37” E AP4 - 19° 30’ 38” S, 116° 36’ 19” E PER02 - 19° 31’ 12” S, 116° 06’ 39” E PER04 - 19° 31’ 07” S, 116° 05’ 54” E TPA03 - 19° 45’ 44” S, 115° 53’ 24” E
Approx. Water Depth (m)	77-128 m
Timing	Expected commencement date: Q2 2025 Expected finish date: Q4 2026
Duration	NWS Phase 1 Well P&A: • Preparatory activities: approximately 7–10 days per well • P&A: approximately 19–33 days per well • Removal of well infrastructure: approximately 1–5 days per well • Recovery of ancillary equipment (e.g. mooring recovery): approximately 1–2 days. TPA03 Well Intervention: • Approximately 5–14 days.
Operational area / exclusion zones	• Operational area: 4000 m around each well • Temporary exclusion zone: 500 m around the MODU.
Infrastructure	• AP 2, AP 3, and AP 4 production wells in the Angel field • PER02 and PER04 production wells in the Perseus-over-Goodwyn (PoG) field • TPA03 production well in the Tidepole field.
Vessels	MODU, support vessels and helicopters.
Commonwealth Fisheries	No Commonwealth managed fisheries active in Operational Areas. **Active in EMBA:** • North West Slope Trawl Fishery • Western Deepwater Trawl Fishery

Biosecurity

With respect to the biosecurity matters, please note the following information below:

Environment description	
The Operational Areas are located in Commonwealth waters within the North-west Marine Region (NWMR) in water depths of 77 - 128 m along the 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 relatively steep outer slope approximately 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.	
Potential IMS risk	***IMS mitigation management***
The introduction and establishment of invasive marine species has the potential to impact ecosystems/habitat, native species survival and socio-economic values, although the risk and impact assessment completed by Woodside identifies the likelihood of IMS introduction from various location potentials has remote or low likelihood of occurring.	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 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. Woodside recognises the requirement to manage biosecurity risk to domestic conveyances, the requirements under the Biosecurity Control Act 2015, and the mechanism for exemption under the Biosecurity (Exposed Conveyances - Exceptions from Biosecurity Control) Determination 2016. Woodside notes the specified timeframes for pre-arrival reporting using the Maritime and Aircraft Reporting System (MARS), and for submission of the supplied "Questionnaire for Biosecurity Exemptions for Biosecurity Control Determination".

	Woodside works closely with our suppliers and contractors to address the risks and assure awareness of the obligations outlined above.

Feedback

If you have feedback specific to the proposed activities described under the proposed EP, we welcome your feedback via email at Consultation@feedback.woodside.com, via phone call at 1800 442 977 or via the feedback form on our website by **4 November 2024**

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 so that the information is not included when the EP is published on NOPSEMA's website.

The National Offshore Petroleum Safety and Environmental Management Authority (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 Consultation

6.2 Additional consultation

6.2.1 Email sent to Australasian Centre for Corporate Responsibility (ACCR), Australian Border Force (ABF), Australian Communications and Media Authority (ACMA), Australian Conservation Foundation (ACF), Australian Energy Producers (AEP), Australian Fisheries Management Authority (AFMA), Australian Hydrographic Office (AHO), Australian Institute of Marine Science (AIMS), Australian Marine Conservation Society (AMCS), Australian Maritime Safety Authority (AMSA) – Marine Pollution, Australian Maritime Safety Authority (AMSA) – Marine Safety, BP, Bounty Oil and Gas, Broome Chamber of Commerce and Industry (BCCI), Cape Conservation Group (CCG), Carbon CQ, Carnarvon Chamber of Commerce and Industry, Carnarvon Energy Ltd, Chevron Australia, City of Karratha, Coastal Oil and Gas, Commonwealth Fisheries Association (CFA), Commonwealth Scientific and Industrial Research Organisation (CSIRO), Conservation Council of WA (CCWA), Curtin University, Department of Agriculture, Fisheries and Forestry (DAFF) – Biosecurity, marine pests, vessels, aircraft

and personnel, Department of Agriculture, Fisheries and Forestry (DAFF) – Fisheries, Department of Biodiversity, Conservation and Attractions (DBCA), Department of Climate Change, Energy, the Environment and Water (DCCEEW), Department of Defence (DoD), Department of Energy, Mines, Industry Regulation and Safety (DEMIRS), Department of Industry, Science and Resources (DISR), Department of Planning, Lands and Heritage (DPLH), Department of Primary Industries and Regional Development (DPIRD), Department of Transport (DoT), Director of National Parks (DNP), Edith Cowan University, Environs Kimberley, Exmouth Chamber of Commerce and Industry, Exmouth Community Liaison Group, Finder Energy, Friends of the Earth, Greenpeace Australia Pacific (GAP), INPEX Alpha, InCapture, Jadestone Energy, JX Nippon, KATO Energy, KUFPEC, Karratha and Districts Chamber of Commerce and Industry, Karratha Community Liaison Group, Kyushu Electric Wheatstone, Longreach Capital Investments, Marine Tourism WA, Maritime Union of Australia (MUA), Market Forces, Mobil, Murdoch University, Ningaloo Coast World Heritage Advisory Committee (NCWHAC), OMV Australia, Onslow Chamber of Commerce and Industry, PE Wheatstone, Pathfinder Energy, Pilbara Ports Authority, Port Hedland Chamber of Commerce and Industry, Protect Ningaloo, Recfishwest, Santos, Shire of Ashburton, Shire of Broome, Shire of Carnarvon, Shire of Exmouth, Skye Napoleon Pty Ltd, Telstra, The Wilderness Society, Vermilion Energy, University of Western Australia (UWA), WA Game Fishing Association, Western Australian Fishing Industry Council (WAFIC), Western Australian Marine Science Institution (WAMSI), Western Australian Museum, Western Gas, North West Slope Trawl Fishery and Western Deepwater Trawl Fishery licence holders, Gascoyne and Pilbara/Kimberley recreational marine users – 11 October 2024

Following our correspondence on **27 September 2024**, please be advised that the well location coordinates and water depths have been updated as per the table below. There are no other changes to previously provided consultation information, including mitigation and/or management measures.

Wells	Approximate Water Depth (m)	Latitude	Longitude	Titles
AP2	80	19° 28’ 59” S	116° 36’ 37” E	WA-3-L
AP3	80	19° 30’ 38” S	116° 36’ 18” E	WA-3-L
AP4	90	19° 31’ 18” S	116° 35’ 13” E	WA-3-L
PER02	127	19° 31’ 11” S	116° 6’ 39” E	WA-1-L
PER04	128	19° 31’ 26” S	116° 5’ 53” E	WA-1-L
TPA03	113	19° 45’ 43” S	115° 53’ 23” E	WA-5-L

The updated Consultation Information Sheet for this Environment Plan (EP) is available on our website and attached to this email. If you have feedback specific to the proposed activities described, we would welcome your feedback at consultation@feedback.woodside.com or 1800 442 977 by **30 October 2024**.

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 so that the information is not included when the EP is published on NOPSEMA's website.

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.

Kind regards,

Woodside Energy Consultation

6.3 Follow Up Consultation

6.3.1 Email sent to Australasian Centre for Corporate Responsibility (ACCR), Australian Border Force (ABF), Australian Conservation Foundation (ACF), Australian Energy Producers (AEP), Australian Marine Conservation Society (AMCS), Australian Maritime Safety Authority (AMSA) – Marine Pollution, Bounty Oil and Gas, Broome Chamber of Commerce and Industry (BCCI), Cape Conservation Group (CCG), Carbon CQ, Carnarvon Chamber of Commerce and Industry, City of Karratha, Coastal Oil and Gas, Conservation Council of WA (CCWA), Department of Biodiversity, Conservation and Attractions (DBCA), Department of Defence (DoD), Department of Energy, Mines, Industry Regulation and Safety (DEMIRS), Department of Industry, Science and Resources (DISR), Environs Kimberley, Exmouth Chamber of Commerce and Industry, Exmouth Community Liaison Group, Finder Energy, Friends of the Earth, Greenpeace Australia Pacific (GAP), INPEX Alpha, InCapture, Jadestone Energy, JX Nippon, KATO Energy, KUFPEC, Karratha and Districts Chamber of Commerce and Industry (KDDCI), Karratha Community Liaison Group, Kyushu Electric Wheatstone, Longreach Capital Investments, Marine Tourism WA, Maritime Union of Australia (MUA), Market Forces, Mobil, Ningaloo Coast World Heritage Advisory Committee (NCWHAC), OMV Australia, Onslow Chamber of Commerce and Industry, PE

Wheatstone, Pathfinder Energy, Pilbara Ports Authority, Port Hedland Chamber of Commerce and Industry, Protect Ningaloo, Shire of Broome, Shire of Carnarvon, Shire of Exmouth, Skye Napoleon Pty Ltd, The Wilderness Society, Vermilion Energy, WA Game Fishing Association, Western Australian Marine Science Institution (WAMSI), Western Gas – 22 October 2024

Woodside previously consulted you on its plans to submit the North West Shelf (NWS) Phase 1 Well Plug and Abandonment and TPA03 Well Intervention Environment Plan (EP).

Woodside plans to permanently plug and abandon five NWS wells that have ceased production. Woodside also proposes to conduct well intervention activities at the TPA03 well to remediate a valve and restore production from the lower reservoir.

Information on the EP is provided in the email below and in the Consultation Information Sheet, which is attached and available on Woodside's website. The well location coordinates and water depths have been updated below as advised in a follow up email to you on 11 October 2024. There are no other changes to previously provided consultation information, including mitigation and/or management measures.

If you have feedback specific to the activities and the proposed EP, Woodside welcomes it at consultation@feedback.woodside.com or 1800 442 977 by 1 November 2024.

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 our website.

Regards

Woodside Energy Consultation

6.3.2 Email to Australian Fisheries Management Authority (AFMA), Commonwealth Fisheries Association (CFA) – 22 October 2024

Dear Stakeholder

Woodside previously consulted you on its plans to submit the North West Shelf (NWS) Phase 1 Well Plug and Abandonment and TPA03 Well Intervention Environment Plan (EP).

Woodside plans to permanently plug and abandon five NWS wells that have ceased production. Woodside also proposes to conduct well intervention activities at the TPA03 well to remediate a valve and restore production from the lower reservoir.

Information on the EP is provided in the email below and in the Consultation Information Sheet, which is attached and available on Woodside's website. The well location coordinates and water depths have been updated below as advised in a follow up email to you on 11 October 2024. There are no other changes to previously provided consultation information, including mitigation and/or management measures.

If you have feedback specific to the activities and the proposed EP, Woodside welcomes it at consultation@feedback.woodside.com or 1800 442 977 by 1 November 2024.

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 our website.

Regards

Woodside Energy Consultation

6.3.3 Email sent to Commonwealth Scientific and Industrial Research Organisation (CSIRO), Curtin University, Edith Cowan University, Murdoch University, University of Western Australia – 22 October 2024

Woodside previously consulted you on its plans to submit the North West Shelf (NWS) Phase 1 Well Plug and Abandonment and TPA03 Well Intervention Environment Plan (EP).

Woodside plans to permanently plug and abandon five NWS wells that have ceased production. Woodside also proposes to conduct well intervention activities at the TPA03 well to remediate a valve and restore production from the lower reservoir.

Information on the EP is provided in the email below and in the Consultation Information Sheet, which is attached and available on Woodside's website. The well location coordinates and water depths have been updated below as advised in a follow up email to you on 11 October 2024. There are no other changes to previously provided consultation information, including mitigation and/or management measures.

If you have feedback specific to the activities and the proposed EP, Woodside welcomes it at consultation@feedback.woodside.com or 1800 442 977 by 1 November 2024.

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 our website.

Regards

Woodside Energy Consultation

6.3.4 Email sent to Department of Climate Change, Energy, the Environment and Water (DCCEEW) – 22 October 2024

Woodside previously consulted you on its plans to submit the North West Shelf (NWS) Phase 1 Well Plug and Abandonment and TPA03 Well Intervention Environment Plan (EP).

Woodside plans to permanently plug and abandon five NWS wells that have ceased production. Woodside also proposes to conduct well intervention activities at the TPA03 well to remediate a valve and restore production from the lower reservoir.

Information on the EP is provided in the email below and in the Consultation Information Sheet, which is attached and available on Woodside's website. The well location coordinates and water depths have been updated below as advised in a follow up email to you on 11 October 2024. There are no other changes to previously provided consultation information, including mitigation and/or management measures.

If you have feedback specific to the activities and the proposed EP, Woodside welcomes it at consultation@feedback.woodside.com or 1800 442 977 by 1 November 2024.

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 our website.

Regards

Woodside Energy Consultation

6.3.5 Email sent to Department of Climate Change, Energy, the Environment and Water (DCCEEW) – Underwater Cultural Heritage – 12 December 2024

Woodside previously consulted you on its plans to submit the North West Shelf (NWS) Phase 1 Well Plug and Abandonment and TPA03 Well Intervention Environment Plan (EP).

Woodside plans to permanently plug and abandon five NWS wells that have ceased production. Woodside also proposes to conduct well intervention activities at the TPA03 well to remediate a valve and restore production from the lower reservoir.

If you have feedback specific to the activities and the proposed EP, Woodside welcomes it at consultation@feedback.woodside.com or 1800 442 977 by 6 January 2025.

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 our website.

Regards

Woodside Consultation

6.3.6 Email sent to Department of Agriculture, Fisheries and Forestry (DAFF) – Biosecurity, marine pests, vessels, aircraft and personnel, Department of Agriculture, Fisheries and Forestry (DAFF) – Fisheries – 22 October 2024

Woodside previously consulted you on its plans to submit the North West Shelf (NWS) Phase 1 Well Plug and Abandonment and TPA03 Well Intervention Environment Plan (EP).

Woodside plans to permanently plug and abandon five NWS wells that have ceased production. Woodside also proposes to conduct well intervention activities at the TPA03 well to remediate a valve and restore production from the lower reservoir.

Information on the EP is provided in the email below and in the Consultation Information Sheet, which is attached and available on Woodside's website. The well location coordinates and water depths have been updated below as advised in a follow up email to you on 11

October 2024. There are no other changes to previously provided consultation information, including mitigation and/or management measures.

If you have feedback specific to the activities and the proposed EP, Woodside welcomes it at consultation@feedback.woodside.com or 1800 442 977 by 1 November 2024.

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 our website.

Regards

Woodside Energy Consultation

6.3.7 Email sent to Department of Planning, Lands and Heritage (DPLH) – 22 October 2024

Woodside previously consulted you on its plans to submit the North West Shelf (NWS) Phase 1 Well Plug and Abandonment and TPA03 Well Intervention Environment Plan (EP).

Woodside plans to permanently plug and abandon five NWS wells that have ceased production. Woodside also proposes to conduct well intervention activities at the TPA03 well to remediate a valve and restore production from the lower reservoir.

Information on the EP is provided in the email below and in the Consultation Information Sheet, which is attached and available on Woodside's website. The well location coordinates and water depths have been updated below as advised in a follow up email to you on 11 October 2024. There are no other changes to previously provided consultation information, including mitigation and/or management measures.

If you have feedback specific to the activities and the proposed EP, Woodside welcomes it at consultation@feedback.woodside.com or 1800 442 977 by 1 November 2024.

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 our website.

Regards

Woodside Energy Consultation

6.3.8 Email sent to Department of Primary Industries and Resource Development (DPIRD) – 22 October 2024

Woodside previously consulted you on its plans to submit the North West Shelf (NWS) Phase 1 Well Plug and Abandonment and TPA03 Well Intervention Environment Plan (EP).

Woodside plans to permanently plug and abandon five NWS wells that have ceased production. Woodside also proposes to conduct well intervention activities at the TPA03 well to remediate a valve and restore production from the lower reservoir.

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If you have feedback specific to the activities and the proposed EP, Woodside welcomes it at consultation@feedback.woodside.com or 1800 442 977 by 1 November 2024.

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Regards
Woodside Energy Consultation

6.3.9 Email sent to Director of National Parks (DNP) – 22 October 2024

Woodside previously consulted you on its plans to submit the North West Shelf (NWS) Phase 1 Well Plug and Abandonment and TPA03 Well Intervention Environment Plan (EP).

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Regards
Woodside Energy Consultation

6.3.10 Email sent to North West Shelf Trawl Fishery and Western Deepwater Trawl Fishery – 22 October 2024

Woodside previously consulted you on its plans to submit the North West Shelf (NWS) Phase 1 Well Plug and Abandonment and TPA03 Well Intervention Environment Plan (EP).

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Regards

Woodside Energy Consultation

6.3.11 Email sent to Shire of Ashburton – 22 October 2024

Woodside previously consulted you on its plans to submit the North West Shelf (NWS) Phase 1 Well Plug and Abandonment and TPA03 Well Intervention Environment Plan (EP).

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Regards

Woodside Energy Consultation

6.3.12 Email sent to Western Australian Museum – 22 October 2024

Woodside previously consulted you on its plans to submit the North West Shelf (NWS) Phase 1 Well Plug and Abandonment and TPA03 Well Intervention Environment Plan (EP).

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Regards

Woodside Energy Consultation

6.3.13 Email sent to Gascoyne and Pilbara/Kimberley recreational marine users – 22 October 2024

Woodside previously consulted you on its plans to submit the North West Shelf (NWS) Phase 1 Well Plug and Abandonment and TPA03 Well Intervention Environment Plan (EP).

Woodside plans to permanently plug and abandon five NWS wells that have ceased production. Woodside also proposes to conduct well intervention activities at the TPA03 well to remediate a valve and restore production from the lower reservoir.

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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

Woodside Energy Consultation

6.3.14 Letter sent to Gascoyne and Pilbara/Kimberley recreational marine users – 9 January 2025

Please direct all responses/queries to:
Woodside Energy Feedback
T: 1800 442 977
E: feedback@woodside.com

09 January 2025

1
[redacted]

Woodside Energy (Australia) Pty Ltd
ACN 006 923 879
Mia Yellagonga
11 Mount Street
Perth WA 6000
Australia
T +61 8 9348 4000
www.woodside.com

Dear Recreational Marine User,

Woodside previously consulted you on its plans to submit the North West Shelf (NWS) Phase 1 Well Plug and Abandonment and TPA03 Well Intervention Environment Plan (EP).

Woodside plans to permanently plug and abandon five NWS wells that have ceased production. Woodside also proposes to conduct well intervention activities at the TPA03 well to remediate a valve and restore production from the lower reservoir.

The well location co-ordinates and water depths have been updated as per the table below. There are no other changes to the information provided to you in October 2024, including mitigation and/or management measures.

Wells	Approximate Water Depth (m)	Latitude	Longitude	Titles
AP2	80	19° 28' 59" S	116° 36' 37" E	WA-3-L
AP3	80	19° 30' 38" S	116° 36' 18" E	WA-3-L
AP4	90	19° 31' 18" S	116° 35' 13" E	WA-3-L
PER02	127	19° 31' 11" S	116° 6' 39" E	WA-1-L
PER04	128	19° 31' 26" S	116° 5' 53" E	WA-1-L
TPA03	113	19° 45' 43" S	115° 53' 23" E	WA-5-L

The updated Consultation Information Sheet for this Environment Plan (EP) is available via the QR code below.

If you have feedback specific to the proposed activities described, we would welcome your feedback at consultation@feedback.woodside.com or 1800 442 977 by **24 January 2025**.

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 our website at www.woodside.com

Regards

Woodside Energy Consultation

Woodside Energy
Mia Yellagonga
Karlak, 11 Mount Street
Perth WA 6000
Australia

T: 1800 442 977
E: consultation@feedback.woodside.com
www.woodside.com

6.3.15 Email sent to Town of Port Hedland - 2 December 2024

Woodside previously consulted you on its plans to submit the North West Shelf (NWS) Phase 1 Well Plug and Abandonment and TPA03 Well Intervention Environment Plan (EP).

Woodside plans to permanently plug and abandon five NWS wells that have ceased production. Woodside also proposes to conduct well intervention activities at the TPA03 well to remediate a valve and restore production from the lower reservoir.

Information on the EP is provided in the email below and in the Consultation Information Sheet, which is attached and available on Woodside's website.

If you have feedback specific to the activities and the proposed EP, Woodside welcomes it at consultation@feedback.woodside.com or 1800 442 977 by 15 December 2024.

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
Woodside Energy Consultation

6.3.16 Email sent to Aquaculture Council of Western Australia - 9 December 2024

Woodside previously consulted you on its plans to submit the North West Shelf (NWS) Phase 1 Well Plug and Abandonment and TPA03 Well Intervention Environment Plan (EP).

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Regards
Woodside Energy Consultation

6.3.17 Email sent to Shell - 8 January 2025

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Woodside Energy Consultation

6.3.18 Email sent to Chevron – 22 October 2024

Woodside previously consulted you on its plans to submit the North West Shelf (NWS) Phase 1 Well Plug and Abandonment and TPA03 Well Intervention Environment Plan (EP).

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Regards

Woodside Energy Consultation

6.4 Newspaper advertisements

6.4.1 Summary table

Newspaper	Coverage	Publication dates
The Australian	National	30 September 2024
The West Australian	Regional (WA)	30 September 2024
Pilbara News	Local (WA)	2 October 2024
North West Telegraph	Local (WA)	2 October 2024
Midwest Times	Local (WA)	1 October 2024
Broome Advertiser	Local (WA)	3 October 2024
Kimberley Echo	Local (WA)	3 October 2024
Koori Mail	Indigenous	2 October 2024

Newspaper	Coverage	Publication dates
National Indigenous Times	Indigenous	24 September 2024

6.4.1.1 The Australian – 30 September 2024

THE NATION

THE AUSTRALIAN, MONDAY, SEPTEMBER 30, 2024 theaustralian.com.au 7

Lightning rod for homemade electric ute-ilisation

MACKENZIE SCOTT

Ten years after the demise of Australia's car industry, Brisbane biochemist Eddie Kocwa has built an assembly line to convert the US's most popular electric utes for use throughout Australia and the Pacific.

Within four months of beginning production, BossCap has converted 150 Ford F-150 Lightnings from left to right-hand drive in order to meet the growing need of businesses and their environmental and climate targets, with deals already struck with the UN, airports and mining companies.

BossCap chief executive Mr Kocwa said they were unlocking technology that would otherwise have been a decade away. "We're trying to help companies reduce their emissions," he said. "We know that they're on the clock, they've got targets to hit by 2030 and 2050. So we're bringing vehicles to this market, that's our goal."

BossCap's factory in the outer northern Brisbane suburb of Brendale currently "remanufactures" three vehicles a day but has the potential to ramp up production to 150. The car has been tested to make sure it can adapt to the harshest of Australian conditions, having done laps around Holden's historic Lang Lang test track in Victoria and Lakeside Park in Brisbane's Kurrongbah.

Not only is BossCap reigniting Australia's vehicle manufacturing industry, it is offering an alternative to Chinese-built electric vehicles as regulators become increasingly wary about the use of foreign technology in cars, with bans currently being proposed in the US.

The business reported turnover of $100m last year and prides itself on being wholly Australian-owned and employing nearly 100 people. Almost the entirety of its supply chain is onshore, which protects it against the turbulence encountered by many industries during the pandemic.

"Creating jobs, creating industry and developing capability(s) important to us because there is not much left in Australia," Mr Kocwa said. "We've seen what happens when supply chains get compromised – everyone rushes and panics. We need to have capability in Australia.

"We really enforce an Australia policy across the whole business, even in cases where it costs more, because we will have that resilience and dependability."

The local element also allows the business to respond to the needs of different industries and build each vehicle to specification. Construction and renewable energy development business MPC Kinetic has six vehicles in play as it looks to replace its diesel fleet.

BossCap has also partnered with the UN via a local dealer in Samoa, with the vehicles able to act as back-up generators for homes connected to the island nation's irregular power grid. "These vehicles have a tremendous onboard power supply," Mr Kocwa said. "That's the added benefit to EV; aside from (them being) cleaner and greener, having mobile power in remote locations or off-grid is something I don't think Australia fully understands yet; once we do, it's a game-changer."

Mr Kocwa and the company's co-founders are in discussions with other vehicle manufacturers.

Brisbane Airport is trialling two of the F-150s on the tarmac as part of its ambition to operate carbon naturally by 2025. Airport fleet and mechanical manager Greg Burke said it took six months to develop specifications needed for the utes to operate as airside safety vehicles. "Due to their operation in a live runway environment, any shift in technology comes with unique challenges to overcome," he said. "But as a sustainability leader, it's something we are committed to do. So far the Lightning is ticking all our boxes."

LYNDON MECHIELSEN

Melissa Tam with a soon-to-be-modified left to right-hand drive dash for a Ford Lightning F-150 EV ute; below, Eddie Kocwa, co owner of BossCap Group

'Give kids the tools to deal with bullies'

EXCLUSIVE

STEPHEN LUNN
SOCIAL AFFAIRS EDITOR

Governments, schools and parents need to widen their focus from identifying and re-educating bullies to teaching young people how to better cope with the emotional damage bullying does, a leading educator says.

And girls need particular support, given research shows they are more vulnerable to bullying, Michael Bernard says.

The former Melbourne University professor said addressing school bullying requires more attention on giving children and adolescents the tools to emotionally protect themselves if they find themselves on the receiving end.

"Schools have programs on preventing bullying, restorative justice systems for holding bullies accountable, education for bullies as to the consequences of their behaviour and positive behaviour rules in schools to limit the extent of bullying, and so they should," Professor Bernard said.

"On the other side, there's too little investment in equipping all kids with the skills and resources to manage being bullied in a way that doesn't overwhelm them."

The California State University emeritus professor said the key to empowering young people to rise above bullying is to understand they have the power to choose between the negative thinking that leaves them upset about being bullied to a positive mindset that puts them more in control.

And young people must be supported to understand they do not lose their self-worth and that however bad the bullying seems, there are worse things that can happen in life.

Professor Bernard said his recent research using a bullying prevention program he designed that focused on helping young people to emotionally regulate had yielded strong results, with more than 90 per cent feeling like they could manage incidents of bullying.

"What is abundantly clear, and this applies to people in the workplace as much as it does to school students, is that people's mindset about bullying largely determines the effect of the bullying on their emotional and behavioural response," he said.

The issue of bullying is in the spotlight after the suicide of a 12-year-old girl in Sydney this month, with her family saying she had been bullied by other students for years and the school should have stepped in earlier to address it.

Data from the Australian Council for Educational Research's Social-Emotional Wellbeing Survey last year showed children and adolescents reported an increase in stress and anxiety every year from 2018 to 2023.

Levels of stress are much higher for girls than boys, along with significant deterioration from primary to secondary years and from year 7 to year 12, the survey revealed.

Professor Bernard said his new research had shown girls were more likely to show significant improvements with anti-bullying programs when they were targeted, primarily because they tended to respond more negatively to being bullied in the first place.

He said governments including departments of education had a critical role in doing all they could to minimise bullying in schools but they weren't investing in programs aimed broadly at developing an intrinsic capacity to cope. At a more granular level, parents and teachers could play their parts too, he said.

If you need support, help is available. Please contact Lifeline 13 11 14; Beyond Blue 1300 224 636; Kids Helpline 1800 55 1800.

Flyers warned of Qantas strike

AISLING BRENNAN

Thousands of travellers could be facing delays as Qantas engineers plan to continue striking amid an ongoing wage dispute.

More than 1000 Qantas engineers will walk off the job during peak hour flights on Monday morning, as NSW school holidays kick off.

Flights departing major airports in Brisbane, Sydney, Canberra, Melbourne, Adelaide, and Perth will be affected as workers participate in stoppages from 7am to 9am in each time zone.

The wage claim made by the Qantas Engineers Alliance – a union alliance comprising the AMWU, the AWU and the ETU – is for 5 per cent a year, and a 15 per cent first year payment to make up for 3% years of wage freezes.

AMWU national secretary Steve Murphy said staff had no option but to take industrial action after a breakdown in communication with Qantas management over bargaining for enterprise agreements, which expired in June.

"These workers hold special and valuable skills that take a decade to build up," Mr Murphy said. "They were essential workers during the pandemic, and made sacrifices so Qantas would survive. Qantas needs to pay that debt back. Respect your workers, value their skills, pay them what they're worth.

"As our members say, there are no car parts when you're 30,000 feet in the air, so these maintenance engineers need to get it right the first time. If Qantas values that safety, it needs to show it values its workers. This is what this dispute is all about."

A Qantas spokesman said travellers shouldn't be badly impacted by the strike action.

"Over the past four days, we have seen no disruptions to our network as a result of the industrial action from some of our engineering workgroups," he said.

"Our teams have done a great job helping customers safely get to their destination over the busy weekend with school holidays and the footy finals. We have contingencies in place and don't expect Monday's planned strike action to have an impact on customers, or their travel plans."

NEWSWIRE

'Clone stadium for Olympics to save millions'

EXCLUSIVE

JAMIE WALKER
ASSOCIATE EDITOR

Former West Australian premier Colin Barnett has called on Queensland to clone Perth's acclaimed Optus Stadium for the 2032 Olympics, saying a replica would save money and time. The long-serving Liberal Party leader was expanding on a proposal he put forward in The Australian earlier this month to break the logjam in the troubled venues program for the Brisbane Games.

Premier Steven Miles's Labor government and the Liberal National Party opposition under David Crisafulli are at odds over the Olympic stadium options entering the state election campaign on Tuesday.

If re-elected, Mr Miles will press on with the redevelopment of the 1982 Commonwealth Games hub at the Queensland Sport and Athletics Centre deep in Brisbane's southside suburbs, despite concern that the aged stadium is poorly served by public transport and offers limited ongoing value.

Mr Crisafulli, front running in the opinion polls, has described the QSAC plan as horrendous with "zilch" prospects if the LNP wins on October 26. He said he would be guided by a post-election review by the independent infrastructure delivery agency that has been another focus of partisan bickering over the Games preparations.

Mr Barnett said Queensland should effectively reproduce Perth stadium on a greenfield site in inner Brisbane, also using a public private partnership to ease the upfront cost for taxpayers.

He said the new $3.4bn Victoria Park stadium recommended in March by a panel headed by former Brisbane mayor Graham Quirk – but immediately rejected by Mr Miles as too expensive – had the same capacity at 60,000 seats and other synergies with the $1.3bn Perth project completed in 2018.

COLIN MURTY

Colin Barnett

"It did occur to me that given the success of the Perth stadium and that it has won a number of international awards and the size seems appropriate, it must be possible to virtually transfer from Perth to Brisbane the design of that stadium," Mr Barnett said.

"They both have the same long-term uses for AFL and cricket. Just replicate it.

"Obviously, there would have to be some tweaking; you would need to make minor changes along the way.

"While Perth stadium has an exterior that is sort of an iron-ore image, related to the Pilbara and resources industry, you would have a very different image in Brisbane – probably reflecting the barrier reef or the tourism aspects of Queensland.

"But I think that would be doable."

Interviewed by this masthead, Mr Crisafulli said the Olympics had been sold to the public as an opportunity to bring on "generational infrastructure" in rail and road links for Queensland's booming southeast, a position he would uphold if the LNP returned to office.

"It was always about creating generational infrastructure and we spoke about existing venues and the opportunities to come," he said.

"That was the original terms of the (2032) bid. I want to make sure that Queenslanders feel like that's being honoured, and that they feel proud of the process." Pressed on whether he was definitively ruling out a new stadium at Victoria Park, Mr Crisafulli said "No new stadium at Victoria Park."

When The Australian put to him that it didn't leave many options for the main Olympic stadium, he said: "Let's have a look at what an independent infrastructure co-ordination authority comes up with."

Mr Crisafulli, however, reaffirmed a new stadium would not be in the terms of reference for the 100-day review he would commission from the agency if the LNP won the election.

Asked whether he would be prepared to revisit the original proposal by Mr Miles's triple election-winning predecessor as Labor premier, Annastacia Palaszczuk, to rebuild the Gabba stadium, he said: "Let's have a look."

Mr Miles reinstated the stand-alone agency in one of his first acts on succeeding Ms Palaszczuk last December, reflecting the LNP's position that Labor had erred by bringing the functions in-house, but failed to staff it ahead of the government entering caretaker mode for the state election.

Asked whether he would consult Labor over the appointments if he became premier, Mr Crisafulli said: "If we were to win the election, I'm going to give the opposition the respect that I was never afforded in the process."

Mr Barnett said replicating Perth stadium in Brisbane would make it a "very clear, easy project" to deliver, "and for that reason the cost would be far lower than the three or four-billion being talked about."

The WA premier in 2008-17 said: "What I would suggest to whoever wins the state election is they should come over to Perth and just quietly have a look at the stadium. Bring a couple of experts with you.

"It's worth a day trip and I'm sure people involved in those negotiations would also be happy to sit down and talk about the merits of a public private partnership."

6.4.1.2 The West Australian – 30 September 2024

The West Australian
Monday, September 30, 2024

Millions of eyes on final

DYLAN CAPORN

Brisbane's thumping victory over the Sydney Swans was seen by more than 6 million viewers, making it the most watched program on Australian screens this year.

For the first time this year, the deciding match was available on 7plus, with a significant 655,000 viewers streaming the clash on the app. The AFL Grand Final, screened on 7 and streamer 7plus, drew a massive 4.02m viewers across Australian TV screens, including 344,000 in Perth, not including streaming.

The Lions, who walked away with the premiership after a 10-goal victory over the Swans, were watched by 456,000 in their hometown of Brisbane.

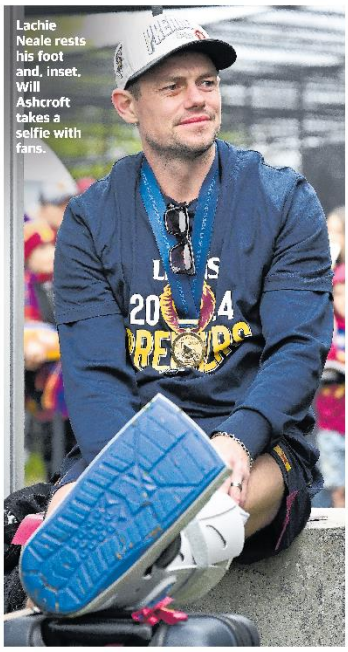
In Melbourne, there were 980,000 switching on the game, followed by 464,000 in Sydney and 360,000 in Adelaide.

The broadcast topped the more than 3.5 million who watched the State of Origin decider match in July.

It comes after a bumper week leading up to the grand final, with Seven's 2024 AFL Brownlow Medal coverage recording a total TV national reach of 2,898,000.

The match marked the first under a new arrangement for Seven, which will now stream matches free every round on 7plus during next year's premiership season.

And a medal to boot



Lachie Neale rests his foot and, inset, Will Ashcroft takes a selfie with fans.

The party is just starting for the Lions and their legion of fans

JAKE SANTA MARIA

Brisbane's premiership stars continued their grand final party in front of thousands of fans in the club's Melbourne heartland of Fitzroy on Sunday.

Bleary-eyed players took to the stage on a wet day at Brunswick Street Oval, but the biggest attraction was newly minted premiership captain Lachie Neale.

