Angel Carbon Capture and Storage Geophysical and Geotechnical Surveys (Commonwealth Waters) Environment Plan

New Energy

January 2026

Revision: 0

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1. INTRODUCTION

1.1 Overview

The Angel Carbon Capture and Storage Joint Venture (Angel CCS JV), of which Woodside Energy Ltd (Woodside) is the Operator, has identified the opportunity for a carbon capture and storage (CCS) project in the North-West region of Western Australia (WA). The proposed Angel CCS Project comprises the development of a carbon dioxide (CO_2) gathering system for the collection of CO_2 via new pipelines from emitters onshore or through import via ships. Collected CO_2 would be transported to a central facility prior to being transported offshore via subsea pipeline and injected into the subsea geological formation.

To support the Angel CCS Project, Woodside, under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth) (referred to as the Environment Regulations), proposes to conduct geophysical and geotechnical surveys within the Operational Area shown in Figure 3-1. In this document, the geophysical and geotechnical surveys are referred to as the GPGT Surveys Program. The GPGT Surveys Program is considered a greenhouse gas activity for the purposes of Regulation 5 of the Environment Regulations.

Data from the surveys is intended to inform the design for the pipeline and umbilical routes, subsea structure foundation locations and planning for mobile offshore drilling unit (MODU) anchoring or jack-up rig placements. The surveys will also support baseline studies to provide data on existing infrastructure and potential future activities.

This Environment Plan (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).

The GPGT Surveys Program is also subject to ‘key greenhouse gas operations’ and ‘greenhouse gas special authority’ approvals by the Commonwealth Resources Minister.

1.2 Purpose of the Environment Plan

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

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

1.3 Defining the greenhouse gas activity

The GPGT Surveys Program is considered a greenhouse gas activity for the purposes of Regulation 5 of the Environment Regulations. Woodside, as operator of the Angel CCS JV, intends to exercise a right conferred under Greenhouse Gas (GHG) Assessment Permit (G-10-AP), specifically by collecting geophysical and geotechnical data to inform decisions for the placement of subsea infrastructure and design for the pipeline and umbilical routes for the proposed Angel CCS Project.

The use of a refraction sub-bottom profiler (SBP) is planned as part of the activity to characterise the shallow sediment layers beneath the seabed. Although this technique involves the use of seismic signals, it does not constitute a seismic survey under the definition provided by Regulation 5 of the Environment Regulations. The Replacement Explanatory Statement, produced in support of the 2023 remake of the Environment Regulations, specifically identifies the exclusion of geophysical and geotechnical surveys from the definition of seismic activities, due to their lower risk.

The Offshore Infrastructure Regulator produced a factsheet in 2023 (Offshore Infrastructure Regulator 2023), differentiating the acoustic impacts of geophysical investigations as much lower intensity than those used for

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offshore petroleum seismic surveys due to the size and output of the equipment involved (Ruppel *et al.* 2022).

Section 3.6.5 provides further differentiation between refraction sub-bottom profiling and seismic survey acoustic sources.

1.4 Environment Plan summary

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

Table 1-1: Environment Plan (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
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 7.12
Consultation already undertaken and plans for ongoing consultation	Section 5
Details of the Titleholder's nominated liaison person for the activity	Section 1.6.1.2

1.5 Structure of the Environment Plan

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

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

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Criteria for acceptance	Content requirements/relevant regulations	Elements	Section of EP
	• A report on all consultations between the Titleholder and any relevant person		
Regulation 34(d): Provides for appropriate Environmental Performance Outcomes, environmental performance standards and measurement criteria	Regulation 21(7): • Environmental performance outcomes and standards	Environmental performance outcomes (EPOs) Environmental performance standards (EPSs) Measurement criteria (MCs)	Section 6
Regulation 34(e): Includes an appropriate implementation strategy and monitoring, recording and reporting arrangements	Regulation 22: • Implementation