The former Fremantle star, who battled a heel injury through the finals series, was seen sporting a moonboot on stage.

But the two-time Brownlow medallist wasn't bothered at all.

"I couldn't give a s...," Neale said.

"It's a little bit sore this morning but that's probably because I was up until 6am on it, so the physio has put me in a boot this morning. I'll be fine."

The Lions blew Sydney off the park at the MCG on Saturday in a 60-point victory that sealed their first premiership in 21 years.

One man everyone was chasing a selfie with was Will Ashcroft, who became the youngest player to win the Norm Smith medal at just 20.

A few players were rocking sunglasses, with it not hard to imagine some saw very little sleep overnight — though the premiership medals around their necks would likely relieve any ill feelings.

Neale made the high-profile switch to Brisbane from Fremantle at the end of 2018 in chase of premiership success.

Having now reached the top of the AFL mountain, he said it was even better than he imagined.

"You always imagine that moment and think it's going to be incredible," Neale said.

"Words can't really describe how incredible the last (period of time) since that final siren.

"I can't really say the best moment of my life, otherwise my wife will kill me, but very close."

The Lions flew home to Brisbane on Sunday afternoon, where their flag celebrations were expected to kick on.

NEALE PAYS TRIBUTE TO FREO P66-67

6.4.1.3 Pilbara News – 2 October 2024

Pilbara NEWS
Wednesday, October 2, 2024
pilbaranews.com.au

Fortescue release 'mistake'

ADRIAN RAUSO

Rio Tinto's chief executive Jakob Stausholm was shoehorned into a Fortescue decarbonisation press release without approval, forcing an embarrassing retraction.

Last Wednesday Fortescue announced it had signed a $US2.8 billion ($4.1b) deal with Liebherr for the supply of zero-emission trucks, excavators and dozers, which curiously included highly complimentary quotes from Rio's boss.

Rio is not involved in the Fortescue deal with Liebherr.

"Fortescue's partnership with Liebherr marks a turning point in the history of the mining industry," the quote attributed to Mr Stausholm said.

"It takes foresight and courage to be a first mover, and while we can't always be first, we can be fast followers".

Nearly two hours later Fortescue re-issued the press release with a retraction.

"Quotes attributed to Rio Tinto CEO Jakob Stausholm were mistakenly included in the Fortescue Liebherr media release. Please disregard these quotes and reach out to Rio Tinto for any comments."

Mr Stausholm ended up posting a comment about the Fortescue-Liebherr deal on LinkedIn, albeit with a much more subdued tone and no mention of Rio being a "fast follower" or Fortescue being a "first mover".

"This is a significant partnership for the global mining industry and I congratulate the Fortescue team for taking this bold step to decarbonise their mining fleet," he said on LinkedIn.

Sources say the now retracted comments were first floated after Fortescue founder Andrew Forrest and Mr Stausholm bumped into each other at a mining conference in Las Vegas last week.

But the proposed quotes drafted by Fortescue's PR team did not receive the Rio Tinto tick-off and a version with the quotes still included was mistakenly sent out to media.

The deal Fortescue signed with Liebherr encompasses 360 autonomous electric trucks, 55 electric excavators and 60 battery-powered dozers, representing about two-thirds of the current mining fleet across Fortescue's iron ore operations in WA.

The announcement also included comments from Mr Forrest and Fortescue Metals CEO Dino Otranto.

Rio Tinto's chief executive Jakob Stausholm and FMG boss Andrew Forrest. Picture: The West Australian

6.4.1.4 North West Telegraph - 2 October 2024

Dutton claims rift over tax tweaks

DAN JERVIS-BARDY & ELLEN RANSLEY

Peter Dutton has claimed the Prime Minister and his Treasurer are "at war" with each other over potential changes to negative gearing and capital gains tax concessions that have divided Labor MPs.

The Opposition Leader ruled out supporting any reforms, declaring there was a "growing divide" between Anthony Albanese and Jim Chalmers after it was revealed Treasury had been examining tweaks to the tax breaks.

"It's very obvious that there is a growing divide between the Treasurer on one hand and the Prime Minister on the other," Mr Dutton said last Thursday.

"And those teams seem to be at war with each other.

"And when the Labor Party is focused on internals and fighting against each other, and positioning about who will be the next leader of the Labor Party, Australians are the ones who miss out."

After first declaring it "wasn't Party policy" — in statements reminiscent of Labor's rhetoric before it ripped up the old stage-three tax cuts — Mr Albanese hardened his language on Thursday morning.

He insisted Labor was not planning to take such a policy to the next Federal election, but has not denied the modelling exists or that such changes could be made in the future.

Anthony Albanese. Picture: Facebook

The Prime Minister has insisted he didn't request the work, but conceded he didn't know if Dr Chalmers had.

"Treasury doesn't need to be directed. They're not school children with teachers up the front of the class telling them what to do," he said.

In a press conference last Wednesday, before he departed for China, Dr Chalmers said it was "not unusual for the public service to examine issues that are being speculated about in the public or in the Parliament".

The Labor caucus is split over whether to revisit a version of the policies Bill Shorten took to the failed 2016 and 2019 election, with at least half a dozen backbenchers open to a debate as pressure mounts on the Government to do more to tackle the housing crisis.

But other government MPs, including senior ministers, want the idea to remain firmly off the table.

One senior Labor minister said changes to negative gearing were "absolutely not on the table, and never have been", adding that was the "right approach".

Mr Dutton also accused Dr Chalmers, who is currently in Beijing for bilateral meetings, of running away from questions about "a policy that he's commissioned".

He also denied calls from some of his own backbenchers to consider making changes to negative gearing, instead branding it a "new tax".

"We will take a very strong stance against any changes to negative gearing, because it will disrupt the housing market, it'll drive up rents, and it's not in our nation's best interests," he said.

Appearing at the National Press Club on Thursday, former Liberal Treasurer Joe Hockey reaffirmed his long-held view that negative gearing should be "skewed" to new homes to encourage more construction.

Opposition Leader Peter Dutton. Picture: Kelsey Reid

Mr Albanese remains unconvinced that changes to negative gearing won't reduce housing supply — the main aim of Labor's $32 billion housing agenda.

Property Council-commissioned analysis into Labor's 2019 proposal warned of a 4.1 per cent cut to the housing pipeline, costing 7800 jobs and a $1.5b hit to GDP.

The changes modelled by Treasury reportedly differ from Mr Shorten's plan and include a cap on the number of properties an individual can negatively gear.

"Will it (changing negative gearing) add to supply or will it decrease supply?" Mr Albanese said.

"The figures and research that has been produced by organisations like the Property Council indicate that it would reduce supply and therefore not contribute to solving the issue. And that's the issue."

6.4.1.5 Midwest Times- 1 October 2024

Times
Wednesday, October 2, 2024
midwesttimes.com.au

Alf Parker's Rest in Reef ball sitting on the seabed in 6m of water. Picture: Gill McPherson

Deep way to rest in peace wins

JESSICA MORONEY & MATTHEW PADDICK

A Mid West men's shed has been recognised at the Australian Men's Shed Association awards for its creative efforts to remember loved ones after dying.

The innovative fundraising activity award was taken out by the Jurien Bay Community Men's Shed, for its Rest in Reef project.

The artificial reef was made using reef balls, which used the ashes of loved ones mixed with a special blend of concrete.

The shed offered the unusual memorial service as part of its package, where friends and family could see the reef ball placed within the reef. It is a popular service that has received inquiries from across the nation and is expected to last 20 years, with 100 more balls approved to extend the reef over the next three years.

President Geoff Bunn said the Men's Shed was proud to receive recognition for the project, which created a lasting memorial site for ocean lovers. "We believe this is due recognition of the incredible vision and effort of our foundation members who first developed and constructed an artificial reef off the coast of Jurien Bay, before coming up with the concept of a Rest in Reef," he said. "While we do raise funds from the rest in reef balls, we see it more as a community service than a fundraiser."

Mr Bunn said 17 balls had been added to the original reef, which was made up of 79 larger balls.

It is the only organisation in Australia to offer a Rest in Reef service.

Other men's sheds were recognised at the awards, outlining their contribution to their respective communities.

Wagga Wagga in NSW was recognised for its sustainability, while Queensland's Coolum and NSW's Eden both took out the men's health honour.

Shedder of the year went to Bellbowrie Moggill's Graham Barnard, while the shed of the year was Macclesfield in South Australia.

The Ted Donnelly award for outstanding contribution to the men's shed movement went to Paul Sladdin.

6.4.1.6 Broome Advertiser - 3 October 2024

4 NEWS broomead.com.au Broome Advertiser Thursday, October 3, 2024

Push for a permanent beach car ban at Cable

Djukun Nation chief executive Jaala Ozies said there was a strong desire to protect turtle hatchlings.

CAIN ANDREWS

A traditional owners corporation has started a petition to permanently close Cable Beach to vehicles after Broome Shire Council opted to extend the beach's vehicle ramp closure to protect turtles just last week.

The petition posted to Change.org had gathered more than 5000 signatures in the first 24 hours of its launch on August 13, with the latest numbers nearing 7500 signatures.

Djukun Nation chief executive and lead petitioner Jaala Ozies said the response to the petition had been "overwhelming". "Since we started it in August, we've received an incredible amount of national support," she said.

"The outpouring of signatures and messages shows that there's a strong desire to preserve our cultural heritage and protect the sacred ecosystems on Djukun country."

She said the shire's temporary nesting-season closure was simply "not enough" to protect the sacred habitat. "The continued presence of vehicles in these areas causes damage to the land, disrupts turtle habitats and risks long-term environmental harm," she said.

"For the Djukun people, protecting Billingooroo (Cable Beach) is not only about preserving a sacred cultural site but also ensuring the survival of native wildlife and maintaining the integrity of Djukun country for future generations.

"Extending the vehicle ramp closure temporarily is not enough to protect the ecosystem, the beach, and the turtles. While it may offer short-term relief, the ongoing threat remains as long as vehicles are allowed to access the beach.

"To truly protect the land and wildlife, there should be a permanent closure on all beaches.

This would provide long-term conservation for the environment and ensure the safety of sacred sites on Djukun country."

Ms Ozies said she hoped to see vehicle access banned at Gantheaume Beach as well.

"Protecting all the beaches on Djukun country is essential to preserving the natural environment and the cultural heritage of the Djukun people," she said. However data from the Cable Beach Community Turtle Monitoring data 2017 to 2023 suggests there are minimal turtle hatchlings through the months of March to September each year.

Earliest hatched nests have been recorded in the first week of December with one nest in 2019 recorded on November 13, suggesting some turtles nest successfully on Cable Beach within the monitoring area as early as the first week of October. Tracks have also been opportunistically sighted in September.

In 2023, the last recorded successful nesting was on December 19 with hatching occurring around February 7.

The figures suggest there is a peak period of nesting activity in mid-November to early December with minimal nesting activity during most of January and February.

6.4.1.7 Kimberley Echo - 3 October 2024

Kimberley Echo
Thursday, October 3, 2024
kimberleyecho.com.au

Ley tackles Aboriginal issues

CAIN ANDREWS

Deputy Opposition Leader Sussan Ley has announced the Liberal-National Coalition plans to audit Aboriginal corporations in the Kimberley to ensure Federal funding is effectively used for local services.

During a recent trip to Broome in the lead up to the Federal election next year, Ms Ley said the Coalition was committed to scrutinising how substantial Federal funds were spent.

She said the Coalition would audit Aboriginal corporations in the region to make sure the Federal money they received was actually being spent on services on the ground.

"We've talked about the things that we will do, including a careful audit of Indigenous organisations to make sure that the significant funding they receive from Canberra is actually spent on improving the lives of the people that they are responsible for," Ms Ley said.

"We actually have to start from the ground up and focus on how do we deliver the significant improvements that we know Indigenous Australians deserve."

Deputy Opposition Leader Sussan Ley, left, and Durack MP Melissa Price. Picture: Cain Andrews

In response to questions about how the Coalition would make sure Aboriginal voices throughout the Kimberley were heard after Peter Dutton proclamation's that he will remove the position of First Nations Ambassador if elected, Liberal Durack MP Melissa Price said she would like to see the establishment of "regional voices".

"It's not clear to me what this Indigenous ambassador is actually achieving," Ms Price said.

"I would like to see us as the Coalition review the Voice proposition and start with regional voices so the Kimberley has a voice.

"In fact, we have seen no new policy discussions from the Albanese Government since the Voice failed, so he is failing the Kimberley."

However, there is still no detailed policy framework about how the Coalition would establish these regional voices.

The issue of representation is vital for the Kimberley, which has about 40 per cent of its population identifying as Aboriginal and facing significant challenges related to justice, health and housing.

Support for the Voice varied across the Kimberley, with Fitzroy Crossing voters favouring it at 80 per cent, while Kununurra opposed the proposal.

Other polling locations in the Kimberley, such as Broome and Halls Creek, largely supported the referendum, whereas residents in Kununurra and Derby mirrored the national results more closely.

Nonetheless, the Yes vote gained substantial support in the broader region.

6.4.1.8 Koori Mail - 2 October 2024

Healing Bundjalung rivers

By STEVIE WAPPET

NESTLED in the tree-soaked plains of the Tweed shire in Bundjalung Country, town folk of Uki and the surrounds gathered at Uki hall recently for the launch of Jagun Alliance's new program Heal the Rivers.

Local landholders and interested community members yarned with custodians and land management and restoration experts over a cup of tea before taking a seat to listen to ways First Nations land management strategies could promote the health of Yarribi.

Heal the Rivers is a three-year project focused on Indigenous-led catchment restoration in the Brunswick, Tweed, Richmond and Clarence catchments from local Indigenous run organisation Jagun Alliance.

In partnership with the University of Melbourne and Bush Heritage Australia, and funded by the Australian Government, Heal the River hones in on Jagun Alliance's desire to protect and promote the health, resilience and continuity of our lands and waterways, focusing on how relationships between local landholder, land management and restoration experts and original custodians lay the foundation for a healthy jagun – a healthy Country.

Local landholders taking part in the Heal the Rivers program.

After a Welcome to Country by Kyle Slabb, Oli Costello, Jagun's executive director, spoke on the importance of situating ourselves within our environment as a first step to land restoration.

He spoke on how "our old people have been adapting to climate change for thousands and thousands of years," and for this reason, how important "more support for First Nations leaderships and more support for our knowledges and practices" would aid in healing our rivers.

The floor then opened to a yarning circle, and people were invited to speak on their connection to and interest in the project. It was apparent that all shared the desire to make Country healthier.

One local landholder, Beverly Fairley, has spent the last 20 years restoring her great, great grandfather's rainforest that had been obliterated for sugar cane farming, and with it the health of Yarribi and its tributaries. One example of Bev's dedication is her work removing cat claw, an invasive woody creeper with a tubular root system that kills trees and destroys habitats. Cat claw is notorious for its creeping vine and difficulty to cull.

However, Bev and her sister painstakingly dug out the bulbs of over 61,000 cat claws and removed the vines by hand.

The commitment presented by Bev is just one example of the effort folk of the Tweed are putting in to protect and care for our jagun and its waters.

Heal the Rivers plans to connect more local landholders with Jagun Alliance's Aboriginal Ranger team through cross-sector workshops to share knowledge and identify necessary actions, as well as undertaking community resilience and engagement activities. Heal the Rivers workshops will be held in locations across Durrumbul/Brunswick River catchment, Yarbirri/Tweed River catchment, Baluun/Richmond River catchment, and Birrung /Clarence River catchment.

● Visit Jagun Alliance's website at jagunalliance.org.au for more information and to get involved.

6.4.1.9 National Indigenous Times - 24 September 2024

Increasing opportunities

EXCLUSIVE DECHLAN BRENNAN

Despite increasingly contributing to the Australian economy, First Nations businesses have gone largely unnoticed by past governments, says Indigenous senator Jana Stewart.

The Mutthi Mutthi and Wamba Wamba woman and Labor senator, who is chairing the Joint Standing Committee on Aboriginal and Torres Strait Islander Affairs, held an open hearing in Perth this month into improving economic prosperity for First Nations people.

The inquiry into economic self-determination and opportunities comes after the release of the Murru Waaruu economic outcomes report, which called for a critical shift in public policy to effectively support the economic empowerment of Indigenous people.

Senator Stewart said evidence from the inquiries showed Indigenous-led businesses were 100 times more likely to employ First Nations people, which in turn provides the best opportunity for culturally safe employment.

"The contribution is overwhelmingly positive, not just to the organisation, but you're also more likely to recruit more Aboriginal people; they add value to the organisation," Senator Stewart said. "If you do the work early, they're (the business is) not going to get held up anywhere along the line, because you've done the work, you build the relationships, you build the trust. You're doing the right thing by mob."

Senator Jana Stewart is promoting the work of Indigenous-led businesses. Picture: Aboriginal Hostels Ltd

Senator Stewart also countered negative narratives around work ethic, arguing instead that the retention rate for Indigenous businesses was high because of a culture of safety in Indigenous-led workplaces.

"There's this kind of narrative out there about us, you know, not wanting to work. But actually, the opposite is true," she said.

The Government has spoken much of the importance of jobs, with the Prime Minister using his speech at the Garma festival to promote Indigenous economic development, especially climate and industry policies designed to leverage benefits for remote communities during Australia's clean energy transition. "It really is a big opportunity, in my mind, to really shift the narrative about what Aboriginal people contribute to our nation," Senator Stewart said.

She said the hearings allowed MPs to hear about the impact on both Indigenous businesses, as well as other Aboriginal businesses they get their suppliers from.

Research from Dilin Duwa, Woi Wurrung for "Everlasting Flow," found the "Indigenous ecosystem" makes an important contribution to the Australian economy. It saw 13,693 active businesses and corporations in 2022, which generated $16.1 billion in revenue, employing 116,795 people, and paying $4.2 billion in wages.

The senator for Victoria said these numbers were "no small feat," before noting people in the community had expressed a belief that the "closing the gap" narrative was deficit-focused, without commenting on First Nations' economic contribution. "Generally speaking, the kind of stereotypes are about 'poor us', rather than our strengths," she said.

"The fact that we've been able to have such an impact in such a small amount of time, when you think about the structural lockout, because it's not a disadvantage; we've had a lockout of any kind of economic position in our country."

Furthermore, Senator Stewart said businesses thrived when they were culturally safe.

6.5 Ngaarda radio advertisements

Summary Table

Media	Coverage	Publication dates
Ngaarda Radio	Pilbara	26 August – 30 November 2024

6.5.1.1 Scripts

Script 1 - 30 seconds

Want to know more about Woodside Energy?

Our Roebourne office, located on Roe Street is open Wednesday to Friday and we welcome you to come and chat to our friendly team. Let's talk about local employment and training opportunities, social contribution, the environment, existing operations and future projects. Look for the open sign out the front!

You can also follow us on Facebook @ Woodside North West or phone our community information line 1800 634 988.

Script 2 – 30 seconds

Wayiba, Wanthiwa!

Woodside Energy consults with around 50 Traditional Owner Groups who have deep connections to Western Australia's coastline.

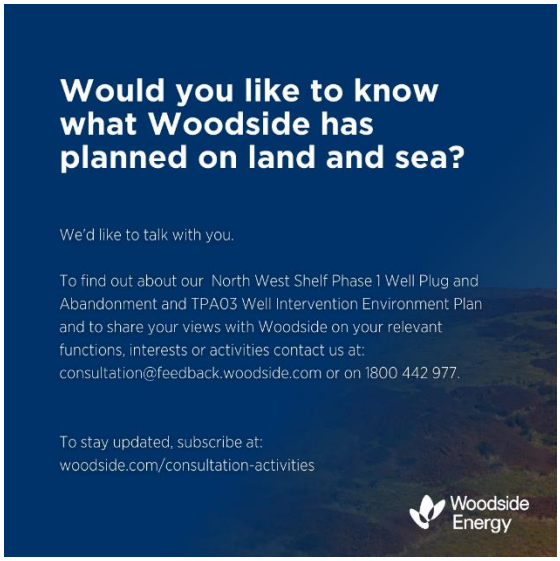
If you or your family has functions, interests or activities that may be affected by our projects, we want to hear from you.

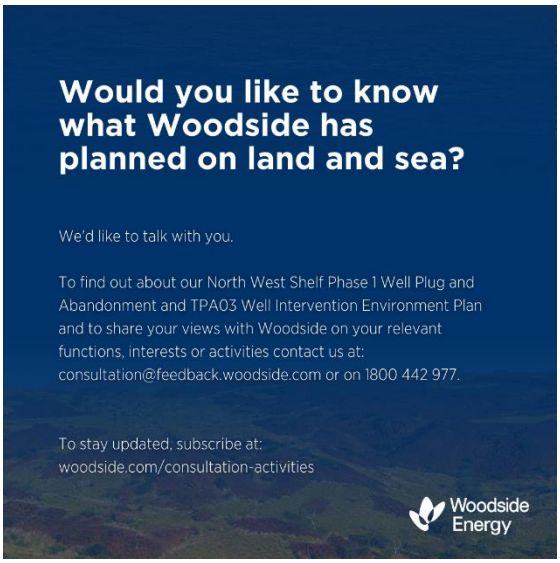
Let's talk about what we have planned on land and sea at our Roebourne office or email us at consultation@feedback.woodside.com

6.6 Social media

6.6.1 Social media EP targeted campaign

A geo-targeted social media campaign was run on Meta platforms from 30 September to 27 October 2024 targeting Pilbara, Karratha, Dampier, Onslow, Roebourne, Port Hedland, Exmouth, Kimberley, Broome, Derby, Wyndham, Gascoyne, Coral Bay, Carnarvon, Denham.





Campaign Results

Reach	Frequency	Impressions	Link Clicks	Link CTR	Engagements	CTR (all)
265,173	10.02	2,658,246	2,896	0.10%	3,924	0.18%

6.7 Community information sessions

The community information sessions that Woodside has conducted are captured below:

6.7.1 Gascoyne Region

6.7.1.1 Exmouth Community Information Session – 14 November 2024

Location	**Exmouth**
Activity	**Community Drop-In: Woodside Marquee**
Date	14 November 2024
Description of the consultation	Woodside hosted a stand at Ross Street Mall in Exmouth. The stand was staffed by Woodside Environment and Corporate Affairs representatives. Woodside displayed a QR code on the stand, linked to the consultation activities page of the Woodside website. Information on the Scarborough Energy Project, Browse to NWS Project, Woodside's Climate Transition Action Plan, leaflets providing QR codes to Woodside's Annual Report and Sustainability, 'Let's Talk' (a publication on the company's Australian activities) were available. EP Consultation Information Sheets available to attendees included: North West Shelf Phase 1 Well Plug and Abandonment and TPA03 Well Intervention
Advertising and invitations	Woodside advertised the sessions to enable individuals to self-identify, become aware of the community consultation, and enable individuals to provide feedback on proposed activities, through the following:

	Geotargeted social media campaign advertising in Exmouth and surrounding areas (+80 kms) from 9 – 14 November 2024. Post on Woodside social media channel. Promotion at the Exmouth Community Liaison Group meeting. An EP consultation banner with QR code (linked to the Consultation Activities page on the Woodside website) was displayed at Woodside's stand along with the EP factsheets and Project information sheets.
Estimated number of individuals / organisations consulted	Woodside had meaningful conversations with approximately 12 groups. These people identified as being Exmouth community members or visitors to Exmouth (residents of the East Coast of Australia or Western Australia).

Summary of Feedback, Objection or Claim

Community members were able to engage with Woodside representatives to understand the proposed activity and how it may affect them, ask questions, and provide their feedback.

There was general interest in Woodside activities. Key issues discussed:

Query on whether Woodside is building new marine infrastructure being built in the nearshore environment. A query was received on whether the design of Scarborough infrastructure allows for juvenile fauna to continue to traverse the nearshore environment.

Woodside responded that the Scarborough trunkline was installed by horizontal directional drilling to minimise impacts to the beach and nesting turtles. The Scarborough trunkline is not a solid structure that would block movement of nearshore juvenile fauna.

General queries on Woodside's footprint in Exmouth.

Queries about employment and local content opportunities.

Interest in understanding current social investment programs and opportunities.

One stakeholder expressed support for more industry activity in Exmouth.

Stakeholders identifying themselves as Woodside shareholders interested in project updates, particularly on Scarborough.

Query on domestic gas commitments for Woodside's activities.

Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response

Whilst feedback was received, there were no specific objections or claims to a particular Woodside project or activity.

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.

Evidence of Promotion and Event

Paid social media	**Social media**
Instagram and Facebook	Woodside North West Facebook page 14 Nov 2024

Photo of the event	Consultation Sheets and Let's Talk newsletter

Social Media Campaign Results

Platform	Geotargeted Reach	Post Dates	Impact
Facebook	Regional: Users 18+ located within 40kms of Exmouth	9 – 14 November 2024	Reach: 20,826 Frequency: 1.15 Impressions: 23,895 All clicks: 76 Link clicks: 5

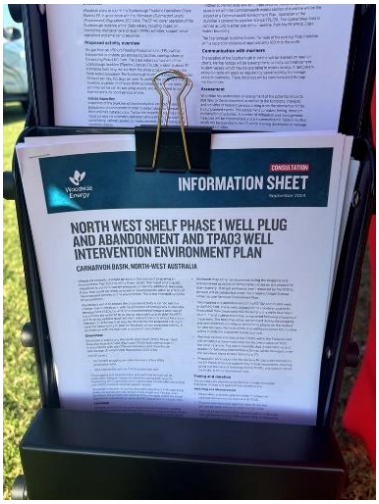
			CTR%: 0.02%
Instagram	Regional: Users 18+ located within 40kms of Exmouth	9 – 14 November 2024	Reach: 19,650 Frequency: 1.10 Impressions: 21,636 All clicks: 9 Link clicks: 1 CTR%: 0.00%
Platform	**Number of reactions**	**Number of comments**	**Comments Relevant to EP**
Meta - Facebook	2 👍 0 shares	0 comments	0

6.7.2 Pilbara Region

6.7.2.1 Dampier Beachside Markets – 12 October 2024

Location	**Dampier**
Activity	Dampier Beachside Markets - Oktoberfest
Date	12 October 2024
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 from Woodside's Corporate Affairs team. Woodside displayed a QR code on the stand, linked to the consultation activities page of the Woodside website. An iPad with consultation/feedback subscription prompt was made available. Woodside made available printed consultation information sheets on: • North West Shelf Phase 1 Plug and Abandonment and TPA03 Well Intervention Environment Plan
Advertising and invitations	Woodside advertised the event to enable individuals to self-identify, become aware of the community consultation, and enable individuals to provide feedback on proposed activities, through the following: • Advertisement in the Pilbara News on 9 October 2024 • Geotargeted Social media posts were published inviting public to attend on Woodside North West Facebook page • Social media post from the event host, Dampier Community Association was published on 11 October 2024 inviting the public to attend • Advertisement was displayed on community noticeboard at Lo's Café, Karratha, and Roebourne Library • An EP consultation banner with QR code (linked to the Consultation Activities page on the Woodside website) displayed at Woodside's stand along with current EP factsheets.
Estimated number of individuals / organisations consulted	Over 1000 community members attended the event. Woodside spoke to many community members, recording 6 meaningful conversations.
Summary of Feedback, Objection or Claim	
• General interest in progress on the Scarborough project and the future of gas in the energy transition. • General interest in the Carbon Capture and Storage process. • Interest in the Woodside community grant program • EP approval process discussed and why we want to talk to the community. No concerns raised. • General queries around employment and graduate opportunities. • Interest in divestment of ex-Woodside homes.	
Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	
Whilst feedback was received, there were no objections or claims raised about EPs. Woodside's participation at the market's is 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 Advertising and Invitations for Event	
Advertisement on Lo's Café Karratha	**Advertisement at Roebourne Library**
	
Photo of the event	**Photo of Consultation Sheets and Let's Talk newsletter**
	

Social Media Posts Dampier Beachside Markets Instagram Post 11 Oct	**Photo of Information Sheets**
	

6.7.2.2 Dampier Beachside Markets – 2 November 2024

Location	Dampier
Activity	Dampier Beachside Markets – Guy Fawkes
Date	2 November 2024
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 from Woodside's Corporate Affairs and First Nations teams. Woodside displayed a QR code on the stand, linked to the consultation activities page of the Woodside website. Woodside made available printed consultation information sheets on: North West Shelf Phase 1 Plug and Abandonment and TPA03 Well Intervention Environment Plan
Advertising and invitations	Woodside advertised event to enable individuals to self-identify, become aware of the community consultation, and enable individuals to provide feedback on proposed activities, through the following: • Advertisement in the Pilbara News on 30 October 2024 (see below) • Social media posts were published inviting public to attend on Woodside North West Facebook page (see below) • Social media post from event host, Dampier Community Association was published on 11 October 2024 inviting public to attend. • Advertisement was displayed on community noticeboard at Lo's Café, Karratha, and Roebourne Library. • An EP consultation display with QR code (linked to the Consultation Activities page on the Woodside website) displayed at Woodside's stand along with current EP factsheets (see below)
Estimated number of individuals / organisations consulted	Over 1200 community members (Dampier Community Association) attended the event. Woodside spoke to many community members, recording 10 meaningful conversations.

Summary of Feedback, Objection or Claim
General queries around employment opportunities. General interest in the Scarborough progress and Browse and the future of gas in the energy transition. EP approval process discussed and why we want to talk to community. No concerns raised. General interest in the Carbon Capture and Storage process. Discussions around the areas housing market and related industry opportunities.
Woodside's Assessment of Merits of Feedback, Objection or Claim and its Response
Whilst feedback was received, there were no objections or claims raised about EPs. Woodside's participation at the market's is 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 Advertising and Invitations for Event

Newspaper Advertisement(s) Pilbara News 30 October 2024	**Social Media Campaign** Woodside North West Facebook 25 October 2024
 Provide your feedback at Dampier Beachside Markets Are you interested in Woodside's proposed activities and operations? Woodside Energy	 Woodside North West October 25 at 6:00 AM Did you see us at this month's Dampier Beachside Markets? It was great to chat with community about Woodside's work in the North West, our community grants programs (closing Thursday, 31 October), Environment Plans and to hear your feedback on our projects. If you would like to know more about what we have planned on land and sea, catch us at the next markets, Saturday 2 November, from 5.30 pm - 8.30 pm.... See more Woodside Energy

Photo of the Event	Photo of Information Sheets
	

Community newsletters

6.7.3 Karratha community update

Edition Q3 – 2024

Woodside Energy

Karratha Community Update

Edition 3 | 2024

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.

Earlier this year, I relocated to Karratha and commenced as Asset Manager of the North West Shelf Project's Karratha Gas Plant.

It was a real pleasure to join Woodside's local team at a time when we were celebrating 70 years of Woodside and 40 years of operations right here in the North West.

Karratha is where our story began in Western Australia and Woodside has a proud history of contribution to the place we continue to call home. This year's milestones gave me insight into the longstanding partnerships and strong relationships we've developed with the community over this time.

The North West Shelf Project has contributed more than $300 million within the City of Karratha since our operations began. This investment in the local community and economy continues as we support partnerships and businesses like the ones you will read about in this update.

We are entering a period of change at the Karratha Gas Plant as we undertake work to prepare for the retirement of one of our LNG processing trains later this year. This is an important step in the journey ahead as we navigate the gradual decline of the North West Shelf reserves and continue to pursue opportunities to process other resource owners' gas.

As we manage the future of the North West Shelf alongside our Pluto LNG operations and the growth of the Scarborough Energy Project, we will continue to engage and collaborate with those we work with, partner with and live alongside. We look forward to engaging and involving the local community in the future of Woodside in Karratha, working together to create opportunities in the place we call home.

Derek Paulgaard
Asset Manager North West Shelf Onshore.

Celebration sundowner

On the evening of 18 September, as the sun set over Karratha, we gathered with our local community partners to celebrate both Woodside's 70th year as a proud Australian company and 40 years of operations in the North West.

Our sundowner event, held at the Red Earth Arts Precinct, provided an opportunity to share our appreciation for the local community which has supported Woodside over its decades of operations in Karratha.

Woodside Executive Vice President and Chief Operating Officer Liz Wescott joined us at the event and expressed her gratitude for the role those in attendance continue to play in shaping Karratha into a thriving and connected community.

Liz also announced a one-off large grant round, supported by Woodside and its Joint Venture participants in the North West Shelf Project and the Scarborough Energy Project's Pluto Train 2.

With applications open throughout October, the Woodside Anniversary Grants will provide funding of up to $100,000 to community groups and not-for-profit organisations in the City of Karratha to support health, liveability, sustainability and environmental outcomes.

Thank you to all who joined us in marking such a special occasion.

Stay up to date on our continued contribution to the local community Woodside North West

Winyama awarded construction contract

This year, Woodside awarded its largest ever Traditional Owner construction contract to Karratha company Winyama Contracting Group (Winyama). The contract was awarded for the delivery of civil works for the Pluto Train 1 Modifications Project. Winyama will work alongside Kellogg Brown & Root Pty Ltd., the project's engineering, procurement and construction management contractor.

Winyama is a 100% Karratha-owned and 50% Indigenous-owned provider of civil, construction and mining services and renewable asset hire that prioritises spend with local and Indigenous suppliers. The name Winyama, meaning Sea Eagle in the Ngarluma language, symbolises the company's mission to provide economic opportunities and prosperity for local Aboriginal people. It is a bird that has held significance through the female line of Ngarluma majority owner Arthur Ramirez's family for generations.

Woodside Pluto Expansion Project Manager Paul Baker said Woodside was thrilled to be partnering with Winyama for the delivery of the civil works for the Pluto Train 1 Modifications Project and supporting the delivery of local business and employment outcomes for the Pilbara.

"By engaging a local Indigenous-led and owned contractor, we're securing the delivery of an important service while contributing to the local economy. The contract will also support the growth of Winyama, increasing the company's capacity to deliver services to other industries across the Pilbara," he said.

Arthur Ramirez, Winyama Chairman and Indigenous Business Manager, said the new supply agreement with Woodside was a major milestone for Winyama.

"This project will allow our team to grow by about another 65 new employees, with the majority being residential employees.

"Being engaged on the Pluto Train 1 Modifications Project will help fulfil Winyama Contracting Group's vision to increase its footprint in the region, which will enable us to increase our focus on outcomes for Aboriginal people through our reflection Reconciliation Action Plan.

"We are really proud that Woodside has chosen a local Karratha-based Indigenous business to execute a major portion of one of their largest current projects, showing they live their values and support local and Indigenous business growth in the region," he said.

Winyama, KBR and Woodside representatives at Pluto LNG.

Healing comes from Country

Roebourne-based start-up Warridahs of the Ngurra (WOTN) aims to build awareness and respect for traditional bush medicine and share cultural knowledge. Meaning 'Women of Country' in Ngarluma language, WOTN was founded in 2023 by Ngarluma and Banjima woman, Kylie Mowarin.

Kylie's years of dedication to exploring the uses and benefits of native plants have seen her experiment with the ingredients in teas and ointments. The healing properties of these plants have recently been reinforced by modern scientific research conducted in partnership with Griffith University.

"We are working with Griffith University, testing two traditional plants for their antimicrobial, antioxidant and anti-inflammatory properties. So far, we are seeing very positive results," said Kylie.

With support from Woodside, Kylie recently held a bush medicine workshop on Murujuga alongside local Elders, representatives from Murujuga Aboriginal Corporation, Griffith University and a leading archaeologist.

Students from Roebourne District High School were among the attendees at the workshop at Hearson's Cove. Kylie spoke with students about the scientific attributes of traditional medicines and their gathering methods.

"It's important to pass on our knowledge from our ancestors and for our young ones to understand our cultural connections to Country and how it can help with healing our bodies and minds," said Kylie.

Liz Ritchie, Roebourne District High School Principal, said the students' involvement in the workshop was part of Connected Learning, a program developed with support from the Karratha and Roebourne Education Initiative to link classroom curriculum with cultural knowledge and community.

"We are deeply committed to delivering education that is culturally respectful and meaningful. This work can only be achieved when we have the guidance, support and expertise of our families, community advisors, and Elders.

"Participating in the Warridahs of the Ngurra workshops enables our young people to demonstrate practical applications of the learning that occurs in class and on-Country throughout the term.

"The day was an authentic example of how curriculum delivery in a culturally responsive and connected way leads to deep two-way learning of skills and knowledge," she said.

Looking ahead, WOTN plans to create a healing hub in Roebourne, which aims to balance education, wellbeing, and a sustainable business by building upon a range of products Kylie has been developing with native plants.

"We also plan to provide on-Country tours, which will provide economic prosperity for our people through employment and educating women in how to run a business," said Kylie.


Kylie Mowarin with students from Roebourne District High School at Hearson's Cove.

Stay up to date on our continued contribution to the local community Woodside North West

KREI supports student revision seminars

For more than 15 years, Woodside and its Joint Venture participants have contributed to programs aimed at enhancing academic achievements among students in the City of Karratha. Since the establishment of the Karratha and Roebourne Education Initiative (KREI), a key focus has been to bridge the gaps in opportunities available to local students and their peers in metropolitan areas.

During the recent school holidays, the KREI supported a group of Year 12 students from St Luke's College to travel to Perth for a 10-day educational experience. The local students participated in a series of intensive revision seminars, designed to prepare them for their WACE examinations. With small class sizes and personalised help from specialist teachers, students were able to delve into the course material and discuss valuable exam strategies.

While in Perth, the students dedicated time outside the seminars to learn about life at university. They visited several campuses where they engaged in pre-arranged faculty workshops and met with student ambassadors to gain valuable insights into the university environment, academic workload, course offerings and entry pathways.

The students also took the opportunity to explore the university accommodation colleges, helping them to envision their potential future living arrangements and supporting their readiness for their upcoming transition to higher education.

St Luke's College Upper School Pathways Coordinator Carol Potter said this year's revision seminars were an outstanding success.

"We are very fortunate to have the support of the Karratha and Roebourne Education funding, which made both the revision seminars and university visits possible. Our students are now feeling more prepared ahead of their final examinations and transition into tertiary education, away from their family to a big city," she said.

Supporting local students from St Luke's College and Karratha Senior High School to travel to Perth for revision seminars is just one example of Woodside and its Joint Venture participants' contribution to schools in the City of Karratha. Earlier this year, Woodside announced the renewal of the KREI, with five-year community partnership agreements. The renewal builds on a strong history of collaboration and provides continued investment to help local high school and primary school students thrive.

Students from St Luke's College on KREI supported Perth visit.

Scarborough trunkline installation a success

This October, Woodside marked an important milestone as it announced the completion of the Scarborough Energy Project's trunkline installation. Once operational, the 433 km trunkline will transport gas from the offshore Scarborough field to the onshore Pluto LNG facility for processing.

Reaching depths of up to 1400 m, the trunkline took around 12 months to install and had numerous teams and contractors contributing to the successful work program.

Woodside Executive Vice President and Chief Operating Officer Australia Liz Westcott said the trunkline was a critical piece of infrastructure for the Scarborough Energy Project.

"The completion of installation is a significant accomplishment, reflecting the dedication of all involved in achieving this project milestone.

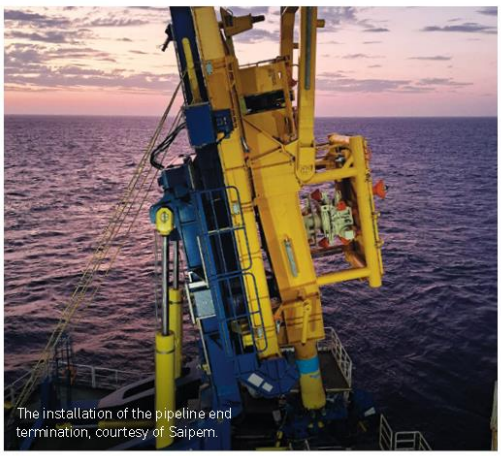
"With the last components of the trunkline in place, the focus will be maintained on safely executing the remaining project scopes to support the targeted first Scarborough LNG cargo in 2026," she said.

Following the successful installation of the trunkline, work will now commence on the pre-commissioning in preparation for hook-up of the subsea infrastructure.

The Scarborough Energy Project was 73% complete in October[1], and is set to help meet demand for the reliable energy the world needs today and into the future. This includes up to 225 terajoules a day of domestic gas supply into the Western Australian market from operations in Karratha.

These volumes will be processed by the recently delivered Pluto Train 2 domestic gas module. The important piece of infrastructure, which arrived in Karratha and was installed in early September, weighs over 1500 tonnes and will connect to the domestic gas export compressor. The domestic gas module is one of the 51 modules that is targeted to be delivered to site by the end of this year.

[1] Excluding Pluto Train 1 modifications.



The installation of the pipeline end termination, courtesy of Saipem.

Let's Talk

Our plans, Your say

Head to woodside.com/consultation-activities to read our latest edition and Environment Plan consultation information.

We welcome feedback on your relevant functions, activities or interests. Alternatively, you can contact us at consultation@feedback.woodside.com or on 1800 442 977.

6.7.4 Let's Talk – Our Plans, Your Say

6.7.4.1 Let's Talk November 2024

Hard copy distribution − November 2024

Date	Location	Event
15 November	Community engagement Karratha/Roebourne	
15 November	Karratha Visitor Centre	
15 November	Dampier Community Association office	
15 November	City of Karratha office	
15 November	Woodside Roebourne office	
15 November	Exmouth Community Drop in	
27 November	KDCCI opportunities	KDCCI Breakfast Briefing
29 November	Karratha CLG	

Let's Talk November 2024 edition

Woodside Energy

Let's Talk

Our Plans, Your Say

Edition 4 | November 2024

The rundown

North West Shelf Visitors Centre welcomes Wanparta

The Ngarla people at the North West Shelf Visitors Centre.

We acknowledge the unique connection that First Nations communities have to land, waters and the environment and seek to consult them in relation to our operations and proposed projects.

As part of our ongoing consultation with First Nations groups, Woodside Energy recently hosted 13 Traditional Owners from Ngarla country at the North West Shelf Visitors Centre, so they could see our operations first hand.

The Ngarla people are the Traditional Owners of an area of land east of Port Hedland that covers the De Grey and Pardoo pastoral stations in Western Australia's North West.

Woodside Manager First Nations Engagements, Michael Roe said that Wanparta Aboriginal Corporation as the Prescribed Body Corporate for the Ngarla people, had been identified as a relevant person to consult with on previously submitted and present Environment Plans.

"The Ngarla people were interested in learning more about the world of gas, and as part of the consultation process were invited to Karratha for a visit to the North West Shelf Visitors Centre overlooking the Karratha Gas Plant."

"This provided an occasion to build trust and understanding whilst providing the opportunity to provide feedback on our activities. In this case we were consulting on the five-yearly review of the Pluto Facility Operations Environment Plan." said Michael.

An accepted Environment Plan is required in order for Woodside to carry out activities. Meaningful conversations with First Nations people are documented and make up part of an Environment Plan submitted to regulatory bodies for assessment ahead of continued operation.

Wanparta Aboriginal Corporation Chairperson, Mary-Jo Coppin said, "the trip was really informative with good consultation, well organised and we felt very welcome at the facility."

A key element of Woodside's consultation efforts is our willingness to be flexible and adaptable to suit the audience in our overall efforts to avoid or minimise potential impacts from our operations.

Munro's Mack10k Fishing Competition

Munro's Mack10k 2024 Fishing Competition, held in Onslow from 24-25 August 2024, saw hundreds of anglers and fishing enthusiasts from across Australia enter into the running for a chance to reel in $10,000.

The event doubles up as a research initiative, spearheaded by Recfishwest's Fishing for Science program and supported by Woodside Energy.

Working with the Department of Primary Industries and Regional Development, the Recfishwest science team collected biological samples from mackerel caught by competitors, providing insight into the health of the local fish population.

Read more about the annual competition, hosted by the Ashburton Angler Fishing Club by visiting: recfishwest.org.au

To stay updated, subscribe for future editions at
woodside.com/what-we-do/consultation-activities

Community spotlight

Wangarri Crane and Equipment Hire

Murujuga Commercial Limited's (MCL) first Pilbara business, Wangarri Crane and Equipment Hire (Wangarri), has been awarded the contract for supply and maintenance of cranes and forklifts for the Pluto Train 2 Project, the onshore component of the Scarborough Energy Project.

Established by MCL as a joint venture with Boddington's Hire, Wangarri provides a range of lifting equipment that includes cranes, forklift trucks, reach stackers and telehandlers for hire to the resource sector and other industrial clients across the Pilbara.

One of five commercial ventures managed by MCL, Wangarri forms a portfolio of businesses and commercial ventures that aim to provide a strong and economic future for its Murujuga members.

Wangarri means "Coming to Life" in Yindjibarndi, which represents MCL's journey as it moves from a start-up phase toward building business streams that align to the strategic goals and objectives of the Murujuga Aboriginal Corporation.

Bechtel, the appointed contractor for the Pluto Train 2 project, delivers engineering, procurement, construction and commissioning, has awarded contracts to local Indigenous businesses, such as Wangarri to deliver a variety of work scopes.

"We are very happy to be working with Wangarri on Pluto Train 2. We deeply value this local contract and appreciate their professionalism and dedication to providing safe and high-quality cranes and forklifts." said Bechtel Pluto Train 2 site manager Terry Klowss.

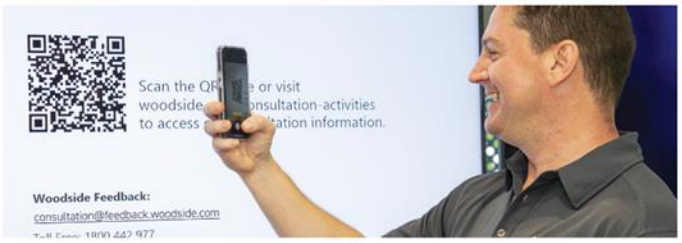
Jig Albert, MCL Managing Director said the contract with Bechtel on Pluto Train 2 had been an enormous stepping stone for their business.

"We have been contracted to provide a range of the smaller cranes for the project. Mostly this consists of Franna pick and carry cranes, however we are also providing a 160 tonne all-terrain crane and a small three tonne Maeda spider crane, as well as the ongoing maintenance of these machines," said Jig Albert.

"It has given our business the confidence to invest in our own equipment which will drive equity for the business and in turn provide a direct return to Murujuga Aboriginal Corporation members."

Learn more about Wangarri Crane and Equipment Hire and their work on the Scarborough Energy Project

The importance of consultation



"Like safety, consultation continues to be a core focus for NOPSEMA," Sue McCarrey, CEO, NOPSEMA *(Source: The Regulator, 2024, Issue 2)*

Consultation is a key component of Woodside's environmental planning and can involve a two-way process with relevant persons who wish to provide feedback on operations or proposed offshore activities.

Consultation enables Woodside to confirm current measures or identify additional measures, if any, that could be taken to lessen or avoid potential adverse effects of the proposed activity on the environment. It is a key requirement of Australia's offshore environmental management framework and Environment Regulations.

An appropriate consultation approach which meets regulatory requirements enables Regulators such as the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for Commonwealth activities, or the Department of Energy, Mines, Industry Regulation and Safety for state activities, to assess and accept Environment Plans (EP).

Woodside is committed to open and transparent consultation and does this by providing clear information on proposed activities, assessing and responding to objections or claims about the activity, and providing a reasonable period of time and opportunity for a relevant person to provide feedback.

If required due to the nature and scale of a proposed activity, Woodside undertakes additional consultation activities over a longer period to ensure a reasonable period of time period and sufficient information has been provided. This allows for an informed assessment of the possible consequences of the activity on stakeholders' (referred to as a 'relevant person' under Commonwealth regulations) functions, interests or activities.

Subscribe to stay up-to-date

On Woodside's website we enable members of the public to subscribe to receive information about EPs as it becomes available.

Subscribing is a great way to stay informed about updates and important information related to Woodside's activities. It also provides the public with timely notifications about new projects, environmental initiatives, community engagements, and consultation information sheets for proposed activities.

Woodside has updated its consultation email address to consultation@feedback.woodside.com

To subscribe to Woodside's consultation activities **click here** and enter your details on the page.

Join the conversation at **woodside.com/what-we-do/consultation-activities**

Community conversations

Woodside consults local communities at local events. If you see our friendly team out-and-about, please come and chat to us about our operations and projects.

Recently our team engaged with community members at pop-up Environment Plan information sessions in Karratha and Exmouth and participated in the Dampier Beachside Markets. Our teams also recently met with stakeholders in Broome, Onslow and Roebourne.

We also meet quarterly with Community Liaison Groups in Karratha and Exmouth where we communicate updates and consult with community members on a range of relevant activities.

If you're interested in what Woodside has planned on land and sea, come and chat to our friendly team and follow the Woodside North West Facebook page for updates including our Karratha Community Update newsletter.

Stay up to date on our continued contribution to the community we call home.

SEARCH ON FACEBOOK OR CLICK HERE

Woodside North West

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.

Environment Plan	Activity Type	Location	Consultation Dates
NWS Phase 1 Well P&A and TPA03 Well Intervention	Decommissioning and Project	125 - 138 km north / north-west of Dampier	27 September to 30 October 2024
Angel Subsea Infrastructure Removal	Decommissioning	125km north of Dampier	30 September to 1 November 2024

You can access our consultation information, provide feedback and subscribe for updates by **clicking here**.

Progress snapshot

Environment Plan	Activity Type	Date Accepted	Status
Minerva Decommissioning and Field Management	Decommissioning	14 October 2024	In progress
NWS and Julimar Exploration Wellhead Decommissioning	Decommissioning	3 July 2024	In progress
Angel Operations (Lambert West Drilling)	Operations / Project	25 June 2024	In scheduling
Julimar Development Phase 3 Drilling and Subsea Installation	Project	10 June 2024	In scheduling
Stybarrow Decommissioning and Field Management / End State	Decommissioning	23 May 2024	In progress
Goodwyn Alpha Geophysical and Geotechnical Surveys	Project	30 May 2024	In progress
Griffin Field Decommissioning (End State) (Griffin Field Deviation / Griffin Leave In-situ)	Decommissioning	1 March 2024	In progress
Stybarrow Plug and Abandonment	Decommissioning	21 December 2023	In progress
Scarborough Seabed Intervention and Trunkline Installation	Project	13 December 2023	In progress
Scarborough WA-61-L and WA-62-L Subsea Infrastructure Installation	Project	8 December 2023	In progress
Scarborough Drilling and Completions	Project	1 December 2023	In progress
Griffin Decommissioning and Field Management	Decommissioning	21 November 2023	In progress

You can view Commonwealth Environment Plans for approved activities and operations by visiting:
info.nopsema.gov.au/home/approved_projects_and_activities

Milestone celebrations at FeNaCING Festival

The City of Karratha recently hosted the FeNaCING Festival, bringing together community and celebrating the region's key industries – iron (Fe), sodium chloride, commonly known as salt (NaCl), and natural gas (NG).

Woodside Energy, along with its joint venture partners, proudly supported the event, with a pavilion that featured Woodside's 70th anniversary as a company and 40th year of safe and reliable operations in the North West.

Woodside CEO Meg O'Neill made a special appearance at the festival, meeting local community members and helping with a range of giveaways on offer.

Meg praised the event organisers who successfully celebrated the community spirit that makes Karratha a great place to live and work.

"We know that such a significant milestone could only be achieved with the support of our people and the Karratha community," she said. "I was really thrilled to have the opportunity to join our team in the Woodside marquee as they engaged with the community about issues that matter to them and answered questions about our operations and growth projects."

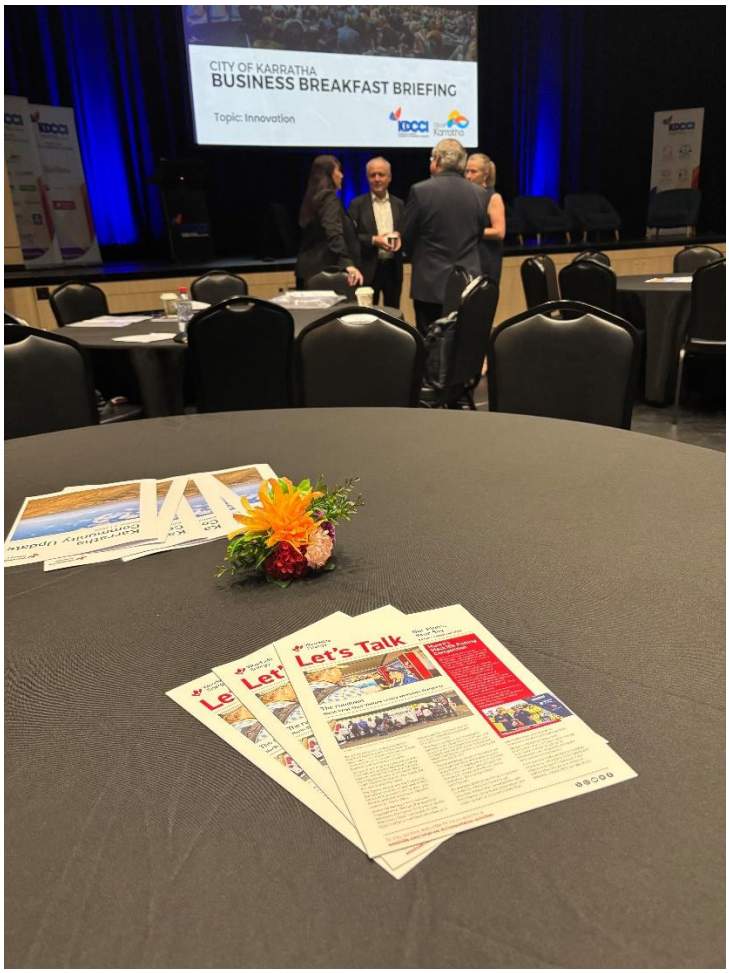
Many attendees who visited the Woodside marquee expressed curiosity about Woodside's Environmental Plans and other topics including Carbon Capture and Storage, the Scarborough Energy Project and the development of Browse.

Woodside's active participation in events like the FeNaCING Festival supports our consultation approach to engage the community on our current business activities, including opportunity to provide feedback on our Environment Plans.

Woodside Energy CELEBRATE 70

Join the conversation at **woodside.com/what-we-do/consultation-activities**

KDDCI Breakfast Briefing Event



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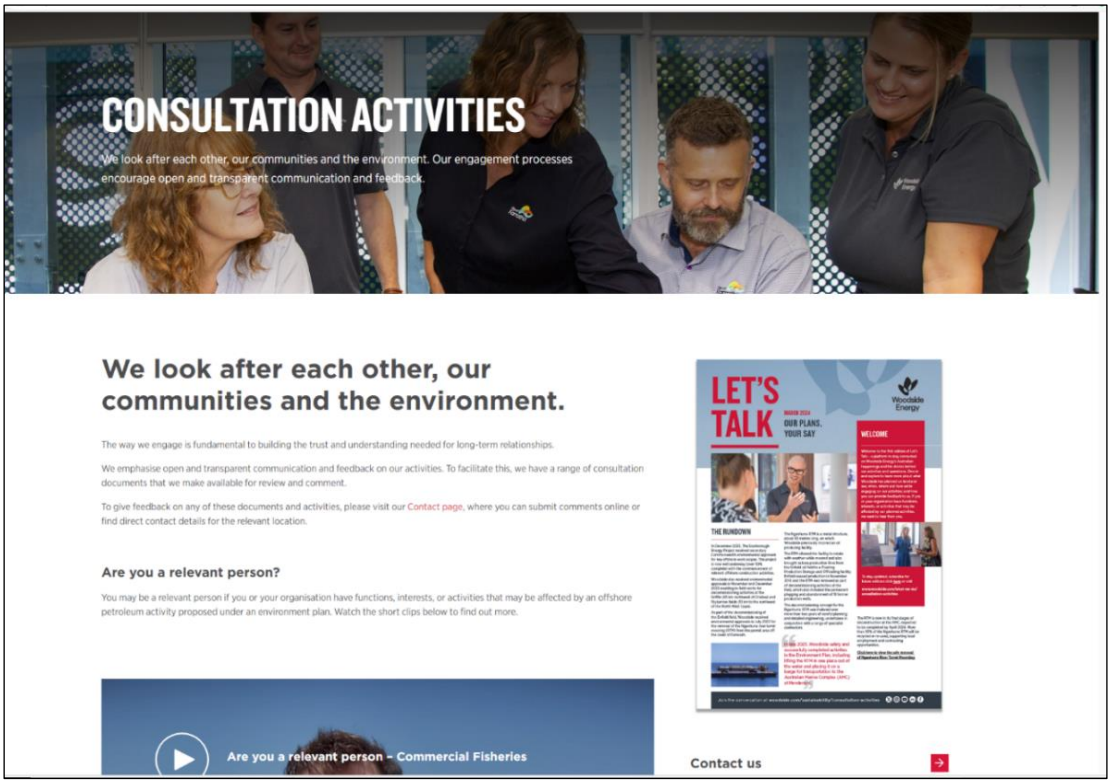

APPENDIX G OIL SPILL PREPAREDNESS AND RESPONSE STRATEGY SELECTION AND EVALUATION

Woodside Energy

Oil Spill Preparedness and Response Mitigation Assessment for the North West Shelf Phase 1 Plug and Abandonment and TPA03 Well Intervention Environment Plan

Corporate HSE

Hydrocarbon Spill Preparedness

February 2025
Revision 0

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EXECUTIVE SUMMARY

Woodside Energy Ltd. (Woodside) has developed its oil spill preparedness and response position for the North West Shelf Phase 1 Plug and Abandonment and TPA03 Well Intervention activities, hereafter known as the Petroleum Activities Program (PAP).

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 PAP 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 Scenario	Credible Scenario-01 (CS-01): Hydrocarbon release caused from a loss of well containment (LOWC) – AP3 Angel Field at 19° 30' 38.51" S, 116° 36' 18.57" E. 107,779 m^3 over 68 days of Angel Condensate. 3.8 % residual component of 4096 m^3	Section 2.2
	Credible Scenario-02 (CS-02): Hydrocarbon release caused from a LOWC – PER-02 PoG Field at 19° 31' 06.50" S, 116° 05' 53.64" E. 219,093 m^3 over 73 days of Perseus (Searipple) Condensate. 0.38 % residual component of 833 m^3	
	Credible Scenario-03 (CS-03): Unplanned hydrocarbon release from a LOWC from TPA03 during well intervention at 19° 45' 43.618" S, 115° 53' 23.986" E. 56,441 m^3 over 71 days of TPA Condensate/ GWA Condensate.[1] 0.8% residual component of 451.5 m^3 or 6.4 m^3 per day.	
	Credible Scenario-04 (CS-04): Marine fuel release caused by loss of marine vessel separation – Angel-3 Wellhead location at 19° 23' 26.03" S, 116° 37' 47.25" E. Instantaneous release of 500 m^3 of marine diesel oil (MDO). 5% residual component of 25 m^3	
Hydrocarbon Properties	**Angel Condensate** Angel Condensate is a mixture of volatile and persistent hydrocarbons with high proportions of volatile and semi-volatile components. In favourable evaporation conditions, about 67.0% of the oil mass should evaporate within the first 12 hours (BP < 180 °C); a further 23.8% should evaporate within the first 24 hours (180 °C < BP < 265 °C); and a further 5.4% should evaporate over several days (265 °C < BP < 380 °C). Approximately 3.8% of the oil is shown to be persistent.	Section 6.7.2 of the EP Appendix A of the First Strike Plan
	Perseus (Searipple) Condensate Searipple Condensate 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 66.5% of the oil mass should evaporate within the first 12 hours (BP < 180 °C); a further 20.2% should evaporate within the first 24 hours (180 °C < BP < 265 °C); and a further 13% should evaporate over several days (265 °C < BP < 380 °C).	

[1] Modelling for GDA05 LOWC, 6 km from TPA03 well and within the same title (WA-5-L), was undertaken in 2021 using NOPSEMA's contemporary modelling thresholds. TPA03 Well Intervention LOWC is expected to be circa 50% smaller (56,441 m^3) than the GDA05 LOWC volume (108,843 m^3), has the same residue (0.8%), occurs in similar water depths and both over a 71-day release period. Given that TPA03 spill parameters and geographic location fall within the envelope of GDA05, the existing modelling is an appropriate surrogate and therefore additional modelling was not required.

<table>
<tr><td></td><td>TPA Condensate / GWA Condensate

N.B. GWA condensate has very similar properties to the hydrocarbon produced from TPA03 well and is therefore an appropriate surrogate – see footnote [2].

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 (BP < 180 °C); a further 22.5% should evaporate within the first 24 hours (180 °C < BP < 265 °C); and a further 10.8% should evaporate over several days (265 °C < BP < 380 °C). Approximately 0.8% of the oil is shown to be persistent.</td><td></td></tr>
<tr><td></td><td>Marine Diesel Oil (MDO)

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 (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. The aromatic content of the oil is approximately 3%.</td><td>Section 6.7.3 of the EP

Appendix A of the First Strike Plan</td></tr>
<tr><td>Modelling Results</td><td>Stochastic modelling

Quantitative, stochastic assessment has been undertaken for all credible spill scenarios to help assess the environmental risk of a hydrocarbon spill.

A total of 100 replicate simulations were completed for CS-01, CS-02 and CS-03, and 200 replicate simulations for CS-04 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.</td><td>Section Error! Reference source not found.</td></tr>
<tr><td></td><td>Deterministic modelling

Deterministic modelling was then undertaken for CS-01 as the worst-case credible scenario (WCCS) to establish the following for response planning purposes:

• Minimum time to floating hydrocarbon contact with the offshore edge(s) of any shoreline receptor polygon (at a concentration of 10 g/m2)
• Minimum time to commencement of oil accumulation at any shoreline receptor (at a threshold of 100 g/m^2)
• Maximum cumulative oil volume accumulated at any individual shoreline receptor (at concentrations in excess of 100 g/m^2)
• Maximum cumulative oil volume accumulated across all shoreline receptors (at concentrations in excess of 100 g/m^2)
• Minimum time to entrained/dissolved hydrocarbon contact with the offshore edges of any receptor polygon (at a threshold of 100 ppb)</td><td></td></tr>
<tr><td></td><td>
<table>
<tr><th></th><th>CS-01: Hydrocarbon release caused by LOWC from AP3 well (107,779 m^3 Angel Condensate)</th><th>CS-02: Hydrocarbon release caused by LOWC from PER-02 well (219,093 m^3 Perseus (Searipple) Condensate)</th><th>CS-03: Hydrocarbon release caused by LOWC from TPA03 well (56,441 m^3 GWA Condensate)</th><th>CS-04: Marine fuel release caused by loss of marine vessel separation (500 m^3 MDO)</th></tr>
<tr><td>Minimum time to floating hydrocarbon contact with the offshore edge(s) of any shoreline receptor polygon (at</td><td>Model 23, Q1, 64.2 days at Muiron Islands</td><td>No contact at threshold</td><td>No contact at threshold</td><td>No contact at threshold</td></tr>
</table>
</td><td></td></tr>
</table>

[2] Modelling for GDA05 LOWC, 6 km from TPA03 well and within the same title (WA-5-L), was undertaken in 2021 using NOPSEMA's contemporary modelling thresholds. TPA03 Well Intervention LOWC is expected to be circa 50% smaller (56,441 m^3) than the GDA05 LOWC volume (108,843 m^3), has the same residue (0.8%), occurs in similar water depths and both over a 71-day release period. Given that TPA03 spill parameters and geographic location fall within the envelope of GDA05, the existing modelling is an appropriate surrogate and therefore additional modelling was not required.

	a concentration of 10 g/m^2)					
	Minimum time to commencement of oil accumulation at any shoreline receptor (at a threshold of 100 g/m^2)	Model 1, Q3, 23.4 days at Southern Pilbara – Islands (3 m^3)	*No contact at threshold*	*No contact at threshold*	*No contact at threshold*	
	Maximum cumulative oil volume accumulated at any individual shoreline receptor (at concentrations in excess of 100 g/m^2)	Model 10, Q2, 56.3 m^3 at Montebello Islands	*No contact at threshold*	*No contact at threshold*	*No contact at threshold*	
	Maximum cumulative oil volume accumulated across all shoreline receptors (at concentrations in excess of 100 g/m^2)	Model 23, Q1, 65.2 m^3 at Montebello Islands	*No contact at threshold*	*No contact at threshold*	*No contact at threshold*	
	Minimum time to entrained/dissolved hydrocarbon contact with the offshore edges of any receptor polygon (at a threshold of 100 ppb)	Glomar Shoals – 92 hours	Rankin Bank– 160 hours	Rankin Bank– 18 hours	Rankin Bank– 18 hours	
Net Environmental Benefit Analysis	Monitor and evaluate, source control via relief well drilling, source control via capping stack[3], source control (vessel), source control blowout preventer (BOP) intervention, 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 aacceptable level for the risk presented in Section 2, without the implementation of considered additional, alternative or improved control measures.					Section 7

[3] Note: Capping stack is not considered feasible for water depths of <100m and/or if vertical Xmas trees are in place. Feasibility will be assessed on a case-by-case basis.

1 INTRODUCTION

1.1 Overview

Woodside Energy Ltd (Woodside) has developed its oil spill preparedness and response position for the North West Shelf Phase 1 Plug and Abandonment activities, hereafter known as the Petroleum Activities Program (PAP). 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 North West Shelf Phase 1 Plug and Abandonment and TPA03 Well Intervention Environment Plan (EP)
- Oil Pollution Emergency Arrangements (OPEA) (Australia)
- The North West Shelf Phase 1 Plug and Abandonment and TPA03 Well Intervention Oil Pollution Emergency Plan (OPEP) including
  - First Strike Plan (FSP)
  - 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 PAP 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 PAP 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 PAP. 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 the Monitor and evaluate operations and the operational NEBA (Section 4). Planning, coordination and resource management are initiated by the Corporate Incident 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.

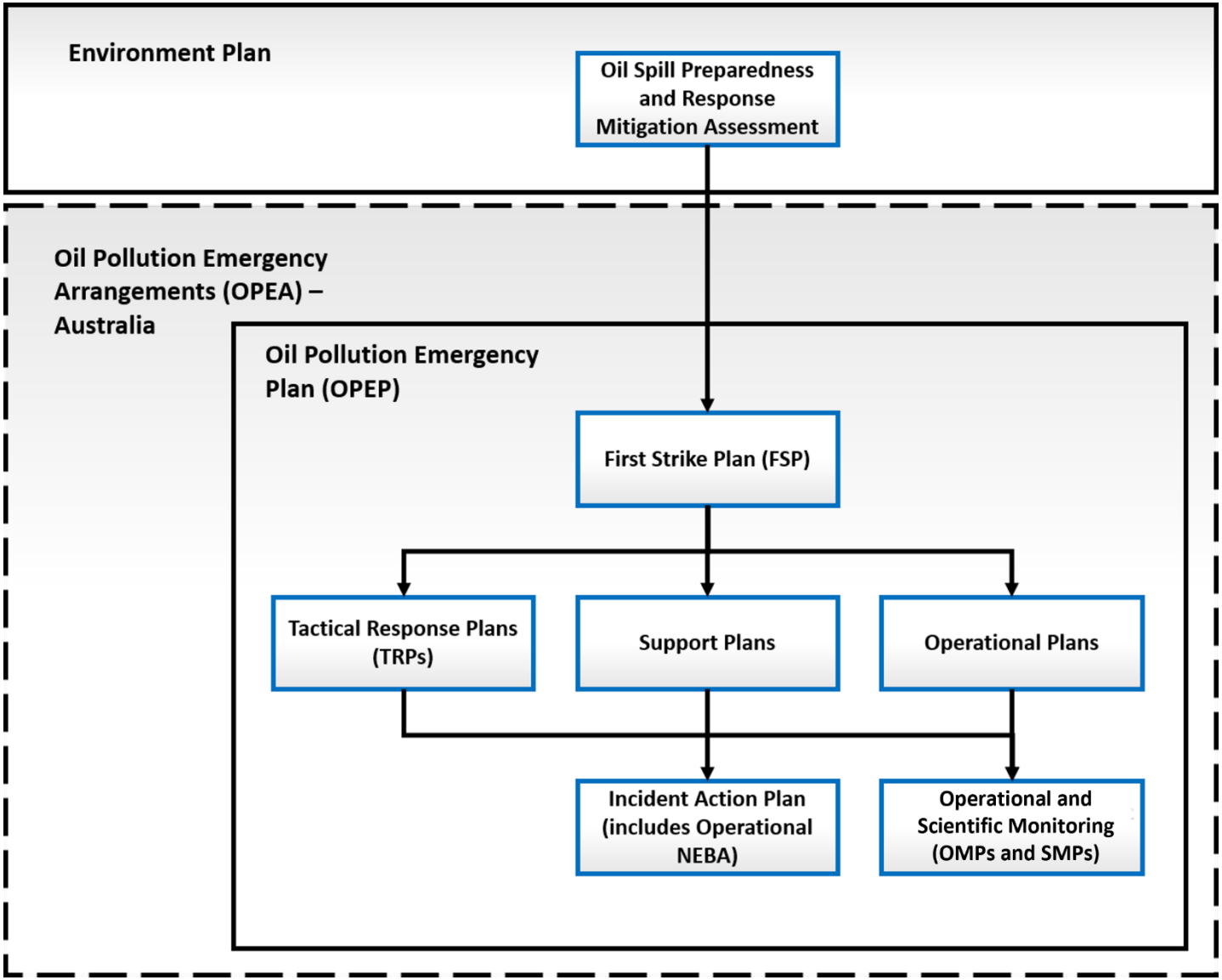

Figure 1-1: Woodside hydrocarbon spill document structure

Table 1-1: Hydrocarbon Spill preparedness and response – document references

Document	Document overview	Stakeholders	Relevant information	Document subsections (if applicable)
North West Shelf Phase 1 Plug and Abandonment and TPA03 Well Intervention Environment Plan (EP)	Demonstrates that potential adverse impacts on the environment associated with the North West Shelf Phase 1 Plug and Abandonment (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.	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)	
Oil Pollution Emergency Arrangements (OPEA) Australia	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 North West Shelf Phase 1 Plug and Abandonment and TPA03 Well Intervention (this document)	Evaluates response options to address the potential environmental impacts resulting from an unplanned loss of hydrocarbon containment associated with the PAP 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.	
North West Shelf Phase 1 Plug and Abandonment and TPA03 Well Intervention 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.	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	

Document	Document overview	Stakeholders	Relevant information	Document subsections (if applicable)
	Oil Pollution First Strike Plans are intended to be the first document used to provide immediate guidance to the responding Incident Management Team (IMT).		process for oil spill trajectory modelling, aerial surveillance and oil spill tracking buoy details.	
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 Source Control Emergency Response Planning Guideline Protection and Deflection Shoreline Clean Up Oiled Wildlife Response Operational and Scientific Monitoring Bridging Implementation Plan[4]
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 available Tactical Plans, refer to Tactical Response Plans (TRP).
Support Plans	Support Plans detail Woodside's approach to resourcing and the	CIMT: Operations, Logistics and Planning Sections.	Technique for mobilising and managing additional resources	Logistics Support Plan Aviation Support Plan

[4] In accordance with Regulation 56 of the Environment Regulations, the Woodside *Operational and Scientific Monitoring Bridging Implementation Plan* was provided to NOPSEMA with the North Rankin Complex Operations Environment Plan in August 2024 and is publicly available here: https://docs.nopsema.gov.au/A1125894

Document	Document overview	Stakeholders	Relevant information	Document subsections (if applicable)
	provision of services during a hydrocarbon spill response.		outside of Woodside's immediate preparedness arrangements.	Marine Support Plan Accommodation & Catering Plan – Australia Transport Management Plan – Australia Waste Management Plan – Australia Health and Safety Support Plan Hydrocarbon Spill Responder Health Monitoring Guidelines People and Global Capability (Surge Labour Requirements) Support Plan (Land Based) Security Support Plan Stakeholder Engagement Support Plan Guidance for Hydrocarbon Spill Claims Management Communications Support Plan – Australia

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 PAP.

The North West Shelf Phase 1 Plug and Abandonment and TPA03 Well Intervention 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.

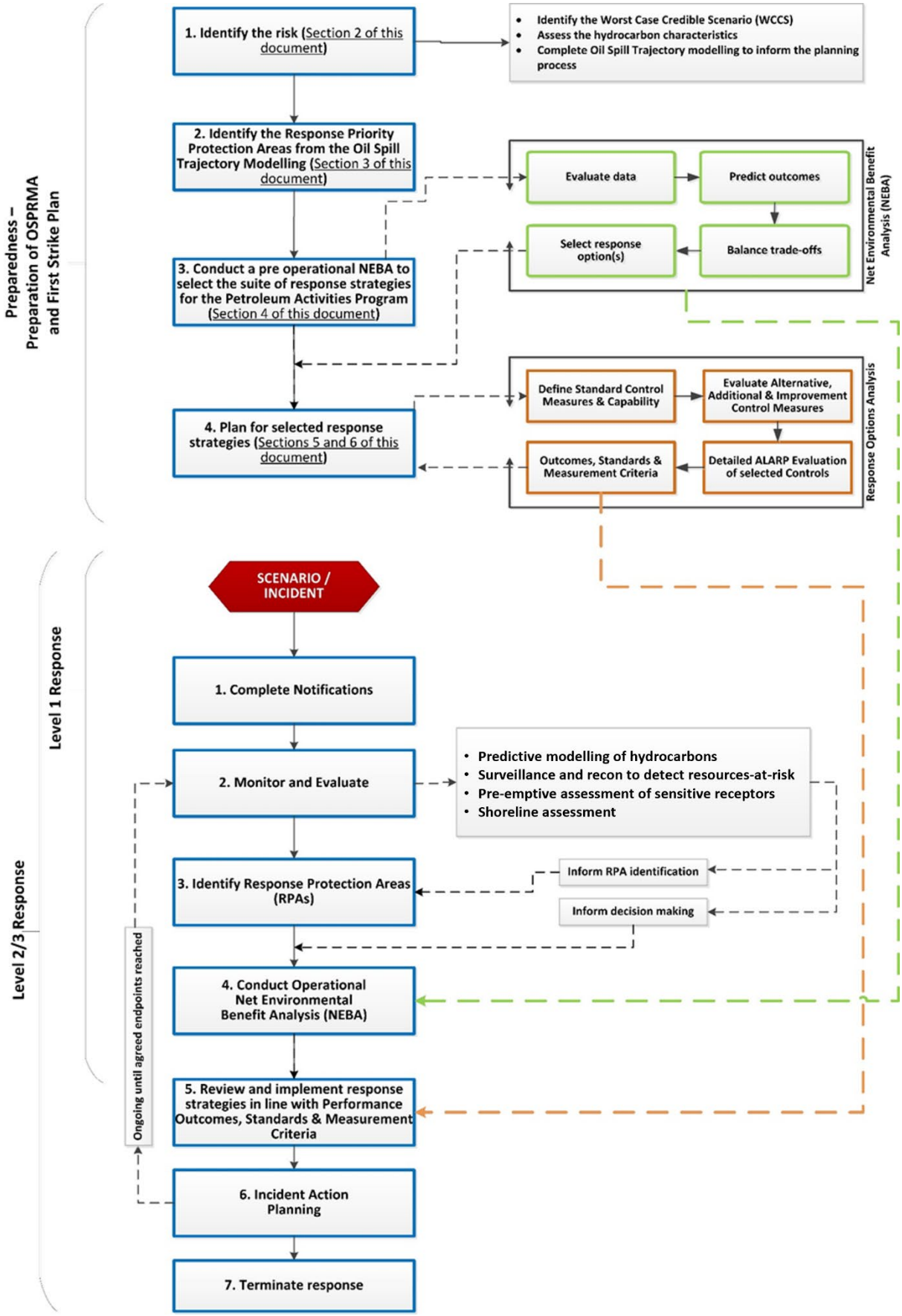

Figure 2-1: Response planning and selection process

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

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.

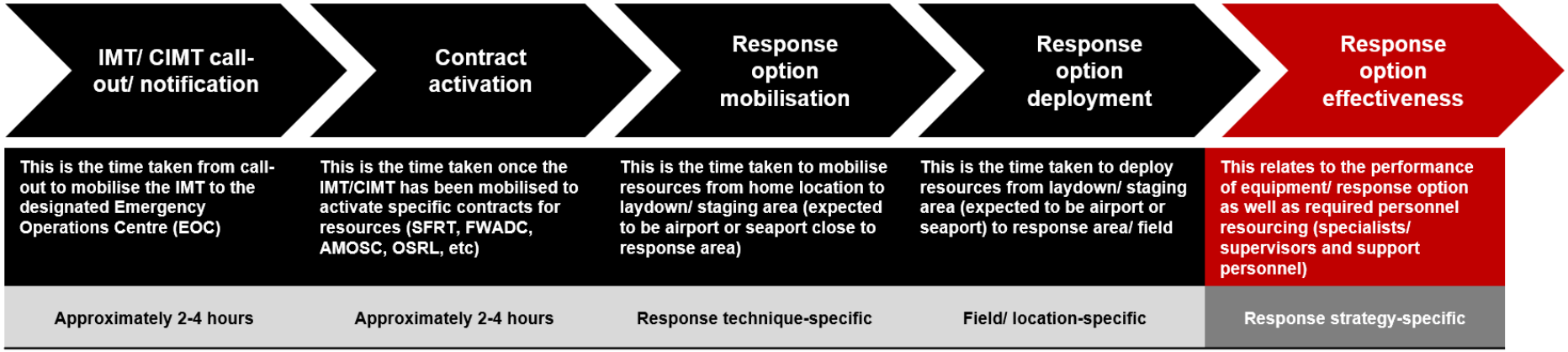

Figure 2-2: Response planning assumption – timing, resourcing and effectiveness

2.2 Environment plan risk assessment (credible spill scenarios)

Potential hydrocarbon release scenarios from the PAP 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 of the EP. Five unplanned events or credible spill scenarios for the PAP 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 PAP. The WCCS for the activity is 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 WCCS, 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 WCCS.

A loss of well control scenario at three locations (CS-01, CS-02 and CS-03) has been modelled and is considered to determine the WCCS for response planning purposes. CS-01 is the only scenario to predict shoreline loading, this scenario is therefore selected for planning purposes and is used to inform the shoreline response.

Table 2-1: Petroleum Activities Program 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)
Credible Spill Scenario-01 (CS-01)	Yes	Hydrocarbon release caused from a loss of well containment (LOWC) – AP3 Angel Field	107,779 m^3 over 68 days	3	Angel Condensate	3.8%	4096 m^3 over 68 days (60 m^3 per day)
Credible Spill Scenario-02 (CS-02)	No	Hydrocarbon release caused from a LOWC – PER-02 PoG Field	219,093 m^3 over 73 days	3	Perseus (Searipple) Condensate	0.38%	833 m^3 over 73 days (11 m^3 per day)
Credible Spill Scenario-03 (CS-03)	No	LOWC During well intervention – subsea blowout – TPA03	56,441 m^3 over 71 days	3	GWA Condensate used as an appropriate surrogate [5]	0.8%	451.5 m^3 over 71 days (6 m^3 per day)
Credible Spill Scenario-04 (CS-04)	Yes	Marine fuel release caused by loss of marine vessel separation – Angel 3 Wellhead location	Instantaneous release of 500 m^3	2	MDO	5%	25 m^3 instantaneously
Credible Spill Scenario-05 (CS-05)	No	Marine fuel loss during hydrocarbon bunkering – Angel and PoG Field	24 m^3 over 15 minutes	1	MDO	5%	1.2 m^3 over 15 minutes (0.08 m^3 per minute)

[5] Modelling for GDA05 LOWC, 6 km from TPA03 well and within the same title (WA-5-L), was undertaken in 2021 using NOPSEMA's contemporary modelling thresholds. TPA03 Well Intervention LOWC is expected to be circa 50% smaller (56,441 m^3) than the GDA05 LOWC volume (108,843 m^3), has the same residue (0.8%), occurs in similar water depths and both over a 71-day release period. Given that TPA03 spill parameters and geographic location fall within the envelope of GDA05, the existing modelling is an appropriate surrogate and therefore additional modelling was not required.

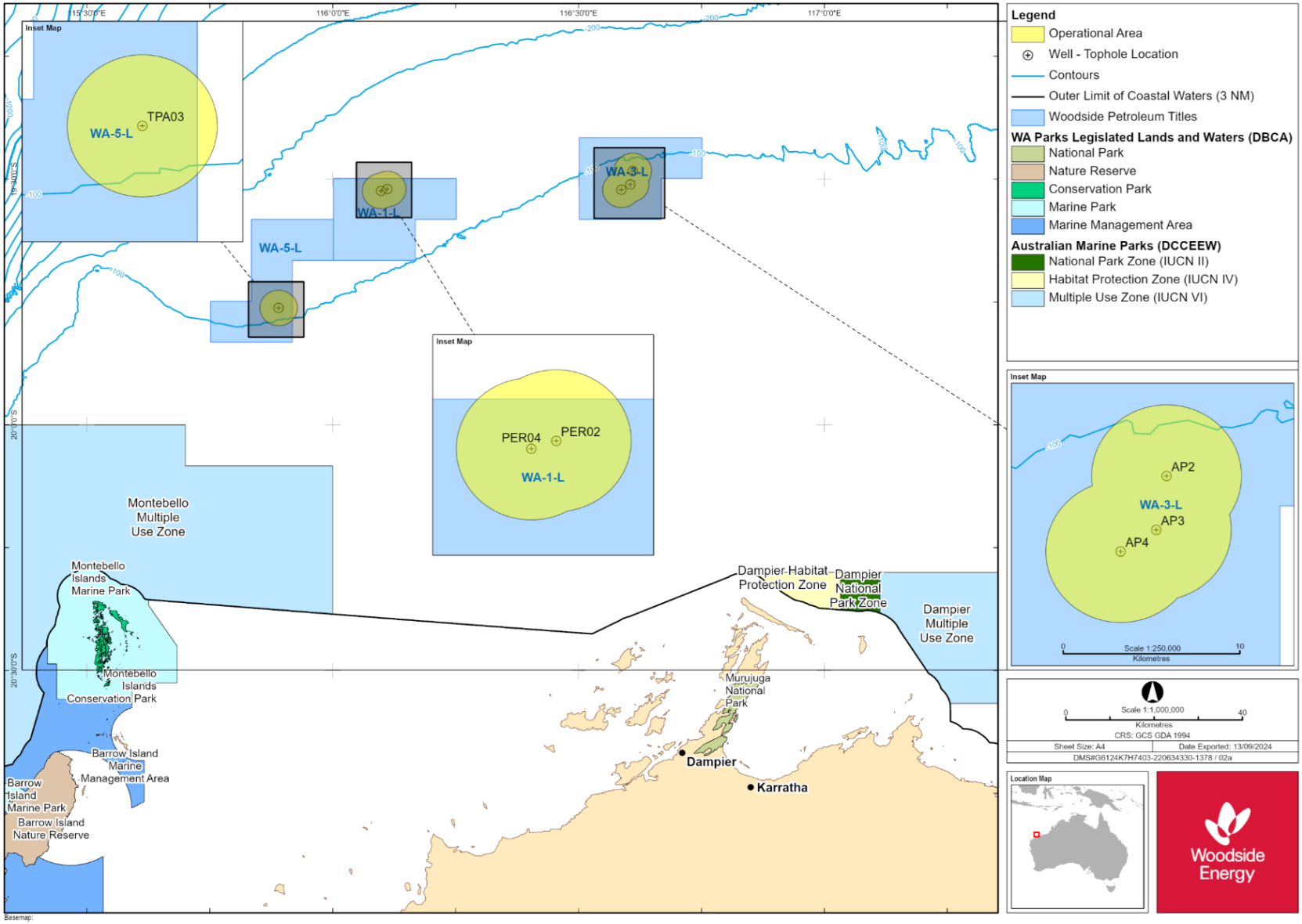

Figure 2-3: Location of activities

2.2.1 Hydrocarbon characteristics

Hydrocarbon characteristics, including modelled weathering data and ecotoxicity, are included in Section 6.7.1 to 6.7.3 of the EP.

Angel Condensate

Angel Condensate is a mixture of volatile and persistent hydrocarbons with high proportions of volatile and semi-volatile components. In favourable evaporation conditions, about 67.0% of the oil mass should evaporate within the first 12 hours (BP < 180 °C); a further 23.8% should evaporate within the first 24 hours (180 °C < BP < 265 °C); and a further 5.4% should evaporate over several days (265 °C < BP < 380 °C). Approximately 3.8% of the oil is shown to be persistent.

Perseus (Searipple) Condensate

Searipple Condensate 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 66.5% of the oil mass should evaporate within the first 12 hours (BP < 180 °C); a further 20.2% should evaporate within the first 24 hours (180 °C < BP < 265 °C); and a further 13% should evaporate over several days (265 °C < BP < 380 °C).

TPA Condensate / GWA Condensate

N.B. GWA condensate has very similar properties to the hydrocarbon produced from TPA03 well and is therefore an appropriate surrogate – see footnote [6].

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 (BP < 180 °C); a further 22.5% should evaporate within the first 24 hours (180 °C < BP < 265 °C); and a further 10.8% should evaporate over several days (265 °C < BP < 380 °C). Approximately 0.8% of the oil is shown to be persistent.

Marine Diesel Oil (MDO)

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 (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. The aromatic content of the oil is approximately 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

[6] Modelling for GDA05 LOWC, 6 km from TPA03 well and within the same title (WA-5-L), was undertaken in 2021 using NOPSEMA's contemporary modelling thresholds. TPA03 Well Intervention LOWC is expected to be circa 50% smaller (56,441 m^3) than the GDA05 LOWC volume (108,843 m^3), has the same residue (0.8%), occurs in similar water depths and both over a 71-day release period. Given that TPA03 spill parameters and geographic location fall within the envelope of GDA05, the existing modelling is an appropriate surrogate and therefore additional modelling was not required.

expert witness evidence in Australian court proceedings, aiding the prosecution to determine spill quantum estimates.

2.2.2 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 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). Further details relating to the assessments for the scenarios can be found in Section 6 of the EP.

2.2.2.1 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 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 environmental impacts

Hydrocarbon	Surface hydrocarbon (g/m^2)	Dissolved hydrocarbon (ppb)	Entrained hydrocarbon (ppb)	Accumulated hydrocarbon (g/m^2)
Condensate	10	50	100	100
Diesel	10	50	100	100

2.2.3 Deterministic modelling

Woodside uses deterministic modelling results to evaluate risks and impacts and response capability requirements. These 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 a single containment and recovery operation or surface dispersant operation (single sortie or vessel spraying) can effectively treat in one ten (10) 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 monitor and evaluate feedback in a real event.

Deterministic modelling was carried out on CS-01 as the WCCS 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/m2
- Column E represents the viscosity of the hydrocarbon in centistokes (cSt) at sea surface temperature
- Column F and G represents the mass of hydrocarbon across the entire cell in kg and tons respectively.

Table 2-3: Example Deterministic modelling data

Latitude	Longitude	Time_hour	Conc_gm^2	Visc_cSt	Mass_kg	Mass_tons
A	B	C	D	E	F	G
-19.711226	115.814366	6	6.413877	81.007389	6429.693282	6.413877
-19.702194	115.814366	6	1.740181	81.300190	1744.571745	1.740181
-19.720258	115.823922	6	1.869578	76.440503	1874.078751	1.869578
-19.711226	115.823922	6	51.471109	80.668490	51597.969472	51.471109
-19.702194	115.823922	6	4.734574	80.068396	4746.515274	4.734574
-19.720258	115.833477	6	4.879617	58.780817	4891.356945	4.879617
-19.711226	115.833477	6	36.161301	70.992921	36250.382543	36.161301

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.

Woodside recognises no single response technique will treat all available subsea or surface oil and a combination of response techniques will be required for the identified scenario. Even with the significant resources available to Woodside through existing capability and third-party resources, the primary offshore response techniques of surface dispersant application and containment and recovery will only treat or recover a minor proportion (<30%) of the available surface hydrocarbons based on previous response experience.

Woodside is committed to a realistic, scalable response capability commensurate to the level of risk and able to be practically implemented and feasibly sustained.

2.2.4 Response planning thresholds for surface and shoreline hydrocarbon exposure

Thresholds to determine the EMBA are used to predict and assess environmental impacts and inform the operational and scientific monitoring (OSM), however they do not appropriately represent the thresholds at which an effective response can be implemented. Additional response thresholds are used for response planning and to determine areas where response techniques would be most effective. The deterministic modelling is then used to assess the nature and scale of a response.

In the event of an actual response, existing deterministic modelling would be reviewed for suitability and additional modelling would be conducted using real-time data and field information to inform IMT decisions.

The deterministic spill modelling outputs are presented at response planning thresholds for surface hydrocarbons for the WCCS. Surface spill concentrations are expressed as grams per square metre (g/m^2) (Section 2.2). The thresholds used are derived from oil spill response planning literature and industry guidance and are summarised below.

2.2.4.1 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[7]	Code 3 – Dull metallic colours	5 to 50
50	Predicted minimum floating oil threshold for containment and recovery and surface dispersant application [8]	Code 4 – Discontinuous true oil colour	50 to 200

[7] Operational monitoring 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 (WA DoT) or AMSA.

[8] 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.

Surface hydrocarbon threshold (g/m^2)	Description	Bonn Agreement Oil Appearance Code	Mass per area (m^3/km^2)
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. 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 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/m^2 was chosen as an average/equilibrium thickness for offshore response operations (50 g/m^2 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).

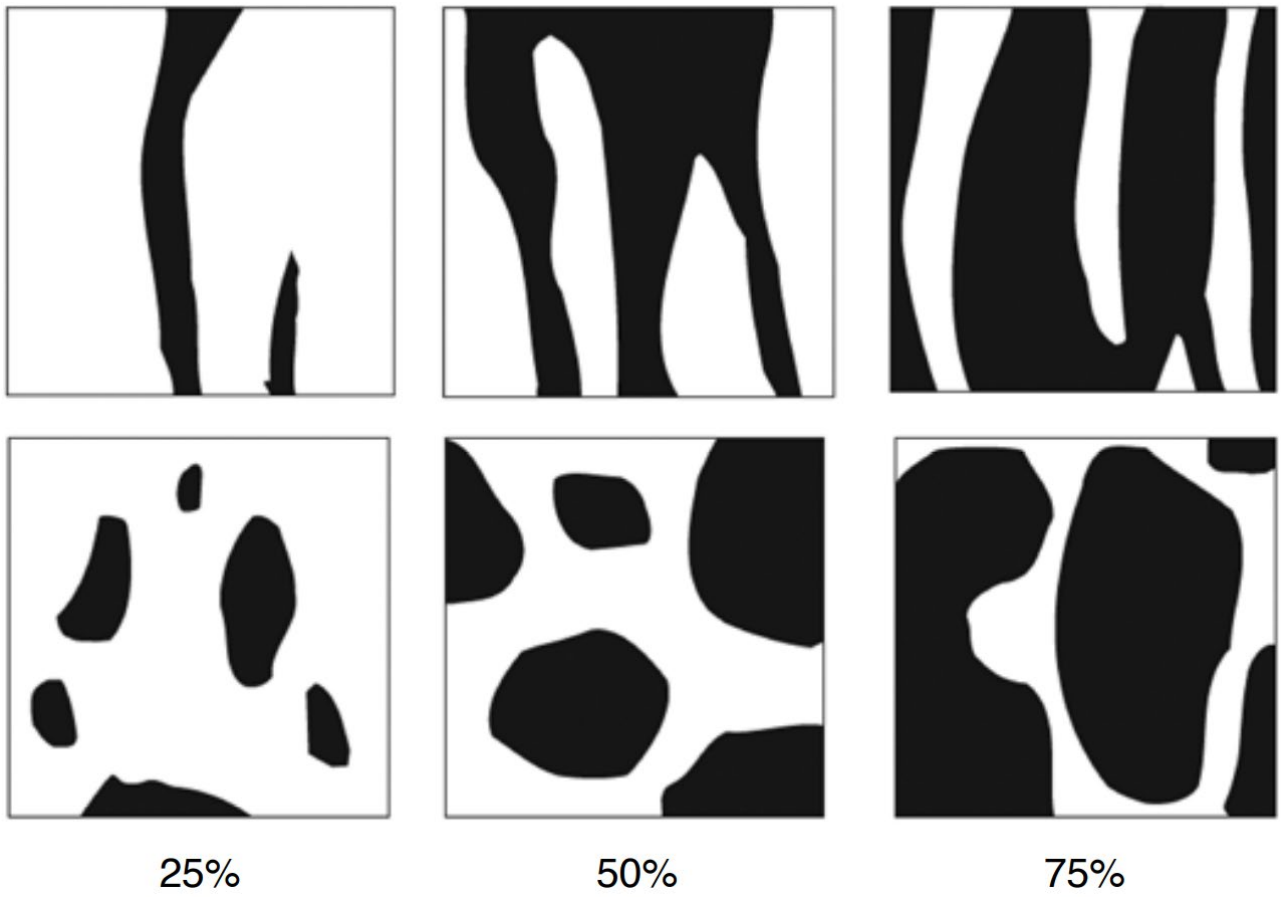

Figure 2-4: Proportion of total area coverage (AMSA, 2014)

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.

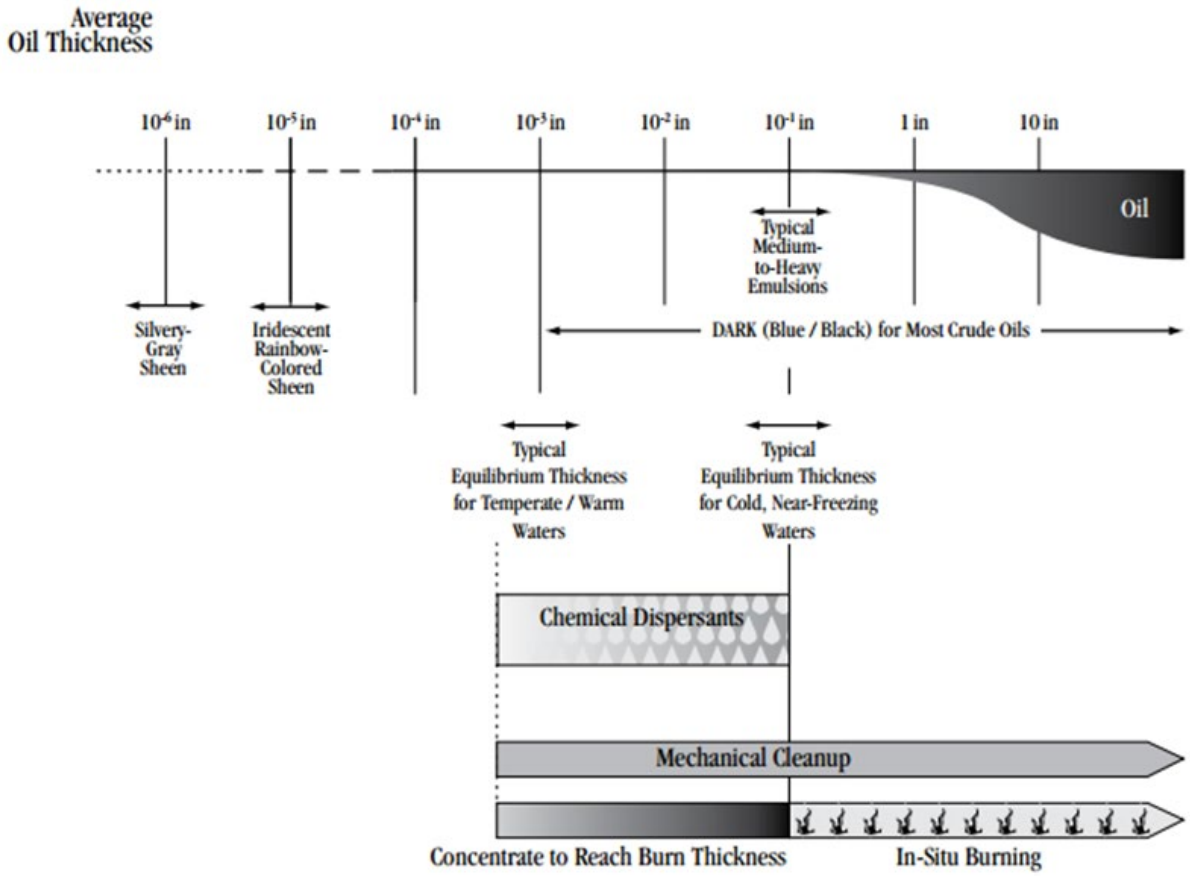

Figure 2-5: Oil thickness versus potential response options (from Allen & Dale 1996)

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/m^2) to hundredths of an inch (approx. 250 g/m^2). 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.

2.2.4.2 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).

2.2.5 Spill modelling results

Details of the scenario and modelling inputs are included along with deterministic results in Table 2-6.

The selected deterministic runs used to represent the WCCS are:

- Minimum time to floating hydrocarbon contact with the offshore edge(s) of any shoreline receptor polygon (at a threshold of 10 g/m^2).
- Minimum time to commencement of hydrocarbon accumulation at any shoreline receptor (at a threshold of 100 g/m^2).
- Maximum cumulative hydrocarbon volume accumulated at any individual shoreline receptor (at a threshold of 100 g/m^2).
- Maximum cumulative hydrocarbon volume accumulated across all shoreline receptors (at a threshold of 100 g/m^2).
- Minimum time to entrained/dissolved hydrocarbon contact with the offshore edges of any receptor polygon (at a threshold of 100 ppb).

Table 2-6: Worst case credible scenario modelling results

Scenario description	Results			
	CS-01: Hydrocarbon release caused by LOWC from AP3 well (107,779 m^3 Angel Condensate) (results from deterministic modelling)	**CS-02: Hydrocarbon release caused by LOWC from PER-02 well (219,093 m^3 Perseus (Searipple) Condensate) (results from stochastic modelling)**	**CS-03: Hydrocarbon release caused by LOWC from TPA03 well (56,441 m^3 GWA Condensate) (results from stochastic modelling)**	**CS-04: Marine fuel release caused by loss of marine vessel separation (500 m^3 MDO) (results from stochastic modelling)**
WCCS – total volume released Refer to Section 2.2.1 for detailed hydrocarbon characteristics	**Credible Spill Scenario-01 (CS-01):** Unplanned subsurface release of Angel Condensate from the AP3 production well representing the worst-case loss of well control. Subsurface - 107,779 m^3 of Angel condensate over 68 days.	**Credible Spill Scenario-02 (CS-02):** Unplanned surface/subsurface release of Searipple Condensate, due to a loss of well containment at the PER 02 subsea well. 219,093 m^3 of Perseus (Searipple) condensate over 73 days. Surface – 1,832.65 m^3 over 5 days Subsurface – 217,260.59 m^3 over 68 days	**Credible Spill Scenario-04 (CS-04):** Unplanned release of TPA condensate/ GWA condensate from the TPA03 production well, representing worst-case loss of containment after a loss of well control during well intervention. 56,441 m^3 of TPA condensate/ GWA condensate over 71 days	**Credible Spill Scenario-05 (CS-05):** Uncontrolled (instantaneous) surface release of 500 m^3 of marine diesel due to a vessel collision at the Angel-3 wellhead location (closest wellhead to Glomar Shoals). Instantaneous surface release of 500 m^3 of marine diesel oil (MDO).
WCCS – residual volume remaining post-weathering	3.8% residue of 4096 m^3 60 m^3 per day	0.38% residue of 833 m^3 11 m^3 per day	GWA Condensate used as an appropriate surrogate[9] 0.8% residue of 451.5 m^3 6.4 m^3 per day.	5% residue of 25 m^3 Instantaneous release
Location	19° 30’ 38.51” S 116° 36’ 18.57” E	19° 31’ 06.50" S 116° 05’ 53.64” E	19° 45’ 43.618" S 115° 53’ 23.986” E.	19° 23’ 26.03" S 116° 37’ 47.25” E
Modelling results				
Surface area of hydrocarbons (>50 g/m^2)	*No contact at threshold*	*No contact at threshold*	*Modelling does not predict floating oil >10 g/m^2 at any RPA. Surface hydrocarbons at >50 g/m^2 are, however, predicted to be present in open water within 1 km of the well for CS-03.*	*No contact at threshold*
Surface area of hydrocarbons (>50 g/m^2 and <10,000 cSt)	*No contact at threshold*	*No contact at threshold*		*No contact at threshold*
Minimum time to floating hydrocarbon contact with the offshore edge(s) of any shoreline receptor polygon (at a concentration of 10 g/m^2)	Model 23, Q1 64.2 days at Muiron Islands	*No contact at threshold*	*No contact at threshold*	*No contact at threshold*
Minimum time to commencement of hydrocarbon accumulation at any shoreline receptor (at a concentration of 100 g/m^2)	Model 1, Q3 23.4 days at Southern Pilbara – Islands (3 m^3)	*No contact at threshold*	*No contact at threshold*	*No contact at threshold*
Maximum cumulative hydrocarbon volume accumulated at any individual shoreline receptor (at a concentration of 100 g/m^2).	Model 10, Q2 56.3 m^3 at Montebello Islands	*No contact at threshold*	*No contact at threshold*	*No contact at threshold*
Maximum cumulative hydrocarbon volume accumulated across all shoreline receptors contacted by accumulated hydrocarbons (at a concentration of 100 g/m^2)	Model 23, Q1 65.2 m^3 at Montebello Islands	*No contact at threshold*	*No contact at threshold*	*No contact at threshold*
Minimum time to entrained/dissolved hydrocarbon contact with the offshore edges of any receptor polygon (at a threshold of 100 ppb)	Glomar Shoals – 92 hours	Rankin Bank– 160 hours	Rankin Bank– 18 hours	Rankin Bank– 18 hours
The full list of response protection areas (RPAs) predicted from modelling is available in Table 3-1				

[9] Modelling for GDA05 LOWC, 6 km from TPA03 well and within the same title (WA-5-L), was undertaken in 2021 using NOPSEMA’s contemporary modelling thresholds. TPA03 Well Intervention LOWC is expected to be circa 50% smaller (56,441 m^3) than the GDA05 LOWC volume (108,843 m^3), has the same residue (0.8%), occurs in similar water depths and both over a 71-day release period. Given that TPA03 spill parameters and geographic location fall within the envelope of GDA05, the existing modelling is an appropriate surrogate and therefore additional modelling was not required.

From the above modelling results, the results from the following modelling runs for CS-01 have been used as the basis for response planning:

- Model 23, Q1
- Model 1, Q3
- Model 10, Q2

As shown in the analysis of the deterministic results, modelling predicts the following:

2.2.5.1 Hydrocarbon release caused by loss of well containment (CS-01)

- Fastest shoreline contact at 100 g/m^2 is at the Southern Pilbara Islands (23.4 days).
- Glomar Shoals is predicted to receive fastest entrained oil concentrations at the 100 ppb threshold after 3.8 days
- 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.

3 IDENTIFY RESPONSE PROTECTION AREAS (RPAs)

In a response, monitor and evaluate techniques – 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.

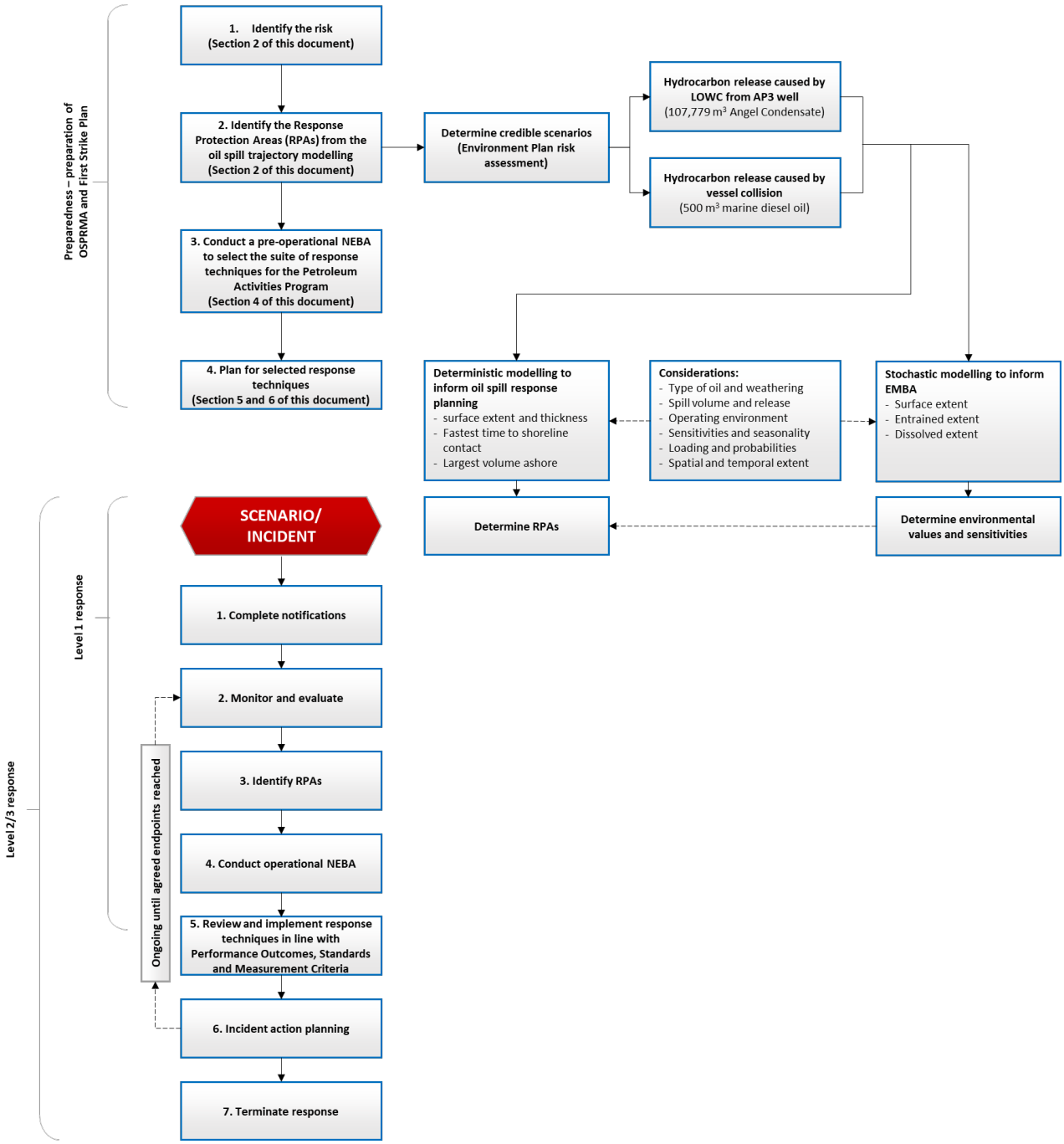

Figure 3-1: Identify Response Protection Areas (RPAs) flowchart

3.1 Identified sensitive receptor locations

Section 6.7.2 and 6.7.3 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
- 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 2.2.4). 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 6.7.2 and 6.7.3 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 4 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 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.

Table 3-1: Response Protection Areas (RPAs) from deterministic modelling (CS-01)

Response protection area	Conservation status	IUCN protection category	Minimum time to shoreline contact (above 100 g/m^2) in days [10]	Maximum shoreline accumulation (above 100 g/m^2) in m^3 [11]
Muiron Islands/ Muiron Islands MMA	Marine Management Area	IUCN VI – Protected area with sustainable use of natural resources IUCN IA – Strict Nature Reserve	Day 25.6 (8 m^3) Run 1, Q3	46 m^3 (64 days) Run 23, Q1
Southern Pilbara Islands – Peak Island	State Marine Park Australian Marine Park	IUCN IV – Recreational Use Zone	Day 23.1 (3 m^3) Run 1, Q3	23 m^3 (62.9 days) Run 23, Q1
Sunday Island	Marine Management Area		Day 75.4 (3 m^3) Run 23, Q1	3 m^3 (75.4 days) Run 23, Q1

[10] This volume and time represent the first time to contact on defined shoreline polygon and the maximum volume ashore for that 24 hour period.
[11] This volume and time represent the maximum volume ashore on defined shoreline polygon for any 24 hour time period

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 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 in the planning/preparedness process and would also be followed in a response.

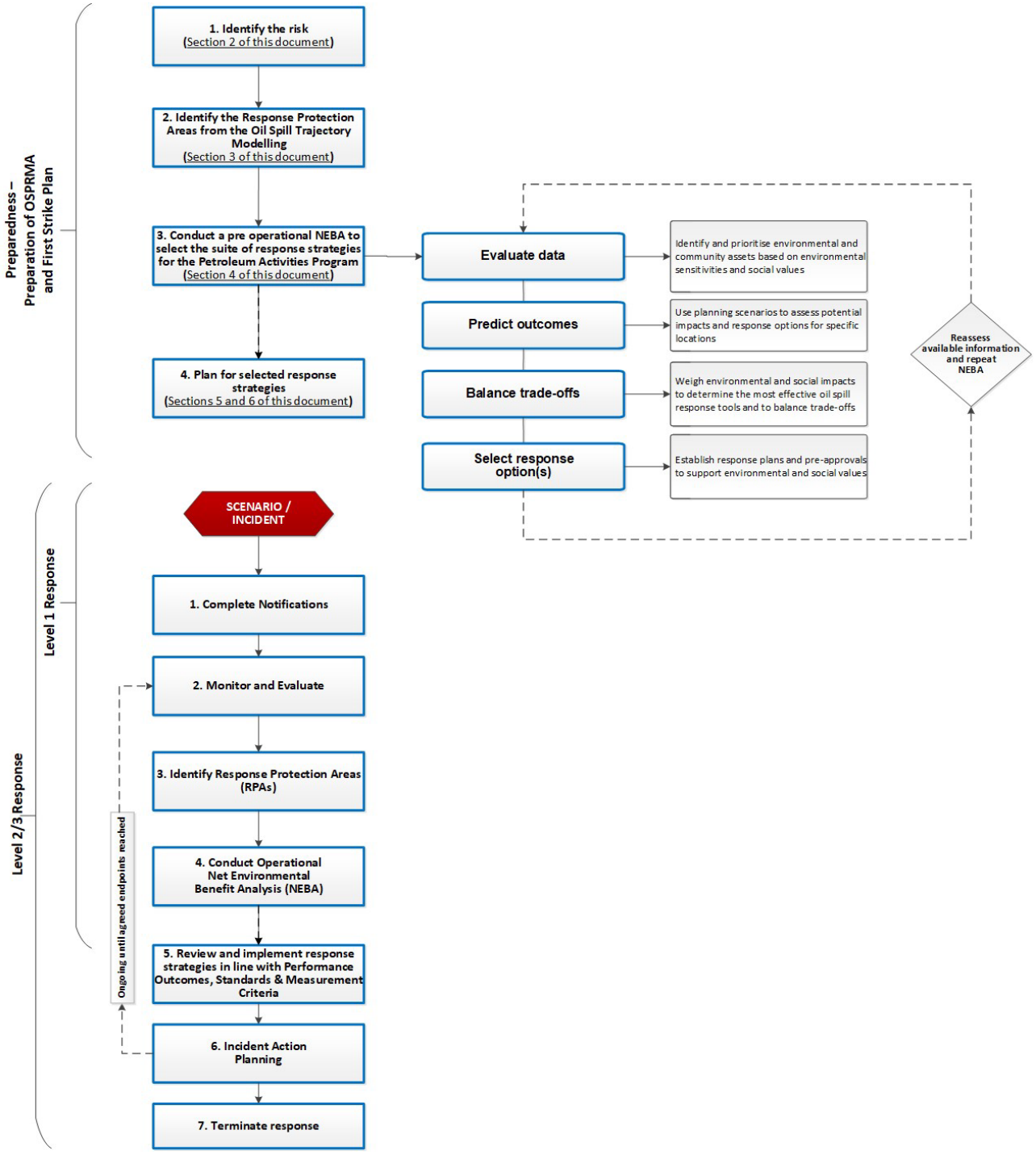

Figure 4-1: Net Environmental Benefit Analysis (NEBA) flowchart

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 2.2.4) and the surface concentrations (Section 2.2.4.1) 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 PAP 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 PAP 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
- 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 and Table 4-2 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.

Table 4-1: Response technique evaluation – Loss of Well Containment (LOWC)

Response Technique	Effectiveness	Feasibility	Decision	Rationale for the decision
Monitor an 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 (WA DoT).	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 blowout preventer (BOP) 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.	In the event of the worst-case scenario with a loss of well containment during drilling operations, ROV operations to locally operate the BOP would be attempted.	Yes	The use of 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 in place an Activity Source Control Emergency Response Plan (SCERP) covering NWS Phase 1 P&A and TPA03 well intervention activities. Capping the wells is considered feasible based on worst-case discharge rates, where water depths are >100 m, and for wells with horizontal Xmas trees or after removal of vertical Xmas tree. Though all capping stack deployment technologies are unproven, in the event of a loss of well containment, 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 location of suitable vessels for capping stack deployment are monitored monthly. 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.	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. Capping stack deployment is not considered feasible where water depths are <100m or if there a vertical Xmas tree is still in place. Feasibility will be assessed on a case-by-case basis.
Source control via relief well drilling	A release of condensate will be over approximately 68 days at the AP3 well location, 73 days at the PER02 well location and 71 days at the TPA03 well location. Relief well drilling is one of the primary options to stop the release.	For a spill from the AP3, PER02 or TPA03 wells, 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	SSDI is not predicted to be effective on the subsea hydrocarbon release due to shallow water depth, oil properties and predicted gas release volumes. 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 and to reduce exposure to floating and entrained/dissolved oil. Based on the deterministic modelling analysis, it is predicted that 3 m^3 of shoreline accumulation would potentially occur up to 23.4 days after the LOWC occurred in the deterministic run with the shortest timeframe to shoreline accumulation (CS-01). The use of SSDI would 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. Given the preceding information and that there is conflicting evidence on the efficacy of SSDI, despite the considerable amount of research and experimental work completed since the Deepwater Horizon spill (Quigg et al. 2021), the use of SSDI is considered unwarranted and would not provide net environmental or safety benefits.	No	Due to the minimal surface and shoreline exposure predicted at RPAs, together with this technique not being required to facilitate other source control techniques, the use of SSDI is not deemed appropriate. The application of subsea dispersant would unnecessarily introduce additional chemical substances to the marine environment and further increase exposure of subsea ecosystems to entrained hydrocarbons.

Response Technique	Effectiveness	Feasibility	Decision	Rationale for the decision
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 dispersants are not generally considered a feasible response technique when applied to thin surface films such as condensate, as the dispersant droplets tend to pass through the surface films without binding to the hydrocarbon. EMSA (2010) recommends thin layers of spilled hydrocarbons should not be treated with surface dispersant, including surface slicks with Bonn Agreement Oil Appearance Codes (BAOAC) 1-3. Surface oil concentrations are not predicted to meet the 50 g/m^2 minimum concentration required for application of dispersant to be effective for CS-01 (Angel AP3 well). Surface oil concentrations >50 g/m^2 are only predicted for short distances for CS-02 and CS-03 (Perseus – 8 km from the release site) and CS-04 (TPA-03 - 1 km from the release site). Rapid evaporation of the surface oil (>80% in 24-hours) will result in rapid weathering and thinning of the oil. Therefore, effective subsea dispersant will not be feasible. The volatile nature of condensate is also likely to lead to unsafe conditions in the vicinity of the hydrocarbon spill, thus this response technique is deemed unsuitable for this activity.	No	Angel, Perseus and TPA condensates will rapidly evaporate and disperse, resulting in concentrations too thin to effectively treat with surface dispersant. The use of surface dispersant could unnecessarily introduce additional chemical substances 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 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.
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 for NWS Phase 1 P&A and TPA03 Well Intervention predicts that floating oil will be prone to rapid spreading and evaporation and will not reach the required threshold (>50 g/m^2) for containment and recovery to be feasible within any RPA. Surface oil concentrations are not predicted above 50 g/m^2 for CS-01 (Angel AP3 well). Surface oil concentrations >50 g/m^2 are only predicted for short distances for CS-02 and CS-03 (Perseus - 8km from the release site) and CS-04 (TPA-03 - 1 km from the release site). The volatile nature of condensate is also likely to lead to unsafe conditions near release location.	No	Containment and recovery would be an ineffective response technique as it requires a hydrocarbon thickness of BAOAC 4-5 with a 50-100% coverage of 100-200 g/m^2. Surface oil concentrations are not predicted above 50 g/m^2 for CS-01 (Angel AP3 well). Surface oil concentrations >50 g/m^2 are only predicted for short distances for CS-02 and CS-03 (Perseus – 8 km from the release site) and CS-04 (TPA-03 – 1 km from the release site). This response strategy is therefore considered ineffective.
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.	If monitor and evaluate techniques 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 DoT (for Level 2/3 spills). For CS-01, the first shoreline contact is predicted from shoreline accumulation hydrocarbon in 23.4 Days (at Southern Pilbara Islands – Peak Island, 3 m^3) allowing adequate time to deploy this technique. No shoreline contact is predicted for CS-02 - CS-04. Protection strategies can be used for targeted protection of sensitive resources.	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 modelling during a spill event, shoreline protection and deflection techniques will be employed to minimise hydrocarbon accumulation providing net environmental benefit.

Response Technique	Effectiveness	Feasibility	Decision	Rationale for the decision
		Access to sensitive areas may cause more negative impact than 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.	If monitor and evaluate techniques 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 DoT (for Level 2/3 spills). For CS-01, the first shoreline contact is predicted from shoreline accumulation hydrocarbon in 23.4 Days (at Southern Pilbara Islands – Peak Island, 3 m^3) allowing adequate time to deploy this technique. No shoreline contact is predicted for CS-02 - CS-04. 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	Response Protection Areas 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 modelling 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 Pluto 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.

Table 4-2: Response technique evaluation – MDO release from vessel collision (CS-04)

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 a marine diesel 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 DoT. 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 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 is prone to rapid spreading and evaporation and are not considered effective when applied on thin surface films such as marine diesel 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	The application of dispersant to marine diesel is unnecessary as the diesel will rapidly evaporate and would thus unnecessarily introduce additional chemical substances to the marine environment. The additional entrainment would also increase exposure of subsea species and habitats to hydrocarbons.
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 marine diesel 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 with a 50-100% coverage of 100 g/m^2 to 200 g/m^2.	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.	No	Containment and recovery would be an inappropriate response technique for a spill of marine diesel. 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

Response Technique	Effectiveness	Feasibility	Decision	Rationale for the decision
		Furthermore, modelling predicts that floating oil will not reach the required threshold (>50 g/m^2) for containment and recovery to be feasible within any RPA. The volatile nature of marine diesel is also likely to lead to unsafe conditions in the vicinity of the hydrocarbon thus this response technique is deemed inappropriate.		the spilled diesel would have been subject to rapid evaporation prior to the commencement of containment and recovery operations.
Shoreline protection and deflection	Shoreline protection and deflection can be effective at preventing contamination of at-risk areas.	A marine diesel spill would be prone to rapid spreading and evaporation and modelling predicts that no shoreline receptors will be contacted at threshold. Furthermore, the volatile nature of marine diesel is also likely to lead to unsafe conditions in the vicinity of the hydrocarbon. Monitor and evaluate 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 by floating oil concentrations at any of the assessed 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/m2.	A marine diesel spill would be prone to rapid spreading and evaporation and the modelling predicts that no shoreline receptors will be contacted at threshold – any minor contact is significantly below any threshold concentration that would allow a response to be feasible. Furthermore, the volatile nature of marine diesel is also likely to lead to unsafe conditions in the vicinity of the hydrocarbon. Monitor and evaluate techniques 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 marine diesel 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 techniques 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.

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* (2024) 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/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

- 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.

5.1 Monitor and Evaluate

Monitor and evaluate techniques 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)[12] (see Section 5.8). 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 [Exmouth / Onslow / Port Hedland].

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 is expected to be present in open waters. Surface oil concentrations >50 g/m^2 are only predicted for short distances for CS-02 (8 km from the release site) and CS-03 (1 km from the release site).
- The shortest timeframes that shoreline contact from floating oil at >100 g/m^2 is predicted to be 23.4 days at Southern Pilbara – Islands (3 m^3, CS-01). No shoreline contact is predicted at threshold concentrations for CS-02, CS-03 or CS-04).
- The shortest time to contact for oil at concentrations of entrained hydrocarbons greater than 100 ppb at shoreline receptors is 3.8 days at Glomar Shoals (CS-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 worst-case spill may extend up to 68 days (CS-01) with response operations extending to month 3 based on the predicted time to complete shoreline clean-up operations.

[12] In accordance with Regulation 56 of the Environment Regulations, the Woodside *Operational and Scientific Monitoring Bridging Implementation Plan* was provided to NOPSEMA with the North Rankin Complex Operations Environment Plan in August 2024 and is publicly available here: https://docs.nopsema.gov.au/A1125894

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 5.10)**
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	2 trained aerial observers available to be deployed by day 1 from resource pool.	1, 2, 3B, 3C, 4
		4.2	1 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	5.1	10 days prior to any predicted impact, in agreement with WA DoT (for Level 2/3 incidents), deployment of 2 specialists from resource pool in establishing the status of sensitive receptors.	1, 2, 3B, 3C, 4

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 5.10)**
	of sensitive receptors	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 Monitor and evaluate 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.

5.2 Source Control and Well Intervention

The worst-case credible scenario for a loss of well containment is considered to be complete loss of well control during well intervention/ P&A activities. This scenario would result in an uncontrolled flow from the well as outlined in the EP. In the event of a complete loss of well containment, 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:
  - closure of the Tubing Retrievable Safety Valve (TRSV)
  - a capping stack is installed
  - a relief well is drilled and first attempt at well kill within 68 days (AP3 well, CS-01), 73 days (PER02 well, CS-02) or 71 days (TPA03, CS-03).
- 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 68 days (CS_01) with response operations extending to month 3 based on the predicted time to complete shoreline clean-up 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	
Capping stack feasibility	Capping stack deployment is not considered feasible where water depths are <100m. Associated personnel safety issues make it unsafe to deploy equipment in close proximity to the release location. Conventional/ vertical capping stack deployment may be feasible. This would be considered, at the discretion of the vessel master on the day, giving due regard to the safety of the vessel and crew and factors that may influence a safe deployment such as plume radius and acceptable environmental conditions e.g. wind speed, wave height, current and plume radius.
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 a loss of containment for any of the wells within the PAP. 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 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

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 5.10)**
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	ROV available on MODU ready for deployment within 48 hours to attempt initial BOP well intervention.	1, 3B, 3C
		7.5	Hot Stab and/or well intervention attempt made using ROV and SFRT within 48 hours.	1, 3B, 3C
		7.6	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.[13]	1, 3C
		7.7	Contract in place for access to equipment and staff to assist with the mobilisation, deployment, and operation of well intervention equipment.	1, 3B, 3C
		7.8	MODU mobilised to site for relief well drilling within 21 days.	1, 3C
		7.9	First well kill attempt completed within 68 days (AP3 well, CS-01), 73 days (PER02 well, CS-02) or 71 days (TPA03, CS-03) days	1, 3B, 3C
		7.10	Open communication line(s) to be maintained between IMT and infield operations to confirm awareness of progress against plan(s).	1, 3A, 3B

[13] Note: Capping stack is not considered feasible for water depths of <100m and/or if vertical Xmas trees are in place. Feasibility will be assessed on a case-by-case basis.

Environmental Performance Outcome		To stop the flow of hydrocarbons into the marine environment		
Control measure		**Performance Standard**		**Measurement Criteria (Section 5.10)**
		7.11	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
		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 PAP.
- 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.

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 PAP 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 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 marine diesel 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 PAP which are detailed in Section 6.7 of the EP. The vessel master's roles and responsibilities are described in EP Section 7.3.

Performance standards for each contracted PAP 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.

5.4 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.

5.4.1 Response need based on predicted consequence parameters

The following statements identify the key parameters upon which the response need can be based:

- There is no floating oil predicted above threshold (50 g/m^2).
- Pre-emptive assessment and shoreline assessments will be mobilised prior to shoreline contact at 100 g/m^2, which occurs on day 23 at Southern Pilbara Islands – Peak Island with concentrations exceeding 100 g/m^2.
- The duration of the spill may be up to 68 days (CS-01) with shoreline response operations extending to month 3 based on the predicted time to complete shoreline clean-up operations.
- 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 5-4: 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).

5.4.2 Environmental performance based on need

Table 5-5: Environmental Performance – Shoreline protection and deflection

Environmental Performance Outcome		To stop hydrocarbons encountering particularly sensitive areas		
Control measure		**Performance Standard**		**Measurement Criteria (Section 5.10)**
10	Response teams	10.1	In liaison with WA DoT (for Level 2/3 incidents), relevant Tactical Response Plans (TRPs) will be identified in the First Strike plan for activation within 5 days prior to a predicted impact.	1, 3A, 3C, 4
		10.2	In liaison with WA DoT (for Level 2/3 incidents), mobilise teams to RPAs within 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
		10.3	In liaison with WA DoT (for Level 2/3 incidents), 1 operation mobilised 5 days prior to predicted impact for each identified RPA. Expected to be 1 RPA within 23.4 days (operation as detailed above).	1, 3A, 3B, 4
		10.4	12 trained personnel available (2 supervisors plus 10 additional personnel) 5 days prior to predicted impact for each identified RPA. Sourced through resource pool.	1, 2, 3A, 3B, 3C, 4
		10.5	Open communication line to be maintained between IMT and infield operations to confirm awareness of progress against plan(s)	1, 3A, 3B
		10.6	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
11	Response equipment	11.1	Equipment mobilised from closest stockpile 5 days prior to predicted impact.	1, 3A, 3C, 4
		11.2	Supplementary equipment mobilised from State, AMOSC, AMSA stockpiles 5 days prior to predicted impact.	1, 3C, 3D, 4
		11.3	Supplementary equipment mobilised from OSRL within 5 days prior to predicted impact.	
		11.4	Woodside maintains integrated fleet of vessels. Additional vessels can be sourced through existing contracts/frame agreements	1, 3A, 3C, 4
12	Management of Environmental Impact of the response risks	12.1	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
		12.2	Shallow draft vessels will be used to access remote shorelines to minimise the impacts associated with seabed disturbance on approach to the shorelines	
		12.3	Shoreline access route (foot, car, vessel and helicopter) with the least environmental impact identified will be selected by a specialist in SCAT operations	

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.

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:

- Deterministic modelling scenarios indicate that first shoreline impact at Southern Pilbara Islands – Peak Island within 23.4 days for the AP3 LOWC scenario (CS-01).

- Existing capability allows for mobilization and deployment of shoreline protection operations by Day 2 (if required). Given shoreline contact at RPAs is not predicted until Day 23 at Southern Pilbara Islands – Peak Island, the existing capability is considered sufficient to mobilise and deploy protection at RPAs prior to hydrocarbon contact, guided by the ongoing operational monitoring.
- 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 6.4.

5.5 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).

5.5.1 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 is predicted is 23.4 days (3 m^3) at Southern Pilbara Islands.
- The duration of the spill may extend up to 68 days (CS-01) with shoreline response operations extending to month 3 based on the predicted time to complete shoreline clean-up 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, 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.

Table 5-6: 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^2–1000 g/m^2) with manual removal using shovels/rakes, etc. from studies of previous response operations and exercises

Table 5-7: 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).

Technique	Description	Shoreline type		Application
		Recommended	Not recommended	
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.
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.

Technique	Description	Shoreline type		Application
		Recommended	Not recommended	
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.

5.5.2 Environmental performance based on need

Table 5-8: 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 5.10)**
13	Shoreline responders	13.1	In liaison with WA DoT (for Level 2/3 incidents), deployment of 1 shoreline clean-up team to contaminated RPAs comprised of: • 1-2 trained specialists per operation • 8-10 personnel/labour hire • Personnel sourced through resource pool within XX hours of request from the IMT.	1, 2, 3A, 3B, 3C, 4
		13.2	Relevant Tactical Response Plans (TRPs) will be identified in the first strike plan for activation 5 days prior to monitor and evaluate predicting impacts.	1, 3A, 3C, 4
		13.3	Clean-up operations for shorelines in line with results and recommendations from SCAT outputs	1, 3A, 3B
		13.4	Zoning of response locations to prevent secondary contamination and minimize the mixing of clean and oiled sediment and shoreline substrates	
		13.5	In liaison with WA DoT (for Level 2/3 incidents), mobilise and deploy up to 1 shoreline clean-up operation to each site where monitor and evaluate predicts an accumulation 5 days prior to impact.	1, 2, 3A, 3C, 4
		13.6	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
		13.7	Open communication line to be maintained between IMT and infield operations to ensure awareness of progress against plan(s)	1, 3A, 3B
14	Shoreline clean up equipment	14.1	Contract in place with 3rd party providers to access equipment.	1, 3A, 3C, 4
		14.2	Equipment mobilised from closest stockpile 5 days prior to predicted impact.	
		14.3	Supplementary equipment mobilised from State, AMOSC, AMSA stockpiles 5 days prior to predicted impact.	1, 3C, 3D, 4
		14.4	Supplementary equipment mobilised from OSRL 5 days prior to predicted impact .	
15	Management of Environmental Impact of the response risks	15.1	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
		15.2	Shallow draft vessels will be used to access remote shorelines to minimise the impacts associated with seabed disturbance on approach to the shorelines	
		15.3	Vehicular access will be restricted on dunes, turtle nesting beaches an in mangroves	
		15.4	Limiting vegetation removal to only that vegetation that has been moderately or heavily oiled	
		15.5	Shoreline access route (foot, car, vessel and helicopter) with the least environmental impact identified will be selected by a specialist in SCAT operations.	

Environmental Performance Outcome		To remove bulk and stranded hydrocarbons from shorelines and facilitate shoreline amenity habitat recovery.		
Control measure		**Performance Standard**		**Measurement Criteria (Section 5.10)**
		15.6	Oversight by trained personnel who are aware of the risks.	
		15.7	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 PAP.

Whilst modelling predicts shoreline contact from day 23.4 (Southern Pilbara Islands), Woodside is satisfied that the current capability is managing risks and impacts to ALARP.

The capability available meets the need identified for this activity. The shoreline clean-up capability has the following expected performance (if required during a response):

- Woodside has the capacity to mobilise and deploy up to 105–140 shoreline clean-up teams (approximately 1,260-1,680 responders in total) by week 3 using existing labour hire contracts with Woodside, AMOSC, Core Group, AMSA and OSRL team leads.
- 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 the end of month 4.
- 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 to Port Hedland and 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

5.6 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 DoT *State Hazard Plan – Maritime Environmental Emergencies* (SHP-MEE). It is the responsibility of DBCA to administer the WAOWRP under the direction of the DoT. 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 DoT. 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.

5.6.1 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 5-9 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 PAP are described in Section 4 of the North West Shelf Phase 1 Plug and Abandonment Environment Plan.

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 5-9: Key at-risk species potentially in Response Protection Areas and open ocean

Species	Open Ocean	Southern Pilbara Islands	Muiron Islands	Sunday Island	Gascoyne MP
Marine turtles (including foraging and inter-nesting areas and significant nesting beaches)	✓	✓	✓	✓	✓
Whale sharks (migration to and from waters at Ningaloo)	✓		✓	✓	✓
Seabirds and/or migratory shorebirds	✓	✓	✓	✓	✓
Cetaceans – migratory whales	✓		✓	✓	✓
Cetaceans – dolphins and porpoises	✓	✓	✓	✓	✓
Sea snakes	✓	✓	✓	✓	✓

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 Muiron Islands within 64.2 days for CS-01.
- The shortest timeframe for shoreline accumulation at response thresholds (>100 g/m^2) is predicted to be 23.4 days at Southern Pilbara Islands – Peak Island (3 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 5-10).

Table 5-10: 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 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.

5.6.2 Environmental performance based on need

Table 5-11: 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 5.10)**
16	Wildlife response arrangements	16.1	Oiled Wildlife Operational Plan in place and utilised during a response to plan, coordinate, implement and terminate operations	1, 3A, 4
		16.2	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
17	Wildlife response equipment	17.1	Maintain contract with AMOSC for immediate access to oiled wildlife response equipment.	1, 3C, 3D, 4
		17.2	Maintain contract with OSRL to access additional oiled wildlife response equipment.	1, 3C, 3D, 4
18	Wildlife responders	18.1	Two Oiled Wildlife Team Members to supervise the oiled wildlife operations who have completed an OWR Management course.	1, 2, 3B
		18.2	Maintain contract with AMOSC for immediate access to trained oiled wildlife response specialists	1, 3B, 3C
		18.3	Maintain contract with OSRL to access additional trained OWR specialists	1, 3B, 3C
		18.4	Open communication line to be maintained between IMT and infield operations to ensure awareness of progress against plan(s).	1, 3A, 3B
19	Management of environmental impacts of response risks	19.1	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 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.

5.7 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 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 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.

5.7.1 Response need based on predicted consequence parameters

Table 5-12: Response Planning Assumptions – Waste Management

Response planning assumptions: Waste management	
Waste loading per m^3 oil recovered (multiplier)	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

5.7.2 Environmental performance based on need

Table 5-13: 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 5.10)**
20	Waste Management	20.1	Contract with waste management services for transport, removal, treatment and disposal of waste	1, 3A, 3B, 3C, 4
		20.2	Access to up to 720 m^3 waste storage by end of Month 3	
		20.3	Recovered hydrocarbons and wastes will be transferred to licensed treatment facility for reprocessing or disposal.	
		20.4	Waste management provider support staff available year-round to assist in the event of an incident with waste management as detailed in contract.	
		20.5	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
		20.6	Waste management to be conducted in accordance with Australian laws and regulations	1, 3A, 3B, 3C, 4
		20.7	Waste management services available and employed during response	
21	Management of environmental impacts of response risks	21.1	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.

The largest shoreline waste volumes predicted for CS-01 are 720 m^3 during month 3 and up to 288 m^3 during month 4 with a maximum of 1008 m^3 of waste expected across all shoreline clean-up operations during the response. The capability available exceeds the need identified.

It indicates that the waste management capability has the following expected performance:

- The largest shoreline waste volumes predicted for CS-01 are 720 m^3 during month 3 and up to 288 m^3 during month 4 with a maximum of 1008 m^3 of waste expected across all shoreline clean-up operations during the response. The capability available exceeds the need identified.
- 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 6.7.
- Woodside's waste contractor (Veolia) 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.

5.8 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)** - The OM techniques outlined in Section 5.1 (predictive modelling, surveillance/ reconnaissance and pre-emptive assessment of sensitive receptors) will be deployed during every Level 2-3 incident. In addition, there are a suite of OMPs (as listed in Table 5-14) and their associated initiation and termination criteria within Table 9-1 of the Joint Industry OSM Framework. Information obtained through operational monitoring provides the IMT with situational awareness on the trajectory of the spill, its weathering state and hydrocarbon concentrations and its potential impacts to sensitive receptors. This phase of monitoring is also designed to inform the effectiveness of the response options being used to treat the spill, so that the IMT can make informed decisions as the response progresses through subsequent operational periods. 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.
- **Scientific Monitoring (SM)** - Is 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 SMP initiation and termination criteria during a Level 2-3 spill event refer to Table 9-2 of the Joint Industry OSM Framework.

Woodside has developed a Woodside OSM Bridging Implementation Plan (OSM-BIP)[14], 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, 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 5-14 lists the Joint Industry OMPs and SMPs that are relevant to North West Shelf Phase 1 Plug and Abandonment Petroleum Activities Program.

The OSM-BIP is structured so that it can provide a flexible framework that can be adapted to individual spill incidents. The Combined Socio-Cultural EMBA (refer to section 2.1 of the OSM-BIP), derived from all Woodside worst-case scenarios, represents the geographical extent of the Woodside BIP. The OSM-BIP includes details on all locations possibly contacted within seven days of a spill based on stochastic modelling of all Woodside worst-case spill scenarios at the low exposure values and a probability of greater than 10 % (refer to Section 2.1 and Table 2.1 in the OSM-BIP for further detail). A baseline review has been conducted for all of these locations and associated receptors. Subsequently, a list of all possible first-strike monitoring priorities has been identified as those locations where baseline data is either not available or not sufficient. The specific first-strike monitoring priorities for the PAP credible spill scenarios are listed in ANNEX C: OSM Activity Specific Requirement and Verification of OSM-BIP Adequacy.

The OSM-BIP also includes the resourcing requirements for Woodside's worst-case scenario in terms of requiring the greatest first-strike and ongoing capability needs as described in Section 8 and 9 of the OSM-BIP. In summary, Woodside assessed the worst-case spill scenario for OSM capability as the scenario contacting the most receptors at the low thresholds at a probability >10% and within 7 days.

The OSM requirements for PAP credible spill scenarios and an assessment to demonstrate that the OSM-BIP adequately covers these requirements is provided in ANNEX C.

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 (APPEA, 2021)) during the

[14] In accordance with Regulation 56 of the Environment Regulations, the Woodside *Operational and Scientific Monitoring Bridging Implementation Plan* was provided to NOPSEMA with the North Rankin Complex Operations Environment Plan in August 2024 and is publicly available here: https://docs.nopsema.gov.au/A1125894

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.

Table 5-14: Joint industry OSM plans relevant to the North West Shelf Phase 1 Plug and Abandonment Petroleum Activities Program

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	✓
OM04b: 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	✓

5.8.1 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 deterministic run with the shortest timeframe for shoreline accumulation at 100 g/m^2 predicted is 23.1 days at Southern Pilbara Islands – Peak Island.

In addition, a number of assumptions are required to estimate the response need for SCAT. These assumptions have been described in Table 5-15. Consequently, for planning purposes and based on the deterministic modelling results for shortest time to contact at 100 g/m^2 there are three RPAs (Southern Pilbara Islands – Peak Island, Muiron Islands and Sunday Island) requiring up to six SCAT specialists. These resourcing requirements can be met via the resourcing arrangements outlined in Table 8-3 of the OSM-BIP.

Table 5-15: 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

5.8.2 Summary – operational and scientific monitoring

Woodside confirms that all the PAP credible spill scenarios fit within the OSM combined EMBA and assessment criteria defined within Appendix A of the OSM-BIP (refer to ANNEX C). Further, receptors contacted are all included within the baseline assessment list in Section 2.2 of the OSM-BIP and the OSM capability requirement for the PAP credible spill scenarios is less than the worst-case capability outlined in the OSM-BIP.

The ALARP assessment for operational and scientific monitoring (Section 6.8) considers alternate, additional, and/or improved control measures on each selected response technique.

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.

5.8.3 Environmental performance based on need

Table 5-16: 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 5.10)**
22	OSM arrangements	22.1	Maintain access to OSM expertise qualified to fulfill OSM Implementation Lead role during a Level 2/3 spill event per Joint Industry OSM Framework requirements.	3A, 3B, 3C, 3D, 4
		22.2	OSM Implementation Lead responsible for overseeing implementation of OMP and SMP components in accordance with the Woodside OSM Bridging Implementation Plan[15].	
23	Access to adequate OSM capability to provide both first strike and ongoing monitoring	23.1	Maintain contract with third-party provider to provide access to suitably qualified and competent personnel and equipment to assist in the implementation of monitoring	3A, 3B, 3C, 3D, 4
		23.2	Obtain monthly capability reports from OSM Service Provider to demonstrate suitable resources are available throughout any activity	
		23.3	Annual testing of OSM Service Provider standby arrangements and activation process	
24	Baseline studies assurance	24.1	Annual review of environmental baseline data for all locations where spill modelling has predicted contact at relevant hydrocarbon thresholds	3D
25	OSM-BIP maintenance	25.1	Annual review will be conducted according to the criteria in the OSM-BIP	3A, 3B, 3C, 3D, 4
26	OSM response	26.1	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, 2021)	1
		26.2	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	
		26.3	OSM to be conducted in accordance with the Woodside OSM-BIP	
		26.4	Implementation of OSM will comply with the minimum standards listed in Appendix A of the Joint Industry OSM Framework	
		26.5	Once OSM data reports are drafted they will be peer reviewed by an expert panel for data integrity	
		26.6	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, 2021)	
27	Shoreline Clean-up Assessment Technique (SCAT)	27.1	Within 24 hours, in liaison with regulatory or jurisdictional authority (for Level 2/3 incidents), deployment of 1-2 specialist(s) in SCAT from resource pool for each of the Response Protection Areas (RPAs) with predicted impacts	1, 2, 3B, 3C, 4
		27.2	Reports from OMP: Shoreline Clean-up Assessment will be provided to the IMT daily, detailing the assessed areas to maximise effective utilisation of resources.	1, 3B, 4

[15] In accordance with Regulation 56 of the Environment Regulations, the Woodside *Operational and Scientific Monitoring Bridging Implementation Plan* was provided to NOPSEMA with the North Rankin Complex Operations Environment Plan in August 2024 and is publicly available here: https://docs.nopsema.gov.au/A1125894

28	Management of Environmental Impact of the response risks	28.1	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
		28.2	Shallow draft vessels will be used to access remote shorelines to minimise the impacts associated with seabed disturbance on approach to the shorelines	
		28.3	Shoreline access route (foot, car, vessel and helicopter) with the least environmental impact identified will be selected by a specialist in SCAT operations	
		28.4	Vehicular access will be restricted on dunes, turtle nesting beaches an in mangroves	
		28.5	Oversight by trained personnel who are aware of the risks	
		28.6	Trained unit leaders will brief personnel prior to operations of the environmental risks of presence of personnel on the shoreline	

5.9 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 three key response planning processes detailed below. 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 PAP.

As the IMS does not directly remove hydrocarbons spilt into the marine environment there is no direct relationship to the response planning need.

5.9.1 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 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.

5.9.2 Operational NEBA process

In the event of a response Woodside will confirm that the response techniques adopted at the time of Environment Plan/ Oil Pollution Emergency Plan (EP/ 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 Oil Pollution Emergency Arrangements (Australia). In effect the operational NEBA will determine whether there is net environmental benefit to continue response operations.

5.9.3 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.

5.9.4 Environmental performance based on need

Table 5-17: 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 5.1010)**
29	Operational SIMA	29.1	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
		29.2	Record the evidence and justification for any deviation from the planned response activities.	
		29.3	Record the information and data from operational and scientific monitoring activities used to inform the SIMA.	
30	Stakeholder engagement	30.1	Prompt and record all notifications (including government notifications) for persons/ organisations in the region are made	
		30.2	In the event of a response, identification of relevant persons/ organisations will be re-assessed throughout the response period.	
		30.3	Undertake communications in accordance with: • Functional Support Team Guideline – Reputation • External Communication and Continuous Disclosure Procedure	
31	Personnel required to support any response	31.1	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
		31.2	A duty roster of trained and competent people will be maintained to maintain minimum manning requirements are met all year round.	3C
		31.3	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
		31.4	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.	
		31.5	S&EM advisors will be integrated into CIMT to monitor performance of all functional roles.	
		31.6	Continually communicate the status of the spill and support Woodside to determine the most appropriate response by delivering on the responsibilities of their role.	
		31.7	Follow the OPEA, Operational Plans, FSPs, support plans and the IAPs developed.	1, 2, 3A, 4
		31.8	Contribute to Woodside's response in accordance with the aims and objectives set by the Incident Commander.	1, 2, 3B, 3C, 4

5.10 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 Emergency and Crisis Management Procedure. 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 Emergency and Crisis Management Procedure 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 S&EM Competency Dashboard

The S&EM competency dashboard records the number of trained and competent responders that are available across Woodside, and some external providers, 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.

Woodside's pool of trained responders is composed of but not limited to personnel from the following organisations:

- Woodside internal
- Australian Marine Oil Spill Centre (AMOSC) core group
- AMOSC
- Oil Spill Response Limited (OSRL)
- Marine Spill Response Corporation (MSRC)
- AMSA
- Woodside contracted workforce

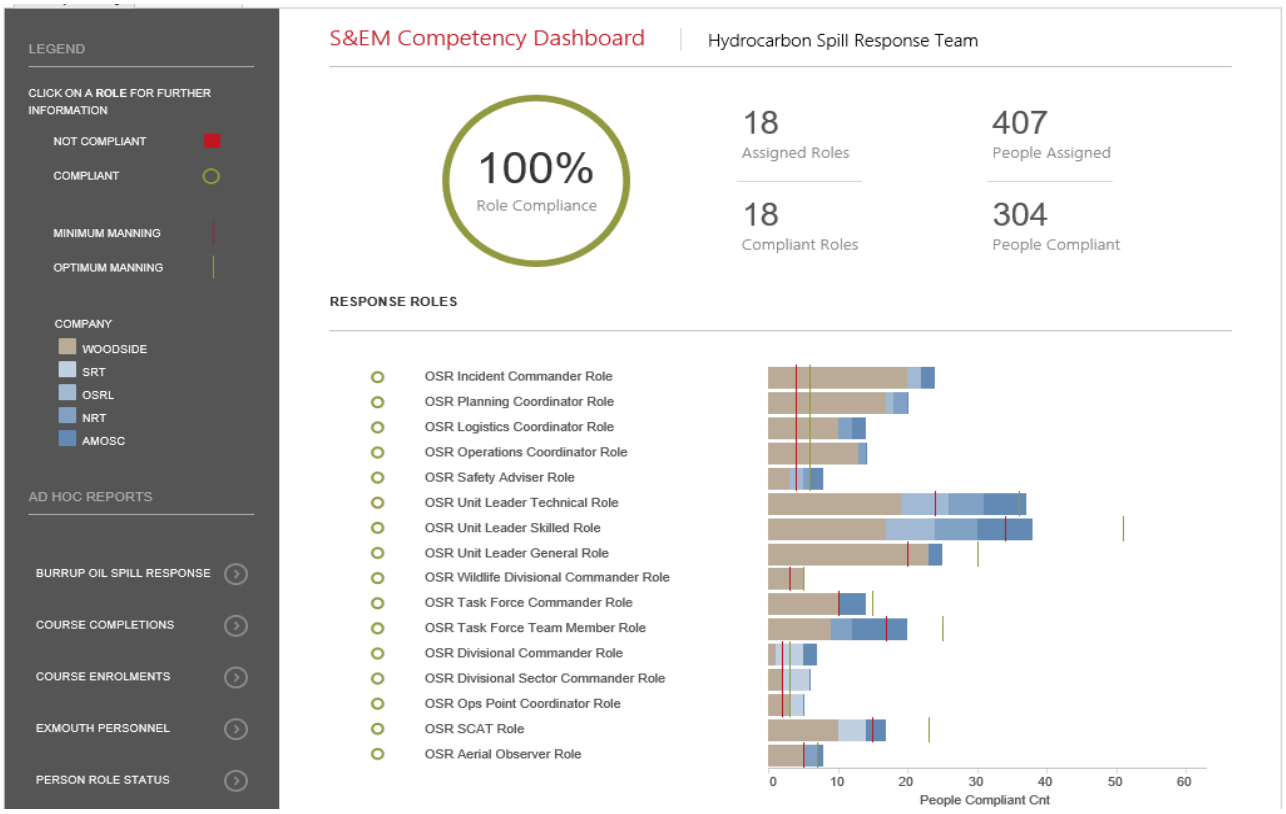

Figure 5-1: Example screenshot of the HSP competency dashboard

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 deeper dive into the Operations Coordinator role and the training modules required to show competence.

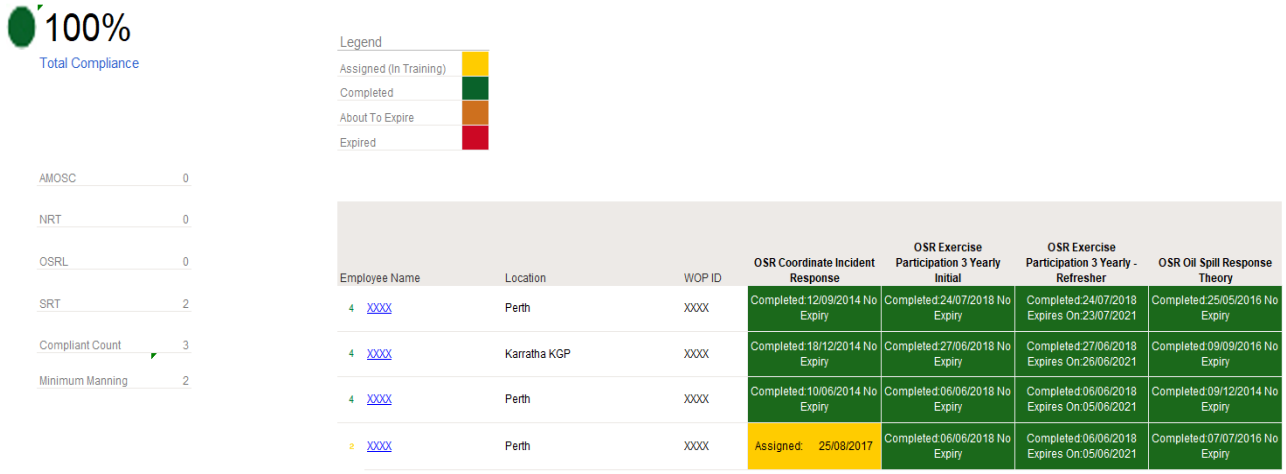

Figure 5-2: Example screenshot for the Operations Coordinator role

3. The Hydrocarbon Spill Preparedness ICE Assurance Process

The Hydrocarbon Spill Response Team has developed a Hydrocarbon Spill Preparedness and Response Internal Control Environment (ICE) process to align and feed into the Woodside Management System Assurance process for a hydrocarbon spill. The process tracks compliance over four key control areas:

a) **Plans** – confirms all plans (including: Oil Pollution Emergency Arrangements, first strike plans, operational plans, support plans and tactical response plans) are current and in line with regulatory and internal requirements.

b) **Competency** – confirms the competency dashboard is up to date and there are the minimum numbers across CIMT, 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** – tracks and monitors capability that could be required in a hydrocarbon incident, including but not limited to: integrated fleet[16] vessel schedule, dispersant availability, rig/vessels monitoring, equipment stockpiles, tracking buoy locations and the CIMT duty roster.

d) **Compliance and Assurance** – confirms all regulator inspection outcomes are actioned and closed out, the global legislation register is up to date and that the key assurance components are tracked and managed. Assurance activities (including audits) conducted on memberships with key Oil Spill Response Organisations (OSROs) including AMOSC and OSRL are also tracked and recorded in the ICE.

The ICE 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 S&EM Function.

The completion of the assurance checks (over and above the ICE process) is also applied via the Woodside Integrated Risk and Compliance System (WiRCs) and subject to the requirements of Woodside's Provide Assurance Procedure.

4. The Hydrocarbon Spill Preparedness and Response Procedure

This procedure sets out how to plan and prepare for a liquid hydrocarbon spill to the marine environment. (Note, this procedure does not apply to scenarios relating to gas releases in the marine environment).

This procedure details the:

- requirement for an Oil Pollution Emergency Plan (OPEP) to be developed, maintained, reviewed, and approved by appropriate regulators (where applicable) including:
  - defining how spill scenarios are developed on an activity specific basis
  - developing and maintaining all hydrocarbon spill related plans
  - ensuring the ongoing maintenance of training and competency for personnel
  - developing the testing of spill response arrangements
  - maintaining access to identified equipment and personnel.
- planning for hydrocarbon spill response preparedness
- accountabilities for hydrocarbon spill response preparedness
- spill training requirements
- requirements for spill exercising / testing of spill response arrangements
- spill equipment and services requirements.

The procedure also details the roles and responsibilities of the dedicated Woodside Hydrocarbon Spill Preparedness team. This team is responsible for:

- assuring that Woodside hydrocarbon spill responders meet competency requirements.
- establishing the competency requirements, annual training schedule and a training register of trained personnel.
- establishing and maintaining the total numbers of trained personnel required to provide an effective response to any hydrocarbon spill incident.
- ensuring equipment and services contracts are maintained
- establishing OPEPs
- establishing OPEAs
- priority response receptor determination

[16] 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

- ALARP determination
- ensuring compliance and assurance is undertaken in accordance with external and internal requirements

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. Those that have been selected for implementation 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.

6.1.1 Monitor and evaluate – Control Measure Options Analysis

6.1.1.1 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**
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 approx. $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 monitoring data used to inform all other response techniques. No improvement required.	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 approx. $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, additional needs are met from WEL 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 $200 per day or $6,000 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. WEL has access to a pool of trained, competent observers at strategic locations to ensure timely and sustainable response. Additional observers are available through current contracts with AMOSC and OSRL.	Current capability meets need. WEL has a pool of trained, competent observers at strategic locations to ensure timely and sustainable response. Additional observers are available through current contracts with AMOSC and OSRL Aviation standards & guidelines ensure all aircraft crews are competent for their roles. WEL 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 ensure training and competency is maintained.	Cost for additional trained aerial observers would be $2,000 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 $50,000 for 24hr access plus an initial $5,000 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**
Night time aerial surveillance.	The risk of undertaking the aerial observations at night is disproportionate to the limited environmental benefit. The images would be of low quality and as such the variable is not adopted.	Flights will only occur when deemed safe by the pilot. The risk of night operations, is disproportionate to the benefit gained, as images from sensors (IR, UV, etc). will be low quality. Flight time limitations will be adhered to.	No improvement can be made without risk to personnel health and safety and breaching Woodside's golden rules.	This option is not adopted as the safety considerations outweigh any environmental benefit gained.	**No**

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 PAP.

- Alternative
  - none selected
- additional
  - none selected
- improved
  - none selected

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 BOP or Xmas tree
- debris clearance and/or removal
- capping stack
- 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). It is not expected that any additional regulatory approvals would be required as inspection, maintenance and repair is within the scope of activities for the contracted MODU and Frame Agreement vessels.

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 (days)
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.

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 Activity Source Control Emergency Response Plan (SCERP) details 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 Activity 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 Planning Guideline
- vessel has an active heave compensated crane, rated to at least 150T for shallow waters or 250T 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. To reduce uncertainty in regulatory approval timeframe, Woodside is collaborating with The Drilling Industry Steering Committee (DISC) and a contracted ISV Vessel Operator to develop a generic Safety Case Revision that contemplates a capping stack deployment. This Safety Case Revision will be used to reduce uncertainty in permissioning timeframes in the event a capping stack deployment is required. 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 1.1.1.

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 North West Shelf Phase 1 Plug and Abandonment 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.

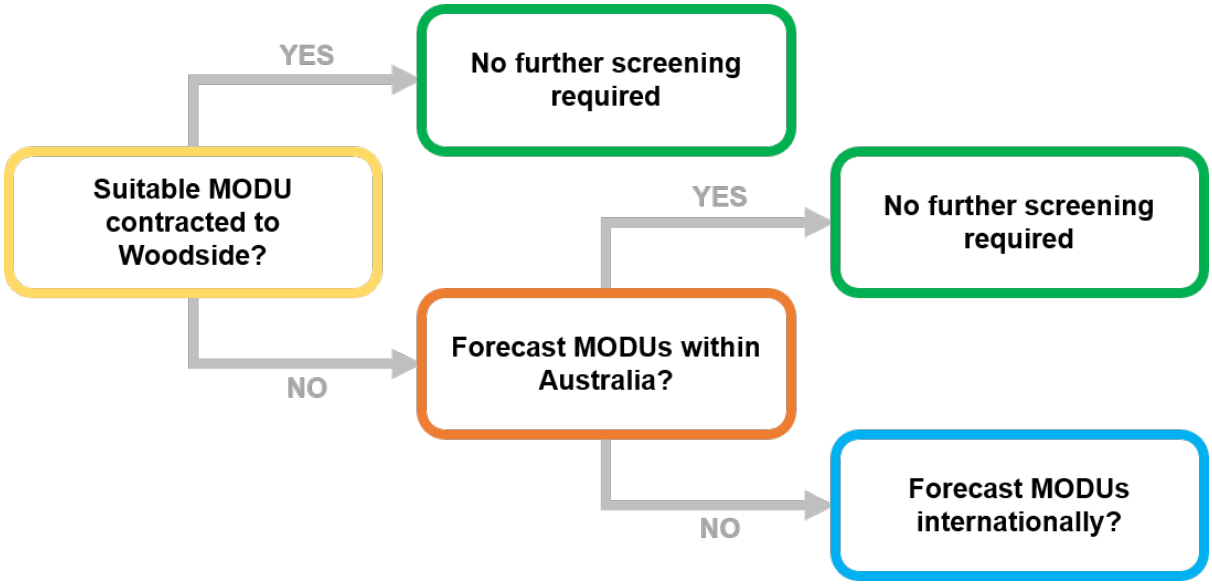

Figure 6-1: North West Shelf Phase 1 Plug and Abandonment process for sourcing relief well MODU

Woodside has not assessed the timeframe for obtaining a relief well MODU through international supply for this project as the certainty of local supply has been confirmed. Screening of a relief well MODU from international waters is undertaken only if required, i.e. there is low confidence in local (Australian) availability. The screening of relief well MODUs is undertaken and presented at a well design stage peer assessment. The capability, location and Australian Safety Case status is assessed for each Woodside contracted MODU. In the event the Woodside contracted MODUs are unsuitable, screening is extended to all MODUs operating in Australian Waters. The suitability and location of pre-identified relief well MODUs is tested again prior to the operation. Though the AEP MoU will serve as the instrument to facilitate the transfer of drilling units and well

site services between operators in the event of an emergency, Woodside will engage each of the identified titleholders in advance to maintain confidence in MODU suitability and availability.

Based on the detail provided, the Primary and Alternate approaches are expected to be achieved within the 21-day period.

The internal and external availability of moored MODUs, plus MODU activities of registered operators and MODUs with approved safety cases, are tracked by Woodside on a monthly basis to ensure that the best available option can be sourced and utilised in the event of the worst-case credible scenario.

If the above forecast indicates a gap in availability of a suitable MODU for relief well drilling within Australia, screening would be extended to MODUs with a valid safety case outside Australia. If an international MODU with an Australian safety case is not identified, an internal review will be undertaken, NOPSEMA notified and the issue tabled at the AEP Drilling Industry Safety Committee. 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. The aforementioned lookahead timeframe would allow two years' warning of any potential gap. Woodside will 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) is assessed as 68 days at the AP3 well location, 73 days at the PER02 well location and 71 days at the TPA03 well location for the North West Shelf Phase 1 Plug and Abandonment PAP. 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. DP and moored MODUs are suitable for the North West Shelf Phase 1 Plug and Abandonment PAP. A moored MODU has been used as the basis for the time estimate below.

To validate the effectiveness of the relief MODU supply arrangements through the AEP MoU, an exercise to test the 21-day 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

Estimated Relief Well Duration (moored days)	AP3	PER02	TPA03	
Rig Mobilisation				
Secure and suspend well. Complete Relief well design. Secure relief well materials.	8.0			21 days
Transit to location based on mobilisation from within the region	2.0			
Backload and loadout bulks and equipment, complete internal assurance of relief well design.	2.0			
Contingency for unforeseen event	9.0			
Mooring activities and relief well construction operations	**33 days**	**38 days**	**36 days**	
Intersection and well kill comprising the following stages:				
Drill out shoe, conduct formation integrity test and drill towards intersection point	1.5			14 days
Execute well-specific ranging plan to accurately intersect wellbore in minimum timeframe	9.5			
Pump kill weight drilling fluid per the relief well plan. Confirm well is static with no further flow	0.5			
Contingency for unforeseen technical issues	2.5			
Total discharge duration	**68 days**	**73 days**	**71 days**	

The following conditions and assumptions are applicable:

- A dynamically positioned MODU is not available.
- A pre-lay mooring spread is required to moor the MODU over subsea infrastructure. Installation would occur in parallel to MODU mobilisation.

Woodside has considered a broad range of alternate, additional, and improved options as outlined in Section 1.1.1.

Intersect and kill duration is estimated at 14 days for the AP3, PER02 and TPA03 wells. 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. During the Montara incident, it took five attempts to achieve a successful intersect.

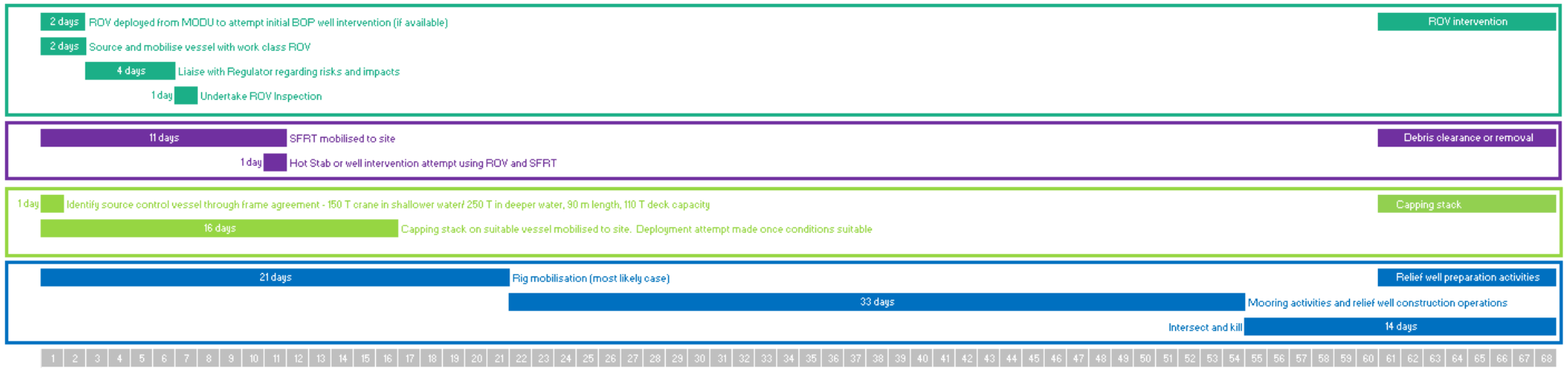

Figure 6-2: Source control and well intervention response strategy deployment timeframes for North West Shelf Phase 1 Plug and Abandonment (based on CS-01 as shortest relief well drilling duration for the PAP)

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.

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, Logistics, and Safety Section Chiefs/ Unit Leaders (on-Roster/Call 24/7) who can articulate need for, and deliver Woodside support, in key delivery tasks including sitting with potential external 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.

The MODUs screened for contingency relief well drilling all operate under an Accepted base Safety Case. A relief well Safety Case Revision would leverage the previously accepted Safety Case Revision for the North West Shelf Phase 1 Plug and Abandonment, 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.

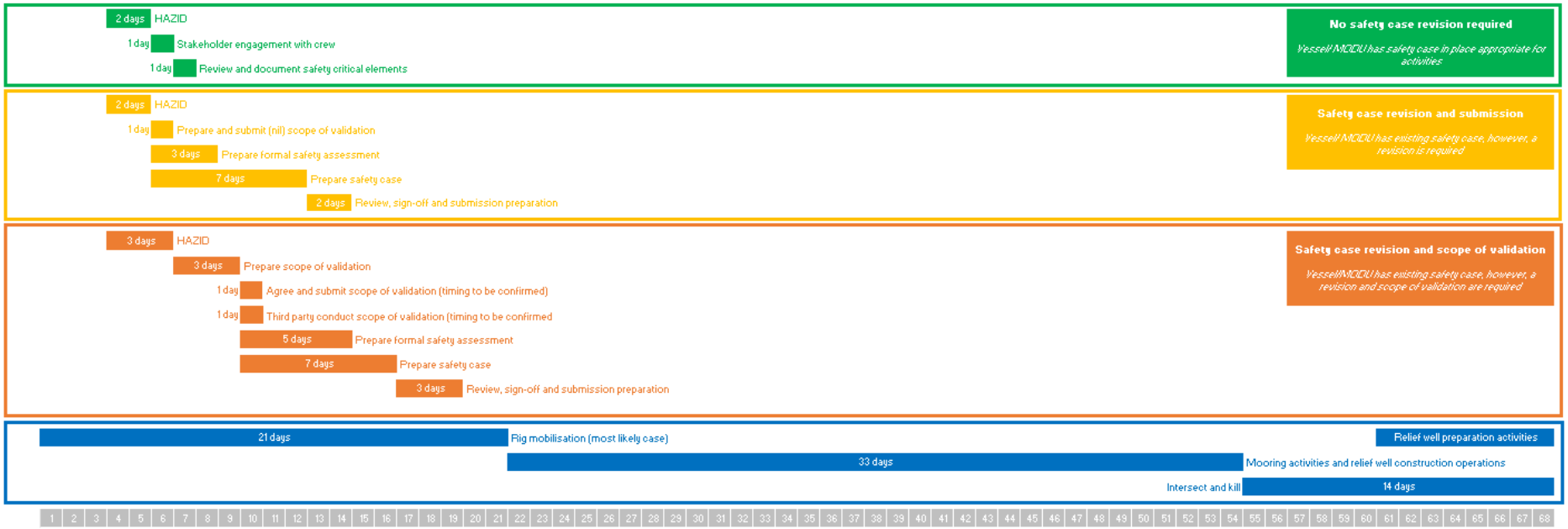

Figure 6-3: Timeline showing safety case revision timings alongside other relief well preparation activity timings for North West Shelf Phase 1 Plug and Abandonment (based on CS-01 as shortest relief well drilling duration for the PAP)

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.

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 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
Standby MODU shared for all Woodside activities	A standby MODU shared across all Woodside activities is likely to provide a moderate environmental benefit as it may reduce the 21-day sourcing, contracting and mobilisation time by up to 10 days (to 11 days). This would reduce the volume and duration of release and may reduce impacts on receptors and sensitivities. This may allow the well to be killed up to 10 days sooner (total of 58 days for well kill) and may result in a reduction of up to 15,350 m^3 of Angel condensate for the worst-case credible scenario (LOWC at AP3 well).	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.	Even with costs shared across Woodside operations, the costs (approximately A$1.1 B over the five years) of maintaining a shared MODU are considered disproportionate to the environmental benefit potentially achieved by reducing mobilisation times by up to 10 days.	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 above finding a MODU through the MOU agreement for all spill scenarios.	**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 may reduce the 21-day sourcing, contracting and mobilisation time by up to seven days (to 14 days). This would reduce the volume and duration of release and may reduce impacts on receptors and sensitivities. This may result in a reduction of up to 10,745 m^3 of Angel condensate for the worst-case credible scenario (LOWC at AP3 well).	This option is not considered feasible for a number of Titleholders due to the remote distances in Australia as well as a substantial range of well depths, types, complexities, geologies and geophysical properties across a range of Titleholders	As the environmental benefit is only considered minor and the reduction in timing would only be for the mobilisation period (reduction from 21 days to 14 days) the costs are considered disproportionate to the minor benefit gained.	The costs and complexity of having a MODU and maintaining a shared arrangement for the duration of the Petroleum Activities Program are disproportionate to the environmental benefit gained above finding a MODU through the MOU agreement for all spill scenarios.	**No**

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
Implement and maintain minimum standards for Safety Case development	Woodside's contingency planning consideration would be to source a rig from outside Australia with an existing Safety Case. This would require development and approval of a safety case revision for the rig and activities prior to commencing well kill operations.	This option is considered feasible and would require Woodside to develop minimum standards for safe operations for relevant Safety Case input along with maintaining key resources to support review of Safety Cases. Woodside would not be the operator for relief well drilling and would therefore not develop or submit the Safety Case revision. Woodside's role as Titleholder would be to provide minimum standard for safe operations that MODU operators would be required to meet and/or exceed.	Woodside has outlined control measures and performance standards regarding template Safety Case documentation and maintenance of resources and capability for expedited Safety Case review.	This option has been selected based on its feasibility, low cost and the potential environmental benefits it would provide.	**Yes**

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 Activities Program, 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 for location. 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 WEL 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**

6.2.7 Deployment Options Analysis

6.2.7.1 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					

6.2.7.2 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 feasibility issues surrounding an offset capping deployment in the water depths at the PAP well locations, together with mobilisation lead times for both a cap and required vessels/ support equipment, would minimise any environmental benefit gained.	Technical feasibility: • The base case considerations for offset installation equipment (OIE) requires a coordinated response by 4 to 7 vessels working simultaneously outside of the 500m exclusion zone. In the event of a worst-case shallow water gas discharge, the 10% LEL modelled radius extends beyond the area of activity required for the OIE deployment thereby introducing health and safety risk to any vessels required for the initial deployment of the carrier and subsequent operations with ROV during capping operations. Though manageable for single vessels, it is prohibitive for operations requiring SIMOPs with numerous vessels working at 180 degrees from one another. • Water depth is also a key consideration as buoyancy modules have not been proven for use in the PAP water depths or with the expected worst-case gas blowout rates. Other factors: • Due to the OIE's size and 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, based in Italy, can only be done so 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 and highlighted that it will require a 600+MT crane vessel for deployment to ensure there is 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 PAP 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	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	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**

	deployment in the water depths at the PAP well locations, together with mobilisation lead times for both a cap and required vessels and support equipment, would minimise any environmental benefit.	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.			
Subsea Containment System alternative to capping stack deployment	While the use of a subsea containment system could reduce the quantity of hydrocarbon entering the marine environment, this is an unproven 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 release duration is 68-73 days (for the AP3, PER02 and TPA03 wells) before drilling of a relief well under the adopted control measure.	The timing for mobilisation, deployment and activation of the subsea containment system is likely to be longer (>90 days), than the expected 68-73 day 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 has investigated the logistics of reducing this timeframe by pre-positioning equipment but the costs of purchasing dedicated equipment by Woodside for this Petroleum Activities Program is not considered reasonably practical and are considered disproportionate to the environmental benefit gained.	This option would not provide an environmental benefit.	**No**
Pre-drilling top-holes	This option represents additional environmental impacts associated with discharge of additional drill cuttings and fluids along with benthic habitat disturbance. It is also not expected to result in a significant decrease in relief well timings	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. Additionally, there is only expected to be a minor reduction in timing for this option of 1-2 days based on the drilling schedule. Duration to drill and kill may be reduced by 1-2 days, but 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.	Utilising an existing MODU and pre-drilling top-hole for relief well commencement would significantly increase costs associated the Petroleum Activities Program. Estimated cost over the program's life is approx. A$1.6 M per day over the PAP based on 2-4 days of top-hole drilling (plus standby time) for each top-hole drilled.	This option would not provide an environmental benefit due to the additional environmental impacts coupled with a lack of 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, casing, 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 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 PAP.

- Alternative

    - None selected
- Additional
    - Implement and maintain minimum standards for Safety Case development
    - Contract in place with Wild Well Control and Oceaneering to supply trained, competent personnel
- Improved
    - Monitor internal drilling programs for MODU availability
    - Monitor external activity for MODU availability
    - Monitor status of Registered Operators / Approved Safety cases for MODUs

6.3 Source Control via Vessel SOPEP – ALARP Assessment

Alternative, additional and improved options have been identified and assessed against the base capability described in Section 5. Those that have been selected for implementation are 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, 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 PAP.

- Alternative
  - None selected
- Additional
  - None selected
- Improved
  - None selected

6.4 Shoreline Protection and Deflection - ALARP Assessment

Alternative, additional and improved options have been identified and assessed against the base capability described in Section 5. Those that have been selected for implementation 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.

6.4.1 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.

6.4.2 Response Planning: North West Shelf Phase 1 Plug and Abandonment – 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 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 by Day 1-2 (if required). Deterministic modelling scenarios indicate that first shoreline impact at Southern Pilbara Islands – Peak Island within 23.4 days (3 m^3) for the AP3 LOWC scenario (CS-01). There is no shoreline impact predicted at threshold for CS-02, CS-03 or CS-04. The existing capability is therefore considered sufficient to mobilise and deploy protection at RPAs prior to hydrocarbon contact, guided by the ongoing monitor and evaluate.

Tactical response plans exist for many of the RPAs identified. The plans identify values and sensitivities that would be protected at location. Modelling does not predict that all priority protection shorelines will be at risk of contact at the same time. Therefore, to allow for the best use of available shoreline protection and deflection resources, monitor and evaluate will inform the response, targeting RPAs where contact is predicted above response threshold levels.

Table 6-4 Table 6-4below 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). As can be seen from the table below. Woodside's capability exceeds the response planning need identified for shoreline protection and deflection operations at identified RPAs.

Table 6-4: Response Planning – Shoreline Protection and Deflection

North West Shelf Phase 1 Plug and Abandonment – AP3 LOWC (CS-01)		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	3	0	72
A	Capability Required												
A1	Number of RPAs contacted (> 100 g/m^2) – AP3 LOWC (CS-01)	0	0	0	0	0	0	0	0	0	1	0	3
B	Capability Available (operations per day)												
B1	SPD operations available – per day (lower)	0	1	1	2	2	4	6	70	70	70	330	330
B2	SPD operations available – per day (upper)	1	2	3	4	6	8	10	84	84	84	336	336
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 5.4),
C1 and C2 – the gap between the upper and lower number of shoreline protection and deflection operations required in A1, A2 and A3 compared to the operations available in B1 and B2

Table 6-5: Indicative Tactical response plan, aims and methods for identified RPAs

Tactical Response Plan	Response aims and methods
Muiron Islands	**First Response Objective:** Ongoing operational monitoring and evaluation of the hydrocarbon spill to adapt aims and response tactics to the evolving nature of the incident. **Second Response Objective**: 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 Objective**: Clean-up of the shoreline. Manual clean up techniques, use of mechanical recovery methods and techniques where appropriate. **Fourth Response Objective**: Collection and specialist cleaning/rehabilitation of oiled wildlife.
Pilbara Islands – Southern Island Group	**First Response objective:** Undertake Monitor and Evaluate strategy – Shoreline assessment techniques to be undertaken. **Second Response objective:** Pre-clean of the beach area using rakes and shovels, move any debris on the beach to above the high tide area, above the reach of any floating oil. **Third Response objective:** Shoreline Protection - prevent oil from moving into key sensitive areas within the gulf area by deployment of booms. Deflection & containment methods would be undertaken. **Fourth Response objective:** Recovery of collected oil where possible through the use of skimming systems. Although boom formations will deflect most of the spilt hydrocarbon away from sensitive areas, it may be necessary to collect and remove floating oil from additional boom formations to prevent the spread of oil down the coastline into the Gulf. **Fifth Response objective:** Clean-up of oiled shoreline using manual clean up techniques, predominantly rakes and shovels, with flushing and vacuum skimming if appropriate and required.

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 indicated that contact could occur and monitor and evaluate operations identify spill heading towards RPA(s).

6.4.3 Shoreline Protection and Deflection – 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**
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**

6.4.3.2 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**
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.	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**

		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 briefing prior to commencing operations.			

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
Faster response/ mobilisation time	Given modelling does not predict floating or shoreline impacts at threshold until day 23.4 (CS-01), 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 23.4 at Southern Pilbara Islands – Peak Island (CS-01) 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**

6.4.4 Selected Control Measures

Following review of alternative, additional and improved control measures as outlined above, the following controls were selected for implementation for the PAP.

- Alternative
  - None selected
- Additional
  - None selected
- Improved
  - None selected

6.5 Shoreline Clean-up – ALARP Assessment

Alternative, additional and improved options have been identified and assessed against the base capability described in Section 5. Those that have been selected for implementation 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.

6.5.1 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.

6.5.2 Response planning: North West Shelf Phase 1 Plug and Abandonment – 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 all required shoreline clean-up operations for the PAP.

Given modelling predicts shoreline contact from day 23.4 (Southern Pilbara Islands – Peak Island) for the AP3 LOWC (CS-01) at lesser volumes (3 m^3) with ongoing accumulation over the following days, Woodside is satisfied that the current capability is managing risks and impacts to ALARP. The largest volumes ashore are at Montebello Islands with approximately 56.3 m^3 predicted on day 45.8. These volumes assume no treatment of floating surface oil by containment and recovery or surface dispersant application 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 6-5.

These figures have been combined into a single response planning need scenario that provides a worst-case scenario for planning purposes as outlined below. Given all other shoreline contact scenarios identified from deterministic modelling are longer time frames and lesser volumes, demonstration of capability against this need will ensure Woodside can meet requirements for any other outcome.

Due to the time of contact predicted shoreline clean-up and deterministic modelling predicting ongoing stranding after this peak, 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 the Dampier region to undertake clean-up operations and to manage wastes generated during the response effort. From previous assessment of facilities in the Dampier region, Woodside estimates that current accommodation can cater for a range of 500-700 personnel per day.

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 6.5.4.

Table 6-6: 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	3	0	72	0
	Oil remaining following response operations - m^3	0	0	0	0	0	0	0	0	0	0	0	0	29
A	**Capability Required (number of operations)**													
A1	**SCU operations required (lower)**	0	0	0	0	0	0	0	0	0	0	0	7	3
A2	**SCU operations required (upper)**	0	0	0	0	0	0	0	0	0	0	0	14	6
B	**Capability Available (number of operations)**													
B1	**SCU operations available - Stage 2 - Manual (lower)**	0	1	3	5	8	12	15	105	105	105	560	560	560
B2	**SCU operations available - Stage 2 - Manual (upper)**	0	2	5	8	10	15	20	140	140	140	560	560	560
C	**Capability Gap**													
C1	**SHC operations gap (lower)**	0	0	0	0	0	0	0	0	0	0	0	0	0
C2	**SHC 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 5.5),
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

6.5.3 Shoreline Clean-up – 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**
No reasonably practical alternative control measures identified					

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**
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**

6.5.3.3 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 23.4 (CS-01), 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	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**

		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 23.4 at Southern Pilbara Islands – Peak Island (CS-01) therefore allowing enough time to re-locate existing equipment, personnel and other resources to the most appropriate areas.			

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 PAP.

- Alternative
  - None selected
- Additional
  - None selected
- Improved
  - None selected

6.6 Oiled Wildlife Response – ALARP Assessment

Alternative, additional and improved options have been identified and assessed against the base capability described in Section 5. Those that have been selected for implementation 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.

6.6.1 Existing Capability – Oiled 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.

6.6.2 Oiled Wildlife Response - Control Measure Options Analysis

6.6.2.1 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**

6.6.2.2 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/m^2) with offshore waters is expected from day one (CS-01), 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 12, 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.	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	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**

	The potential environmental benefit of training additional personnel is expected to be low.	on the scale of the event and the impact to wildlife and maybe sourced via existing contracts with OSROs. Materials for holding facilities, portable pools, enclosures and rehabilitation areas would be sourced as required.			

6.6.2.3 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**

6.6.3 Selected control measures

Following review of alternative, additional and improved control measures, the following controls were selected for implementation for the PAP.

- Alternative
  - None selected
- Additional
  - None selected
- Improved
  - None selected

6.7 Waste Management – ALARP Assessment

Alternative, additional and improved options have been identified and assessed against the base capability described in Section 5. Those that have been selected for implementation 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.

6.7.1 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.

6.7.2 Waste Management - 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
No reasonably practical alternative control measures identified					

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
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 PAP.	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**

6.7.2.3 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 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	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**

	and transport will allow continuous response operations to occur. 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.				

6.7.3 Selected control measures

Following review of alternative, additional and improved control measures as outlined above, the following controls were selected for implementation for the PAP.

- Alternative
  - None selected
- Additional
  - None selected
- Improved
  - None selected

6.8 Operational and Scientific Monitoring – ALARP Assessment

Alternative, additional and improved options have been identified and assessed against the base capability described in Section 5. Those that have been selected for implementation 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.

6.8.1 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.

6.8.2 Operational and Scientific Monitoring – 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
Analytical laboratory facilities closer to the likely spill affected area	The environmental consideration of having access to suitable laboratory facilities in Karratha to carry out the hydrocarbon analysis would provide faster turnaround in reporting of results only by a matter of days (as per the time to transport samples to laboratories).	SM1ater quality monitoring requires water samples to be transported to National Association of Testing Authorities (NATA) rated laboratories in Perth or over to the East coast. Consider the benefit of laboratory access and transportation times to deliver water samples and complete lab analysis. There is a time lag from collection of water samples to being in receipt of results and confirming hydrocarbon contact to sensitive receptors).	Laboratory facilities and staff available at locations closer to the spill affected area can reduce reporting times only to a moderate degree (days) with associated high costs of maintaining capability do not improve the environmental benefit.	This control measure is not adopted as the costs and complexity are considered disproportionate to any environmental benefit that might be realised.	**No**
Dedicated contracted OSM vessel (exclusive to Woodside)	Would provide faster mobilisation time of operational and scientific monitoring resources, however, the environmental benefit associated with faster mobilisation time would be minor compared to selected options.	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 compared with the anticipated availability of vessels and resources within in the required timeframes. The selected delivery provides capability to meet the operational and scientific monitoring objectives, including collection of First-Strike Monitoring Priority data where baseline knowledge gaps are identified for receptor locations where spill predictions of time to contact are >7 days.	The cost and organisational complexity of employing a dedicated response vessel is considered disproportionate to the potential 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**
Use of Autonomous Underwater Vehicles (AUVs) for hydrocarbon presence and detection.	Use of AUVs may be feasible and may provide an environmental benefit in assessing inaccessible areas for presence of hydrocarbons in the water however cost of purchase is disproportionate to the environmental benefit when compared to the monitoring types in place.	AUVs may be considered as an additional method of monitoring, should remote systems be required for health and safety reasons.	Cost A$10,000 for mobilisation and A$15,000 a day when deployed.	This control measure is not adopted as the costs and complexity are considered disproportionate to the environmental benefit that might be realised.	**No**

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
The need for resourcing to acquire adequate baseline in the event of a spill	Adequate baseline to quantify environmental impact of a spill event.	As part of Woodside's OSRL OSM Supplementary Service Agreement, and consistent with the Joint Industry OSM Framework, the OSM Service Provider will provide key OSM personnel and specialised field monitoring equipment in order to address First-strike monitoring priorities and reactive baseline.	No additional cost associated with baseline acquisition under the OSRL OSM Supplementary Service Agreement.	This control measure is not adopted as the current capability meets the need.	**No**

6.8.2.3 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**
Faster mobilisation time (for water quality monitoring).	Due to the restriction on accessing the spill location on Day one there is no environmental benefit in having vessels available from day one. The cost of having dedicated equipment and personnel is disproportionate to the environmental benefit. The availability of vessels and personnel meets the response need. Shortening the timeframes for vessel availability would require dedicated response vessels on standby in KBSF or Exmouth.	Operations are not feasible on day 1 as the hydrocarbon will take time to surface, and the volatile nature of the oil may lead to unsafe conditions in the vicinity of fresh hydrocarbon.	The cost and organisational complexity of employing two dedicated response vessels (approximately A$15M/year per vessel) is considered disproportionate to the potential environmental benefit to be realised by adopting this delivery options. Cost for purchase of equipment approx. A$200,000. Ongoing costs per annum for cost of hire and pre-positioning for life of asset/activity would be larger than the purchase cost. Dedicated equipment and personnel, living locally and on short notice to mobilise. The cost would be approx. A$1M per annum, which is disproportionate to the incremental benefit this would provide, assets are already available on day 1. 2 integrated fleet vessels are available from day 1, however these could be tasked with other operations.	This option is not adopted as the area could not be accessed earlier due to safety considerations. Additionally, the cost and complexity of implementation outweighs the benefits.	**No**

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 PAP:

- Alternative
  - None selected
- Additional
- Improved
  - None selected

6.8.4 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 PAP, 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 PAP, 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 PAP 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 Section 6.7 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.		

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.

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		✓	✓	✓	✓	✓	✓
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) (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 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

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
- 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

- 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 (PS12.1, PS 15.1, PS 28.1).
- Shallow draft vessels will be used to access remote shorelines to minimise the impacts associated with seabed disturbance on approach to the shorelines (PS 12.2, PS 15.2, PS 28.2).

Presence of personnel on the shoreline

- Oversight by trained personnel who are aware of the risks (PS 15.6, PS 28.5).
- Trained unit leader's brief personnel of the risks prior to operations of the environmental risks of presence of personnel on the shoreline (PS 15.7, PS 28.6).

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 12.3, PS 15.5, PS 28.3).
- Vehicular access will be restricted on dunes, turtle nesting beaches and in mangroves (PS 16.3)

Waste generation

- Zoning of response locations to prevent secondary contamination and minimize the mixing of clean and oiled sediment and shoreline substrates (PS 13.4)
- Limiting vegetation removal to only that vegetation that has been moderately or heavily oiled (PS 15.4).

Additional stress or injury caused to wildlife

- 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. (PS19.1).

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.

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

11.1 Glossary

Term	Description / Definition
ALARP	Demonstration through reasoned and supported arguments that there are no other practicable options that could reasonably be adopted to reduce risks further.
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.
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 PAP.
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 PAP.
Dependency	The degree of reliance on other systems in order for the control measure to be able to perform its intended function.
Environment that may be affected	The summary of quantitative modelling where the marine environment could be exposed to hydrocarbons levels exceeding hydrocarbon threshold concentrations.
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.
Major Environment Event	The events with potential environment, reputation, social or cultural consequences of category C or higher (as per Woodside's operational risk matrix) which are evaluated against credible worst-case scenarios which may occur when all controls are absent or have failed.
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.
Preparedness	Measures taken before an incident in order to improve the effectiveness of a response
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])
Receptors at risk	Physical, biological and social resources identified as at risk from hydrocarbon contact using oil spill modelling predictions.
Receptor areas	Geographically referenced areas such as bays, islands, coastlines and/or protected 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. Refer to the Woodside Oil Pollution Emergency Arrangements (Australia) for more details.
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.

Term	Description / Definition
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.
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 – ≥50 ppb and entrained hydrocarbon concentrations – ≥100 ppb.
Zone of Application	The zone in which Woodside may elect to apply dispersant. The zone is determined based on a range of considerations, such as hydrocarbon characteristics, weathering and metocean conditions. The zone is a key consideration in the Net Environmental Benefit Analysis for dispersant use.

11.2 Abbreviations

Abbreviation	Meaning
ADIOS	Automated Data Inquiry for Oil Spills
AEP	Australian Energy Producers (formerly APPEA)
AIIMS	Australasian Inter-Service Incident Management System
ALARP	As low as reasonably practicable
AMOSC	Australian Marine Oil Spill Centre
AMP	Australian Marine Park
AMSA	Australian Maritime Safety Authority
APPEA	Australian Petroleum Production & Exploration Association (now AEP)
AUV	Autonomous Underwater Vehicle
BACI	Before/ After Control Impact
BAOAC	Bonn Agreement Oil Appearance Code
BOP	Blowout Preventer
CIMT	Corporate Incident Management Team
COP	Common Operating Picture
cSt	Centistokes
DM	Duty Manager
DoT	Western Australia Department of Transport
DBCA	Western Australia Department of Biodiversity, Conservation and Attractions (former Western Australian Department of Parks and Wildlife)
EMBA	Environment that May Be Affected
EMSA	European Maritime Safety Agency
EP	Environment Plan
Environment Regulations	Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023
ESI	Environmental Sensitivity Index
ESD	Emergency Shut Down
ESP	Environmental Services Panel
FPSO	Floating Production Storage Offloading
FSP	First Strike Plan
GIS	Geographic Information System
GPS	Global Positioning System
HSP	Hydrocarbon Spill Preparedness
IAP	Incident Action Plan
IC	Incident Commander
ICE	Internal Control Environment
IMSA	Index of Marine Surveys for Assessment
IMT	Incident Management Team
IPIECA	International Petroleum Industry Environment Conservation Association
ITOPF	International Tanker Owners Pollution Federation

Abbreviation	Meaning
IUCN	International Union for Conservation of Nature
KBSF	King Bay Supply Facility
KIMC	Karratha Incident Management Centre
KSAT	Kongsberg Satellite
LOWC	Loss of Well Containment
MODU	Mobile Offshore Drilling Unit
MoU	Memorandum of Understanding
NEBA	Net Environmental Benefit Analysis
NOAA	National Oceanic and Atmospheric Administration
NRT	National Response Team
OILMAP	Oil Spill Model and Response System
OMP	Operational Monitoring Program
OPEA	Oil Pollution Emergency Arrangements
OPEP	Oil Pollution Emergency Plan
OPGGSA	Offshore Petroleum and Greenhouse Gas Storage Act
OSM	Operational and Scientific Monitoring
OSRL	Oil Spill Response Limited
OSTM	Oil Spill Trajectory Modelling
OWR	Oiled Wildlife Response
OWRP	Oiled Wildlife Response Plan
PAP	Petroleum Activities Program
PEARLS	People, Environment, Asset, Reputation, Livelihood and Services
PBA	Pre-emptive Baseline Areas
PPA	Priority Protection Area
PPB	Parts per billion
PPM	Parts per million
ROV	Remotely Operated Vehicle(s)
RPA	Response Protection Area
SCAT	Shoreline Contamination Assessment Techniques
S&EM	Security and Emergency Management
SIMA	Spill Impact Mitigation and Assessment
SIMAP	Integrated Oil Spill Impact Model System
SSDI	Subsea Dispersant Injection
SFRT	Subsea First Response Toolkit
SMP	Scientific monitoring program
SOP	Standard Operating Procedure
TRP	Tactical Response Plan
UAS	Unmanned Aerial Systems
UAV	Unmanned Aerial Vehicles
VOC	Volatile Organic Compound

Abbreviation	Meaning
WHA	World Heritage Area
Woodside	Woodside Energy Limited
WCC	Woodside Communication Centre
WWCI	Wild Well Control Inc
WCCS	Worst Case Credible Scenario
ZoA	Zone of Application

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 PAP for [scenario/oil type] and [scenario/oil type]. The complete list of potential receptor locations within the EMBA within the PAP is included in Section 6.7 of the EP.

The locations utilised for the NEBA were limited to the identified RPAs of the PAP 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)
- Shoreline accumulation (>100 g/m^2) at any time

The detailed NEBA assessment outcomes are shown below. The North West Shelf Phase 1 Plug and Abandonment preoperational NEBA contains the full assessments.

Table A-1: NEBA assessment technique recommendations for Angel Condensate release caused by well loss of containment (CS-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
Muiron Islands & Marine Management Area	Yes	No	No	No	Yes	Yes	No	No	Yes	No	No	Yes
Southern Pilbara Islands – Peak Island	Yes	No	No	No	Yes	Yes	No	No	Yes	No	No	Yes
Sunday Island	Yes	No	No	No	Yes	Yes	No	No	Yes	No	No	Yes
Open water	Yes	No	No	No	Yes	No	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	No	No	Yes	Yes	No	No	Yes	No	No	Yes
NEBA identifies response potentially of net environmental benefit?	Yes	No	No	No	Yes	Yes	No	No	Yes	No	No	Yes

Table A-2: NEBA assessment technique recommendations for MDO (CS-04)

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	Source control (vessel)
Open water	Yes	No	N/A	No	No	No	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	Source control (vessel)
Is this response Practicable?	Yes	No	N/A	No	No	No	No	No	Yes	No	No	Yes
NEBA identifies response potentially of net environmental benefit?	Yes	No	N/A	No	No	No	No	No	Yes	No	No	Yes

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[17]	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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[17] 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

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
Operational Monitoring Operational Plan – 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

Operational Monitoring Operational Plan	Objectives	Activation triggers	Termination criteria
Operational Monitoring Operational Plan – 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.

Operational Monitoring Operational Plan	Objectives	Activation triggers	Termination criteria
Operational Monitoring Operational Plan – 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 DoT 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).

ANNEX C: OSM ACTIVITY SPECIFIC REQUIREMENT AND VERIFICATION OF OSM-BIP ADEQUACY

The following 3 step process ensures that the OSM-BIP adequately covers the following requirements for this activity:

- activity-specific EMBA;
- baseline assessment of activity-specific monitoring priorities; and
- activity-specific capability requirements.

Step 1: Determine if the new activity EMBA fits within the OSM-BIP Socio-Cultural EMBA

The Socio-Cultural EMBA for this credible spill scenario aligns to the EMBA included in the OSM-BIP (**Figure C - 1**).

Step 2: Determine the locations requiring a baseline review and whether these locations are currently included in the OSM-BIP

As per Section 2.2 of the OSM-BIP, receptors requiring a baseline data review were identified as sensitive receptors contacted by hydrocarbons at the low threshold for floating (≥1 g/m^2), shoreline contact (≥10 g/m^2), entrained (≥10 ppb), and dissolved (≥10 ppb) within 7.0 days at a probability >10%.

The locations requiring a baseline data review for this activity are presented in **Table C - 1** and are included in Table 2-3 and Table 4-2 of the OSM-BIP.

As per the baseline review assessment outlined in Section 4 and Table 4-3 of the OSM-BIP, the locations listed in **Table C - 1** are deemed monitoring priorities for the activity. During an actual spill, the monitoring priorities will vary according to the spill event and it should be noted that the monitoring priorities provided in **Table C - 1** are listed for planning and guidance purposes.

Step 3: Determine if the capability requirements and monitoring arrangements of the new activity meet the capability requirements outlined in Sections 7 and 8 of the OSM-BIP and capability arrangements described in Sections 9 and 10 of the OSM-BIP

As per the criteria outlined in Appendix A of the Woodside OSM-BIP, oil spill modelling for the PAP credible spill scenarios predicts that up to a maximum of four receptors could be contacted within 7 days at a probability of >10%, however, all of which are submerged (refer to Table C - 1; CS-01 – loss of well containment of 107,779 m^3 from AP3 well). Given the resource estimates in Section 8 of the OSM-BIP are determined for 5 sites for week 1 and 6 sites for week 2, the available capability for PAP activities are met by the worst-case capability requirements presented in Section 8 of the Woodside OSM-BIP. Therefore, additional deterministic modelling for PAP activities is not required to inform OSM first-strike capabilities.

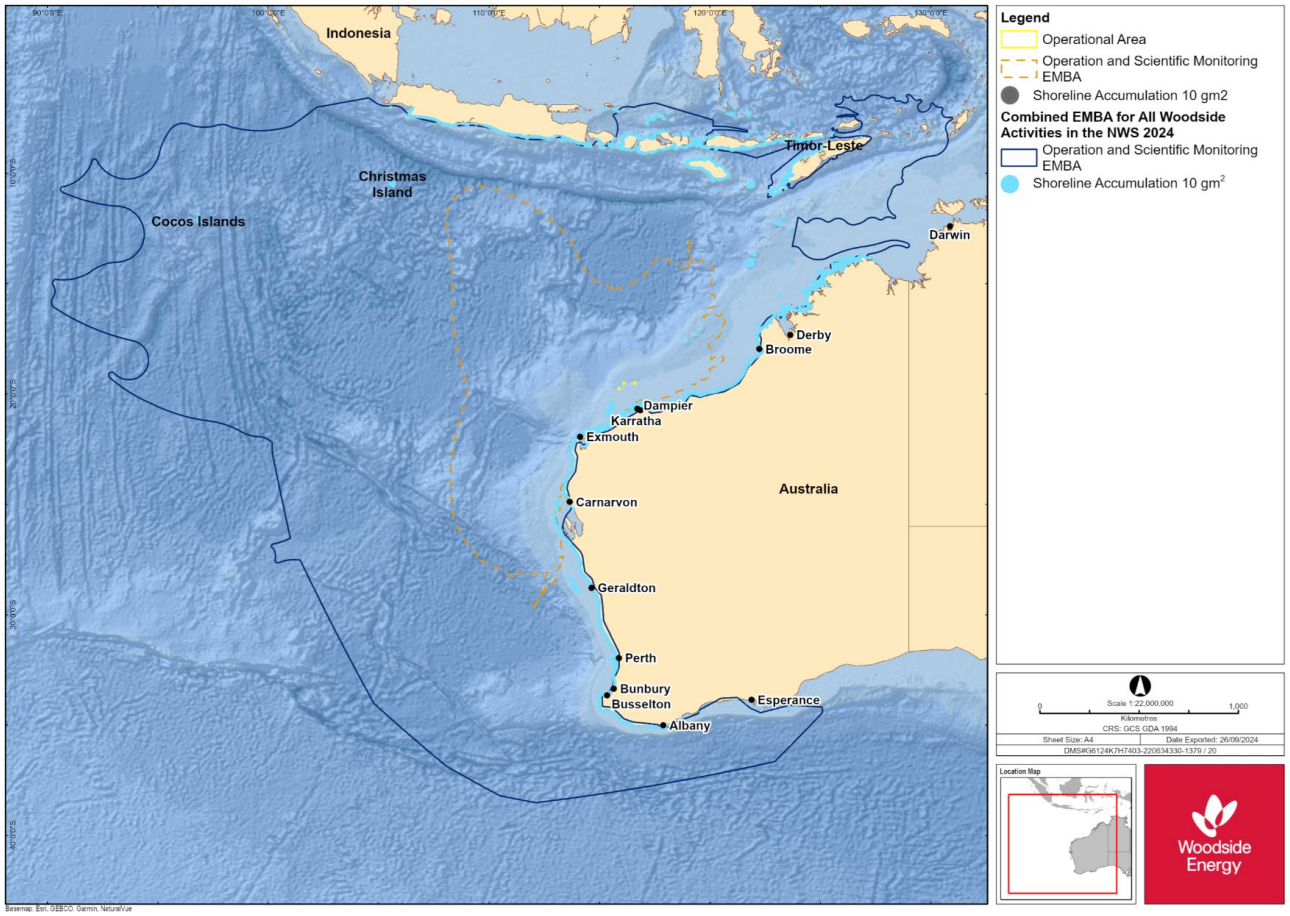


Figure C - 1: PAP Socio-Cultural EMBA based on the area potentially contacted by the low (below ecological impact) hydrocarbon thresholds in the event of the worst-case credible spill scenarios

Please note that the socio-cultural EMBAs illustrated in **Figure C - 1** represent the overall combined extent of the oil spill model outputs based on a total of 100 replicate simulations over an annual period and therefore represents the largest spatial boundaries of 100 oil spill combinations, not the spatial extent of a single spill.

Table C - 1: Modelling results for locations with a probability of contact ≥10% and <7 days

Location	Total contact probability (%) floating oil ≥1 g/m²	Min. arrival time floating oil ≥1 g/m² (days)	Total contact probability (%) shoreline accumulation ≥10 g/m²	Min. arrival time shoreline accumulation ≥10 g/m² (days)	Probability (%) entrained oil at ≥10 ppb	Min. arrival time entrained oil ≥10 ppb (days)	Probability (%) dissolved oil at ≥10 ppb	Min. arrival time dissolved oil ≥10 ppb (days)
CS-01 (AP3)								
Montebello MP*	NC	NC	NC	NC	81	5	58	*Unavailable***
Glomar Shoal*	NC	NC	NC	NC	NC	NC	59	*Unavailable***
Rankin Bank*	NC	NC	NC	NC	NC	NC	38	*Unavailable***
Tryal Rocks*	NC	NC	NC	NC	NC	NC	15	*Unavailable***
CS-02 (PER02)								
Montebello MP*	NC	NC	NC	NC	93	5	60	*Unavailable***
Rankin Bank*	NC	NC	NC	NC	98	3	79	*Unavailable***
CS-03 (TPA03)								
Montebello MP*	NC	NC	NC	NC	100	64	100	3
Glomar Shoal*	NC	NC	NC	NC	NC	NC	10	7
Rankin Bank*	35	1	NC	NC	100	17	100	1

**Submerged receptor that has no features above the sea surface.*

***Minimum arrival time for dissolved hydrocarbon unavailable. A conservative approach has therefore been undertaken when selecting locations requiring a baseline data review. Sensitive receptors that meet the low thresholds in dissolved hydrocarbon impact probability have been recorded as locations requiring a baseline data review regardless of whether they meet the low thresholds in minimum arrival time or not.*

NC = No contact

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
Abrohlos Islands: Pelseart Group
Abrohlos Islands: Wallabi Group
Abrohlos 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
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

APPENDIX H FIRST STRIKE PLAN

Woodside Energy

North West Shelf Phase 1 Plug and Abandonment and TPA03 Well Intervention – Oil Pollution First Strike Plan

Corporate HSE

Hydrocarbon Spill Preparedness

February 2025
Revision 0

TABLE OF CONTENTS

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 (DoT)	DoT	DoT Incident Controller
	Within port limits	1	DoT	Port Authority	Port Harbour Master
		2/3		Port Authority/ DoT	Port Harbour Master/ DoT 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	DoT	DoT	DoT Incident Controller
	Within port limits	1	DoT	Port Authority	Port Harbour Master
		2/3		Port Authority/ DoT	Port Harbour Master/ DoT Incident Controller

SPILLS IN STATE 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 (DoT).

Initially Woodside will be required to make available an appropriate number of suitably qualified persons to work in the DoT IMT (APPENDIX F – Woodside Liaison Officer resources to DoT). DoT's role as the Controlling Agency in State waters 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 DoT establishing incident control in line with DoT *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 DoT 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.

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]	
	Incident Controller or delegate to make relevant notifications in **Table 1-1** of this Oil Pollution First Strike Plan.	
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 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 DoT	Handover control to AMSA 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: 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: 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

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

In the event of an incident impacting live well infrastructure, also activate Angel Operations Oil Pollution First Strike Plan

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.	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 >80L. Record notification using Initial Verbal Notification Form or equivalent and send to NOPSEMA as soon as practicable (cc to NOPTA and DEMIRS).	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 DEMIRS) NOPSEMA [2] NOPTA [3] DEMIRS [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	DoT Maritime Environmental Emergency Response Unit (MEER) Duty Officer	[5]	Verbally notify DoT MEER Duty Officer that a spill has occurred and, if required, request use of equipment stored in Karratha/Fremantle. Follow up with a written Marine Pollution Report (POLREP) as soon as practicable following verbal notification. Additionally, DoT to be notified if spill is likely to extend into WA State waters. Request DoT 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	
As soon as practicable	CIMT IC or Delegate	Department of Climate Change, Energy, the Environment and Water (DCCEEW) Director of National Parks	Marine Park Compliance Duty Officer	[7]	The Marine Park Compliance Duty Officer is notified in the event of oil pollution within a marine park, or where an oil spill response action must be taken within a marine park, so far as reasonably practicable, prior to response action being taken. This notification should include: • titleholder details • time and location of the incident • proposed response arrangements and locations as per the OPEP • contact details for the response coordinator • confirmation of access to relevant monitoring and evaluation reports when available.	Verbal	
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,	CIMT IC or Delegate	WA Department of Biodiversity, Conservation and Attractions (DBCA)	Duty Officer	[8]	Phone call notification	Verbal	

[1] Notification to NOPSEMA must be from a Woodside Representative.

Conservation and Attractions							
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 North West Shelf Phase 1 Plug and Abandonment. 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 North West Shelf Phase 1 Plug and Abandonment. 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)	[9]	Verbally notify AMSA RCC of the hydrocarbon spill. Follow up with a written Harmful Substances Report (POLREP) as soon as practicable following verbal notification.	[9]	
ADDITIONAL LEVEL 2/3 NOTIFICATIONS							
As soon as practicable	CIMT IC or Delegate	AMOSC	AMOSC Duty Manager	[10]	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 AMOS Plan and detail in a Service Contract that will be sent to Woodside from AMOSC upon activation.	[10]	
As soon as practicable	CIMT IC or Delegate	Oil Spill Response Limited (OSRL)	OSRL Duty Manager	[11]	Notification for all services: Contact OSRL duty manager and request assistance from technical advisor in Perth. Send the completed notification form to OSRL as soon as practicable.	[11]	
					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.	[11]	
					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.	[11]	
As soon as practicable if extra personnel are required for incident support	CIMT IC or Delegate	Marine Spill Response Corporation (MSRC)	MSRC Response Manager	[12]	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	

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.					
Operational monitoring – tracking buoy	Yes	Yes	ALL	If a vessel is on location, consider the need to deploy the oil spill tracking buoy. If no vessel is on location, consider the need to mobilise oil spill tracking buoys from the King Bay Supply Base (KBSB) Stockpile. If a surface sheen is visible from the facility, deploy the satellite tracking buoy within two hours.	Operations	**DAY 1:** 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.
Operational monitoring – 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.	Situation or Environment	**DAY 1:** Initial modelling within 6 hours using the Rapid Assessment 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 ([13]).	Situation	**DAY 1:** Detailed modelling within 4 hours of RPS Response receiving information from Woodside.	
Operational monitoring – aerial surveillance	Yes	Yes	ALL	Instruct Aviation Unit Leader to commence aerial observations in daylight hours. Aerial surveillance observer to complete log in Appendix B Form 8.	Logistics – Aviation	**DAY 1:** 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*
Operational monitoring – satellite tracking	Yes	Yes	ALL	The Situation Unit Leader to action satellite imagery services. This may be obtained via: • AMOSC Duty Manager: [10] • OSRL Duty Manager: [11] • KSAT: [14] • Others identified by CIMT	Situation	**DAY 1:** Service provider will confirm availability of an initial acquisition within 2 hours. Data received to be uploaded into Woodside Common Operating Picture.	
Operational monitoring – 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	**10 DAYS PRIOR TO CONTACT:** In agreement with WA DoT, 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	**10 DAYS PRIOR TO CONTACT:** In agreement with WA DoT, deployment of 2 specialists trained in Shoreline Clean-up Assessment Technique (SCAT) for each of the RPAs with predicted impacts.	Shoreline Assessment in Operational Monitoring Operational Plan.
Operational and Scientific Monitoring	Yes	Yes	ALL	Consider the need to mobilise OSM resources via third party service provider.	Environment	**DAY 1:** Notify service provider of spill event and mobilise required programs depending upon nature of spill event	Mobilise OSM service via OSRL: [11] 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.
Surface dispersant	No	No	N/A	This response strategy is not recommended for Angel, PoG or TPA03 condensate or marine diesel as there is limited to no surface expression predicted above response threshold (>50 g/m^2). The addition of dispersant is not considered to have a net environmental benefit			
Containment and recovery	No	No	N/A	This response strategy is not recommended for Lamb Angel, PoG or TPA03 condensate or marine diesel as there is limited to no surface expression predicted above response threshold (>50 g/m^2). Containment and Recovery of condensate poses a significant safety risk and low flash points. Corralling low flash point substances should be avoided, therefore, this response technique is not feasible.	Logistics and Planning		

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	ALL	Equipment from Woodside, AMOSC and AMSA Western Australian Stockpiles mobilised. Consideration of mobilisation of interstate/international shoreline protection equipment (i.e. OSRL).	Operations and Planning	**5 DAYS PRIOR TO CONTACT:** In liaison with WA DoT (for Level 2/3 incidents), mobilise and deploy 1 shoreline clean-up operation to each site where operational monitoring predicts an accumulation 5 days prior to impact. Equipment mobilised from closest stockpile 5 days prior to predicted impact. Supplementary equipment mobilised from State, AMOSC, AMSA stockpiles 5 days prior to predicted impact.	Protection and Deflection Operational Plan *Logistics Section to download immediately and follow steps*
Shoreline clean-up	No	Yes	ALL	Equipment from Woodside, AMOSC and AMSA Western Australian Stockpiles and relevant personnel mobilised. Consideration of mobilisation of interstate/international shoreline clean-up equipment and relevant personnel (i.e. OSRL).	Logistics and Planning	**5 DAYS PRIOR TO CONTACT:** Equipment mobilised from closest stockpile 5 days prior to predicted impact. Supplementary equipment mobilised from State, AMOSC, AMSA stockpiles 5 days prior to predicted impact.	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		Oiled Wildlife Response Operational Plan
SOURCE CONTROL TECNIQUES							
Subsea First Response Toolkit	No	Yes	L2/3	Debris clearance equipment to be mobilised prior to deployment of capping stack (if feasible).	Source Control	**DAY 2:** Remotely Operated Vehicle (ROV) on Mobile Offshore Drilling Unit (MODU) ready for deployment within 48 hours	• Source Control Emergency Response Planning Guideline • Activity Source Control Emergency Response Plan
Subsea Dispersant	No	No	L2/3	This response strategy is not recommended. The PER02, PER03 and TPA03 wells are in water depths of greater than the 100 m minimum water depth recognised for feasible use of subsea dispersant. However, modelling predicts that the LOWC scenarios for these wells will not result in any surface or shoreline oil at any RPA above threshold values, therefore the use of subsea dispersant would increase dispersed/entrained hydrocarbon levels and exposure of subsea biota to potentially higher toxicity substances without providing a net environmental benefit.	Source Control		
Capping Stack	No	Yes	L2/3	Capping stack is considered feasible for water depths of >100m and/or if vertical Xmas trees has been removed. Feasibility will be assessed on a case-by-case basis.	Source Control	**DAY 16:** Capping stack deployed by a chartered construction vessel.	
Relief Well	No	Yes	L2/3	Undertake tactics per Source Control Emergency Response Plan (SCERP).	Source Control	**DAY 1:** Identify source control vessel availability within 24 hours. ROV on MODU ready for deployment within 48 hours. MODU mobilised to location	

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 sensitive receptors are identified as having 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 (from CS-01 – refer to Appendix A):

- Muiron Islands/ Muiron Islands MMA
- Southern Pilbara Islands
- Sunday Island

Tactical Response plans for these locations 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 North West Shelf Phase 1 Plug and Abandonment Operational Areas and identifies priority protection areas.

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 North West Shelf Phase 1 Plug and Abandonment Operational Areas.

Table 3-1: Assets in the vicinity of the North West Shelf Phase 1 Plug and Abandonment Operational Areas

Asset and Operator	Distance and Direction from Operational Area A (km)	Distance and Direction from Operational Area B (km)	O Distance and Direction from Operational Area C (km)
Angel (Woodside)	47 km east	Overlaps	76 km northeast
Goodwyn Alpha (Woodside)	19 km southwest	66 km southwest	9 km northeast
Modec Venture 11 (MODEC)	55 km northeast	19 km north	89 km northeast
North Rankin Complex (Woodside)	3 km southeast	43 km southwest	28 km northeast
Reindeer (Apache Energy)	55 km southeast	58 km southwest	48 km southeast

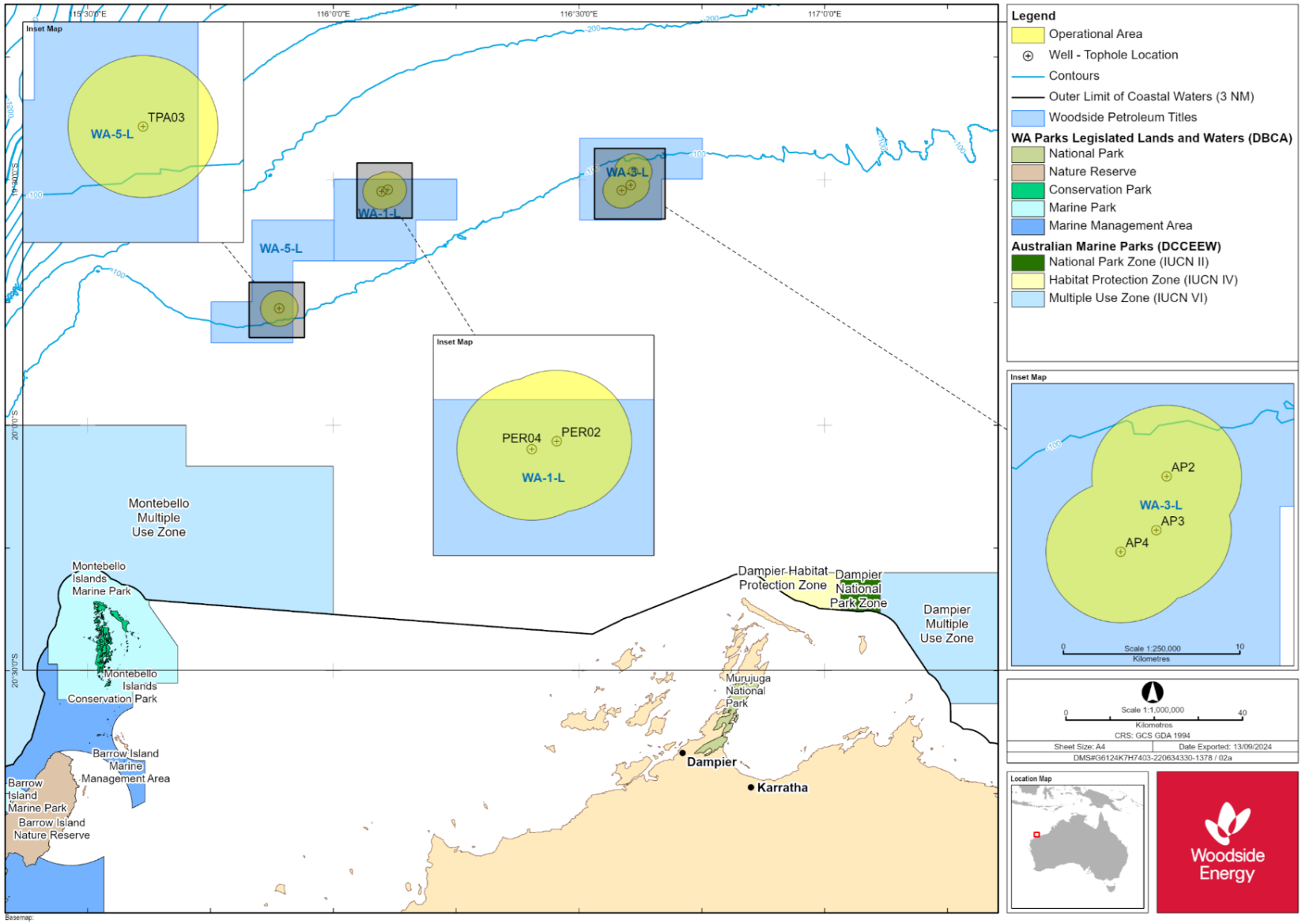


Figure 3-1: Operational area

4. DISPERSANT APPLICATION

Dispersant is not considered an appropriate response strategy for this activity as described in the North West Shelf Phase 1 Plug and Abandonment Environment Plan Appendix D (Woodside's Oil Spill Preparedness and Response Mitigation Assessment).

APPENDIX A – CREDIBLE SPILL SCENARIOS AND HYDROCARBON INFORMATION

Table A - 1: Credible spill scenarios and hydrocarbon information

Scenario	Product	Volume	Residue	Weathering rate		Suggested ADIOS2 Analogue[2]
CS-01 (WCCS) **68-day uncontrolled subsurface LOWC of Angel Condensate from the AP3 Well**	*Angel condensate*	107,779 m^3 [3]	3.8% (4096 m^3)	12 hours (BP < 180 °C)	67%	*NWS condensate*
				24 hours (180 °C < BP < 265 °C)	23.8%	
				Several days (265 °C < BP < 380 °C)	5.4%	
CS-02 **73-day uncontrolled subsurface LOWC of Searipple Condensate from PER 02 Well**	*Searipple condensate*	219,093 m^3	0.38% (833 m^3)	12 hours (BP < 180 °C)	66.5%	*NWS condensate*
				24 hours (180 °C < BP < 265 °C)	20.2%	
				Several days (265 °C < BP < 380 °C)	13%	
CS-03 **71-day uncontrolled subsurface LOWC of TPA (GWA) condensate from the TPA03 Well**	*TPA condensate*	56,441 m^3	0.8% of (451.5 m^3)	12 hours (BP < 180 °C)	65.9%	*NWS condensate*
				24 hours (180 °C < BP < 265 °C)	22.5%	
				Several days (265 °C < BP < 380 °C)	10.8%	
CS-04 **Vessel collision at Angel-3 well resulting in rupture of tank**	*MDO*	500 m^3	5% (25 m^3)	12 hours (BP < 180 °C)	6%	*Diesel Fuel Oil – Southern USA 1 (API 37.2o)*
				24 hours (180 °C < BP < 265 °C)	34.6%	
				Several days (265 °C < BP < 380 °C)	54.4%	

[2] 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.

[3] Modelling for GDA05 LOWC, 6 km from TPA03 well and within the same title (WA-5-L), was undertaken in 2021 using NOPSEMA's contemporary modelling thresholds. TPA03 Well Intervention LOWC is expected to be circa 50% smaller (56,441 m^3) than the GDA05 LOWC volume (108,843 m3), has the same residue (0.8%), occurs in similar water depths and both over a 71-day release period. Given that TPA03 spill parameters and geographic location fall within the envelope of GDA05, the existing modelling is an appropriate surrogate and therefore additional modelling was not required.

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)	[9]
4	Marine Pollution Report (POLREP – DoT)	[5]
5	AMOSC Service Contract	[10]
6a	OSRL Initial Notification Form	[11]
6b	OSRL Mobilisation Activation Form	[11]
6c	OSRL Operational and Scientific Monitoring Service Mobilisation Form	[11]
7	RPS Response Oil Spill Trajectory Modelling Request	[13]
8	Aerial Surveillance Observer Log	Link
9	Tracking buoy deployment instructions	Link

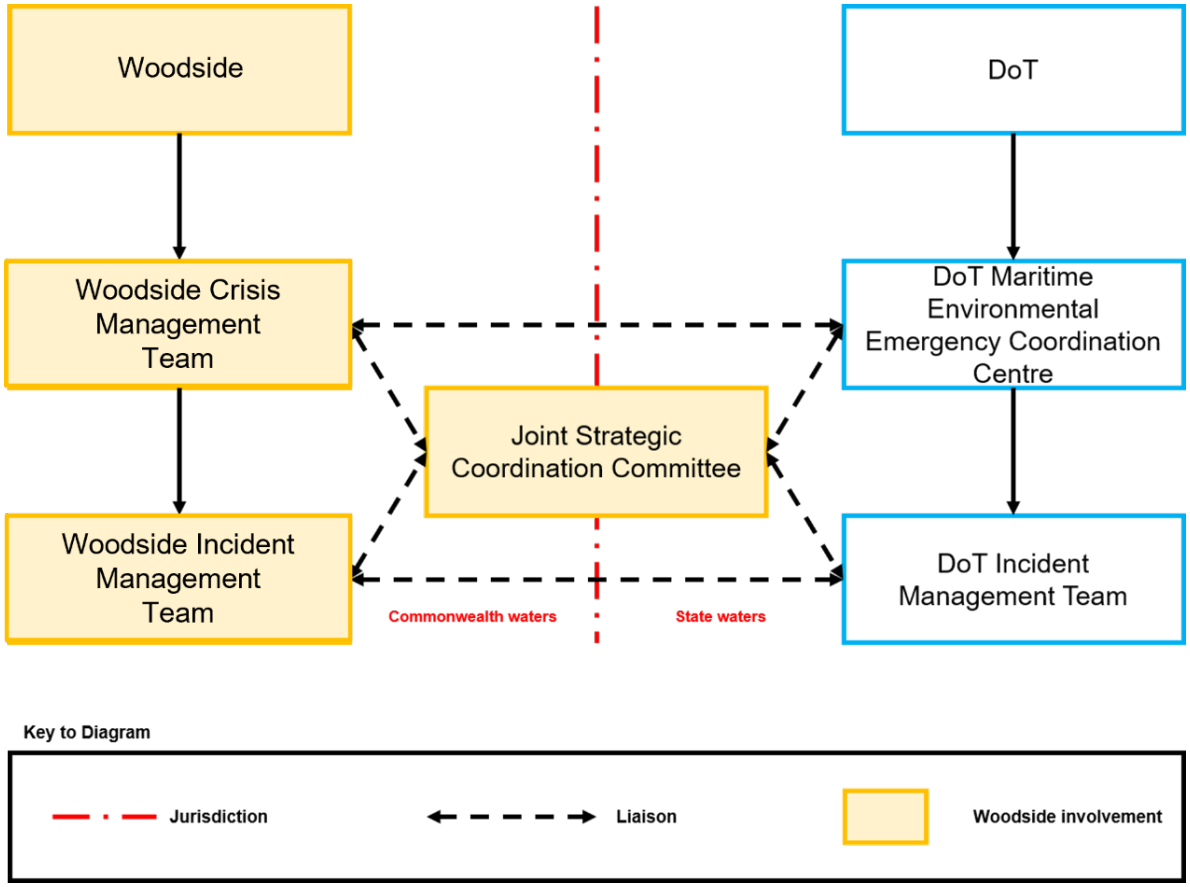
FORM 1 – RECORD OF INITIAL VERBAL NOTIFICATION TO NOPSEMA

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]	
DEMIRS	[4]	

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 it is 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		

APPENDIX D – COORDINATION STRUCTURE FOR A CONCURRENT HYDROCARBON SPILL IN BOTH COMMONWEALTH AND STATE WATERS/ SHORELINES[4]



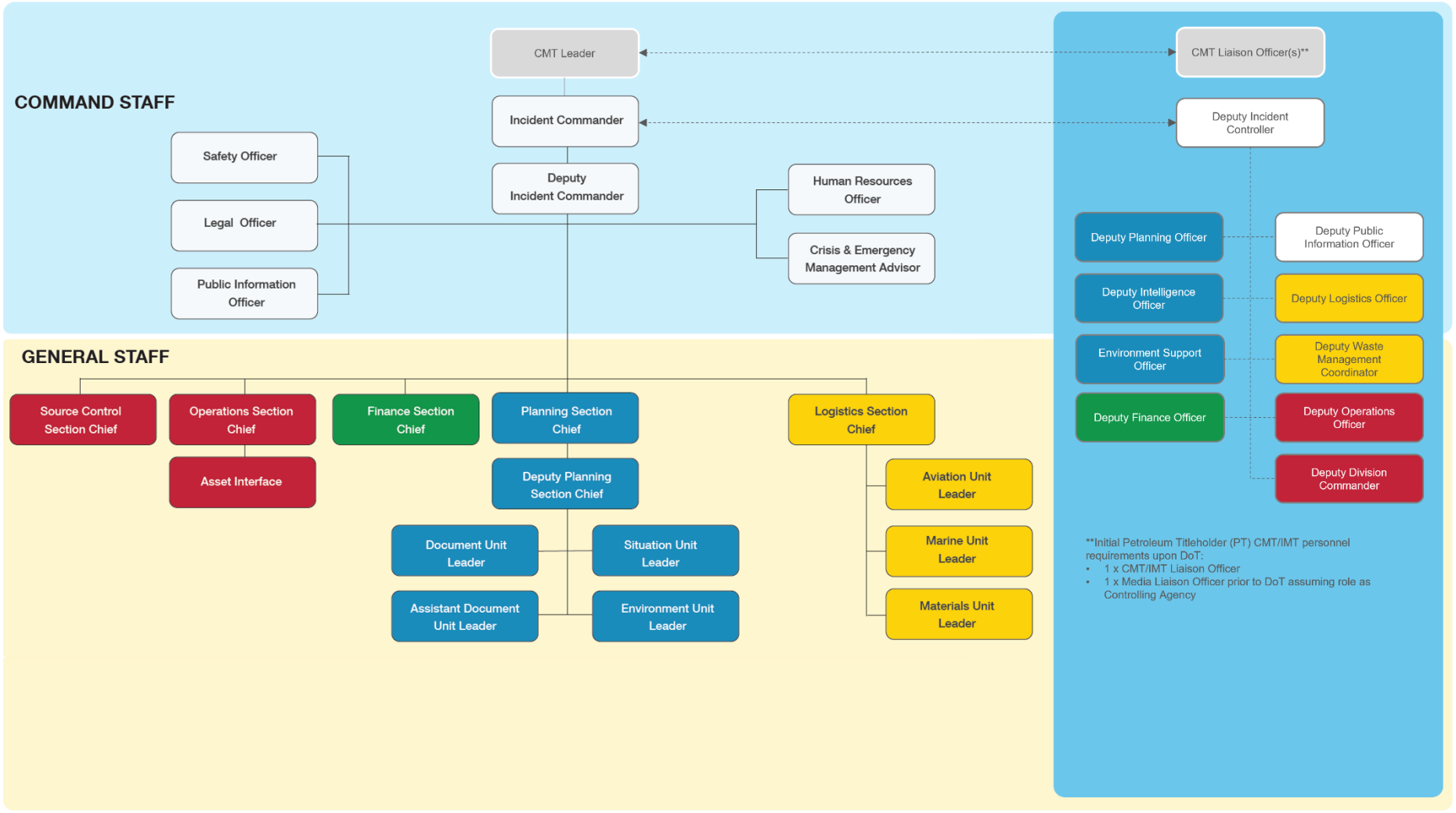
The Control Agency for a hydrocarbon spill in Commonwealth waters resulting from an offshore petroleum activity is Woodside (the Petroleum Titleholder).

The Control Agency/ Hazard Management Agency (HMA) for a hydrocarbon spill in State waters/shorelines resulting from an offshore petroleum activity is DoT. DoT will appoint an Incident Controller and form a separate IMT to only manage the spill within State waters/shorelines.

[4] Adapted from DoT 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.

APPENDIX E – WOODSIDE INCIDENT MANAGEMENT STRUCTURE

Woodside Incident Management Structure for Hydrocarbon Spill (including Woodside Liaison Officers Command Structure within DoT IMT if required) is shown below. Woodside's CIMT would operate from the Emergency Operations Centre (EOC) at the Woodside headquarters in Perth.



APPENDIX F – WOODSIDE LIAISON OFFICER RESOURCES TO DOT

In the event that DoT is required to establish an IMT, Woodside will make available an appropriate number of appropriately qualified persons to work within the DoT IMT.

It is an expectation that Woodside's nominated CMT Liaison Officer and the Deputy Incident Controller attend the DoT 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 DoT'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	#
DoT 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
DoT IMT Incident Control	Deputy Incident Controller	Deputy Incident Commander (Deputy IC)	• Provide a direct liaison between the PT IMT and DoT IMT. • Facilitate effective communications and coordination between the PT IC and the DoT IC. • Offer advice to the DoT 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 DoT IMT.	1
DoT 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 DoT 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 DoT IMT to the PT IMT.	1
DoT 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 DoT, 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 [10]*

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 DoT IMT to the PT IMT.	
DoT 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 DoT 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 DoT IMT to the PT IMT. **(Note this individual must have intimate knowledge of the relevant PT OPEP and planning processes)**	1
DoT 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 DoT IMT Media team. • Facilitate effective communications and coordination between the PT and DoT 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 DoT Information and Warnings team. • Offer advice to the DoT Media Coordinator on matters pertaining to PT media policies and procedures. • Facilitate effective communications and coordination between the PT and DoT Community Liaison teams. • Assist in the conduct of joint community briefings and events. • Offer advice to the DoT 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
DoT 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 DoT to action via PT IMT. **(Note this individual must have intimate knowledge of the relevant PT logistics processes and contracts)**	1

Area	Role	Woodside personnel[5]	Key Duties	#
DoT 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 DoT and to be charged back to the PT.	1
DoT 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 DoT Operations Section. • Offer advice to the DoT 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 DoT response efforts.	1
DoT 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 DoT to action via PT IMT.	1
DoT 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 DoT FOB. • Facilitate effective communications and coordination between the PT Division Commander and the DoT Division Commander. • Offer advice to the DoT 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

APPENDIX G – DOT LIAISON OFFICER RESOURCES TO WOODSIDE

Once DoT activates a State waters/shorelines IMT, DoT will make available the following roles to Woodside.

Area	DoT Liaison Role	Personnel Sourced from:	Key Duties	#
Woodside CIMT	DoT Liaison Officer (prior to DoT assuming Controlling Agency)/ Deputy Incident Controller – State waters (after DoT assumes Controlling Agency)	DoT	• Facilitate effective communications between DoT's SMPC/ Incident Controller and the Petroleum Titleholder's appointed CMT Leader / Incident Controller. • Provide enhanced situational awareness to DoT of the incident and the potential impact on State waters. • Assist in the provision of support from DoT to the Petroleum Titleholder. • Facilitate the provision technical advice from DoT to the Petroleum Titleholder Incident Controller as required.	1
Woodside CIMT Public Information – Media	DoT Media Liaison Officer	DoT	• Provide a direct liaison between the PT Media team and DoT IMT Media team. • Facilitate effective communications and coordination between the PT and DoT 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 DoT Information & Warnings team. • Offer advice to the PT Media Coordinator on matters pertaining to DoT and wider Government media policies and procedures.	1
			Total DoT Personnel Initial Requirement to Woodside	2

APPENDIX I PROGRAM OF ONGOING ENGAGEMENT WITH TRADITIONAL CUSTODIANS

Proposed Program of Ongoing Engagement with Traditional Custodians

This Program of Ongoing Engagement with Traditional Custodians ("Program") has been developed to demonstrate Woodside's commitment to ongoing engagement and support of Traditional Custodians' capacity to care for and manage Country, including Sea Country, and has been directly informed by Traditional Custodians' feedback regarding their capacity to engage and consult on Environment Plans.

It is a living document designed to evolve with ongoing consultation and feedback from Traditional Custodians and, at a minimum, will be subject to annual review. In addition to this Program, Woodside will continue to participate in, and support collective industry engagement with Traditional Owners on the development of a future, sustainable, industry wide Program. Through the Program, Woodside actively supports Traditional Custodians' capacity for, and involvement in, ongoing engagement and feedback on environment plans.

The Program has been developed so that Traditional Custodians can, on an ongoing basis, provide Woodside with feedback relating to the possible consequences of an activity to be carried out under an environment plan on their functions, interests and activities as they relate to cultural values. This feedback will be evaluated in conjunction with Traditional Custodians and, where necessary, avoidance or mitigation strategies in will be developed in collaboration with Traditional Custodians. How the Program is implemented with specific Traditional Custodians will depend on their stated needs and priorities

The Program is underpinned by Woodside's First Nations Communities Policy (woodside.com), the objective of which is to ensure Woodside partners and engages with First Nations communities to create positive economic, social and cultural outcomes that leave a lasting legacy. Woodside does this through building respectful relationships and partnerships with First Nations communities where we are active, in the areas where they are most interested in. We acknowledge the unique connection that First Nations communities have to land, waters and the environment.

The Program will include, as agreed with relevant communities, reasonable commitment to:

1. **Support for ongoing dialogue and engagement**

Woodside will support the capacity of Traditional Custodians to participate in ongoing dialogue and engagement about the environment plans and to enable the ongoing and future identification of cultural values potentially impacted by Woodside's activities. Woodside further commits to agreeing consultation protocols with individual Traditional Custodians to ensure the material provided is appropriate in level of detail such that the potential for cultural impact from Woodside activities can be determined and as required measures can be adopted to avoid or minimise impact.

In addition, Woodside will receive feedback on cultural values from an individual person or organisation that identifies as a Traditional Custodian, at any stage during the development and implementation of activities. This feedback will be evaluated, in conjunction with the Traditional Custodian individual or group and if required, control measures will put in place to avoid impacts to cultural values, or where avoidance is not possible, to minimise and mitigate the impacts to an acceptable level.

Where cultural values are identified post activity completion, any controls relevant to value management will be implemented during the next relevant activity.

2. Support for the identification and recording of cultural features

Woodside will support Traditional Custodians to record and articulate their Sea Country values and will invest in cultural assessments codesigned with Traditional Custodians, where required, to inform potential risks to cultural values from our petroleum activities.

This may include supporting cultural mapping by Traditional Custodians to identify and map significant cultural features including archaeological sites and other cultural values. The scoping of the mapping process will be codesigned with Traditional Custodians.

Woodside understands that cultural knowledge remains the intellectual property of Traditional Custodians and will agree with Traditional Custodians at the outset how that information from surveys will be used to feedback into and inform the environment plan's design and implementation.

In addition, Woodside applies the Cultural Heritage Management Procedure 2019, updated in 2023, to the Program which*:*

- provides a process for the identification, protection, and management of Cultural Heritage taking into account relevant standards, in particular, the United Nations Declaration on the Rights of Indigenous Peoples, the Charter for the Protection and Management of the Archaeological Heritage, the Convention for the Safeguarding of the Intangible Cultural Heritage, and the Convention on the Protection of the Underwater Cultural Heritage;
- applies to underwater cultural heritage and, consistent with current practice, provides for the commissioning of (where appropriate) both archaeological and ethnographic assessments of cultural values over the submerged landscape; and
- the process includes the following:
    - early engagement with relevant Traditional Custodians
    - identification of potential heritage, this could include desktop and field surveys undertaken with the Traditional Custodians.
- the development of cultural management strategies; and, where it is determined cultural heritage may be impacted, the development of Cultural Heritage Management Plans codesigned with Traditional Custodians and implemented by Woodside's First Nations team which:
    - focus on avoidance or minimisation of impacts; and
    - provide regular reviews and for inclusion of new information and further development of the Cultural Heritage Management Plan.

Woodside is committed to continue to receive feedback on cultural values for the life of an environment plan, the inclusion of new information and the development of avoidance or mitigation strategies in collaboration with Traditional Custodians. This information will be recorded via the Woodside Management of Knowledge Process and any potential impacts to the accepted Environment Plan evaluated via the Woodside Management of Change Process.

3. Building capacity for the ongoing protection of country

Woodside will support measures to increase the capability and capacity of the Traditional Custodian groups. This is guided by Woodside's Indigenous Affairs Strategy 2019 ("Strategy"), which is designed to enable the building and maintaining of relationships with Traditional Custodians to leave a lasting legacy, including strengthening of Traditional Custodians' capacity to care for and manage Country, including Sea Country. The Strategy was developed with inputs from Traditional Custodians and contains four pillars that direct Woodside's social investment, policies relating to economic development, procurement and employment, and Woodside's agreement making and implementation of agreements. The pillars are:

1. Culture and Heritage Management: support social outcomes through protection, recognition and respect for culture and heritage;
2. Economic Participation: provide training, jobs, and business opportunities;

3. Capability and capacity: ensure strong corporate governance, leadership development and education initiatives to support self-determination; and
4. Safer and Healthier Communities: partner with Aboriginal people and service providers to maximise safer and healthier community outcomes.

Woodside is committed to an ongoing relationship between Woodside and the Traditional Custodian groups. Through consultation with Traditional Custodians Woodside will continue to:

- establish support for Indigenous ranger programs via social investment;
- establish support for Indigenous oil spill response capability via investigating training models;
- establish support for identification and recording of cultural values and the management of that information by Traditional Custodians;
- establish support for programs identified by the Traditional Custodians as important to them and as agreed by Woodside.

4. Support for capacity and capability in relation to governance

Pillar 3 of the Indigenous Affairs Strategy 2019 focuses on ensuring strong corporate governance, leadership development and education initiatives to support self-determination. To enable this, Woodside will support measures to increase the capability and capacity of the Traditional Custodian groups, including in relation to governance and management systems.

The nature of this support will be informed by the individual needs of Traditional Custodian groups, but may include:

- funding or other support for community meetings, particularly where consultation with representative bodies lies outside of that body's core business and cultural authority or mandate needs to be secured,
- resourcing internal expertise so that information is managed consistently and internally, including ensuring appropriate record keeping of consultation to provide stakeholders with a lasting record of discussions, and
- development or upgrade of IT systems to manage information.

5. Program Reporting and Review of Effectiveness

Woodside will undertake an annual review of the Program to assess its effectiveness and adapt the Program accordingly. The annual review will also include an assessment of appropriateness of the methods used to undertake ongoing consultation with Traditional Custodians.
Progress of the Program will be reported annually in line with annual sustainability reporting via the Woodside website.

APPENDIX J DEPARTMENT OF PLANNING, LAND AND HERITAGE ABORIGINAL ENQUIRY SYSTEM RESULTS

Aboriginal Cultural Heritage Inquiry System

List of Aboriginal Cultural Heritage (ACH) Register

Search Criteria

59 Aboriginal Cultural Heritage (ACH) Register in Shapefile - NWS_Phase1PA_AdvertisingEMBA. 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.

Copyright

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

Aboriginal Cultural Heritage Inquiry System

List of Aboriginal Cultural Heritage (ACH) Register

ID	Name	Boundary Restricted	Boundary Reliable	Culturally Sensitive	Culturally Sensitive Nature	Status	Place Type	Knowledge Holders	Legacy ID
508	POINT MURAT 03	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P07503
509	POINT MURAT 04	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter	*Registered Knowledge Holder names available from DPLH	P07504
563	POINT MURAT 01	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P07501
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
6017	YARDIE CREEK CARAVAN BURIAL	No	No	No	No Gender / Initiation Restrictions	Register	Burial	*Registered Knowledge Holder names available from DPLH	P07115
6311	POINT MURAT.	No	Yes	No	No Gender / Initiation Restrictions	Register	Burial; Artefacts / Scatter; Camp; Midden; Other	*Registered Knowledge Holder names available from DPLH	P06628
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
6761	LOW POINT MIDDEN	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P06172

ID	Name	Boundary Restricted	Boundary Reliable	Culturally Sensitive	Culturally Sensitive Nature	Status	Place Type	Knowledge Holders	Legacy ID
6762	MILYERING MIDDEN	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P06173
6763	YARDIE ROCKSHELTERS NORTH.	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden; Rock Shelter	*Registered Knowledge Holder names available from DPLH	P06174
6764	CAMP 17 SOUTH MIDDENS	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P06175
6765	CAMP 17 NORTH MIDDENS	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P06176
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
6787	MANDU MANDU ROCKSHELTERS.	No	Yes	No	No Gender / Initiation Restrictions	Register	Sub surface cultural material; Artefacts / Scatter; Midden; Other; Rock Shelter	*Registered Knowledge Holder names available from DPLH	P06145
6790	YARDIE CREEK SOUTH 1	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P06148
6791	YARDIE CREEK SOUTH 2	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P06149
6793	ROAD ALIGNMENT 1	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P06151
6794	ROAD ALIGNMENT 2	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P06152
6795	ROAD ALIGNMENT 3	No	Yes	No	No Gender / Initiation Restrictions	Register	Midden	*Registered Knowledge Holder names available from DPLH	P06153
6797	YARDIE WELL ROCKSHELTER.	No	Yes	No	No Gender / Initiation Restrictions	Register	Sub surface cultural material; Artefacts / Scatter; Midden; Other; Rock Shelter	*Registered Knowledge Holder names available from DPLH	P06155
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

Aboriginal Cultural Heritage Inquiry System

List of Aboriginal Cultural Heritage (ACH) Register

ID	Name	Boundary Restricted	Boundary Reliable	Culturally Sensitive	Culturally Sensitive Nature	Status	Place Type	Knowledge Holders	Legacy ID
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
7126	MESA CAMP	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P05792
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
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
7298	YARDIE CREEK ROCKSHELTERS	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter	*Registered Knowledge Holder names available from DPLH	P05644
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
7301	CAMP 17 CREEK EAST	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P05647
7303	TULKI WELL MIDDEN	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P05649
7304	PILGRAMUNNA BAY MIDDEN	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P05650

Aboriginal Cultural Heritage Inquiry System

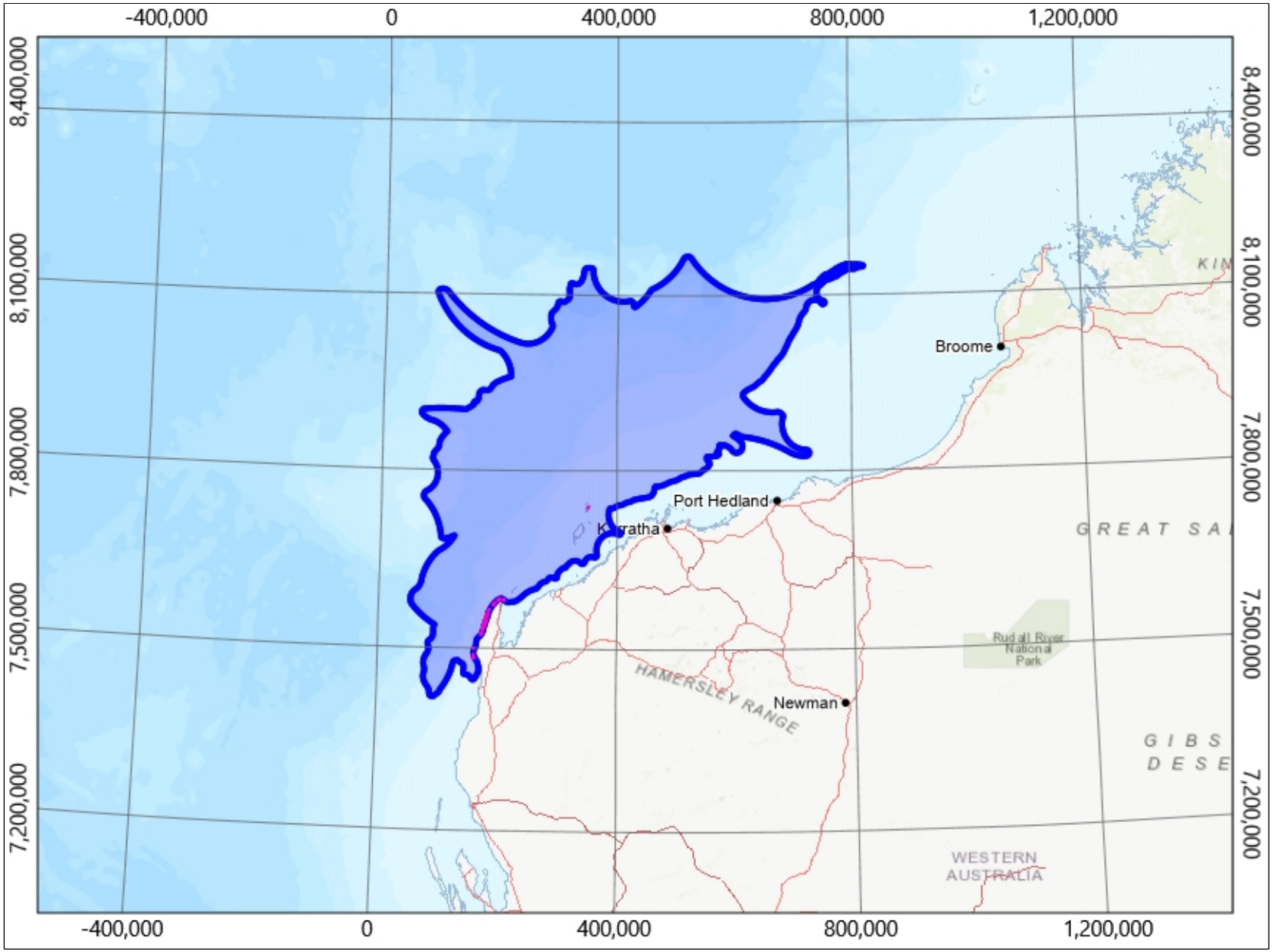
List of Aboriginal Cultural Heritage (ACH) Register

ID	Name	Boundary Restricted	Boundary Reliable	Culturally Sensitive	Culturally Sensitive Nature	Status	Place Type	Knowledge Holders	Legacy ID
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
8301	NINGALOO STATION	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter	*Registered Knowledge Holder names available from DPLH	P04353
10381	VLAMING HEAD	Yes	No	Yes	No Gender / Initiation Restrictions	Register	Ritual / Ceremonial; Creation / Dreaming Narrative	*Registered Knowledge Holder names available from DPLH	P01799
11400	YARDIE CREEK STATION	No	No	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P00750
11401	5 Mile Well (Cape Range)	No	No	No	No Gender / Initiation Restrictions	Register	Sub surface cultural material; Artefacts / Scatter; Engraving; Painting; Quarry	*Registered Knowledge Holder names available from DPLH	P00751
15322	POINT MURAT/WHITE OPAL	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P07916
17193	Ningaloo Station	No	No	No	No Gender / Initiation Restrictions	Register	Burial	*Registered Knowledge Holder names available from DPLH	
17448	CHUGORI ROCKHOLE	No	Yes	No	No Gender / Initiation Restrictions	Register	Ritual / Ceremonial; Creation / Dreaming Narrative; Grinding areas / Grooves; Traditional Structure; Water Source	*Registered Knowledge Holder names available from DPLH	
38695	Mandu Mandu Creek South Rockshelter 8 (MMCSR8)	No	Yes	No		Register	Artefacts / Scatter; Rock Shelter	*Registered Knowledge Holder names available from DPLH	

Department of Planning, Lands and Heritage

Aboriginal Cultural Heritage Inquiry System

Map of Aboriginal Cultural Heritage (ACH) Register



Legend

- Aboriginal Cultural Heritage (ACH) Register
- Search Area
- Aboriginal Community
  - *Permanent*
  - *Seasonal*
  - *Town Based*
- Town
- Road
- River
- Local Government Authority

344.96 kilometres

Map Scale 1 : 10,450,000

MGA Zone 50 (GDA2020)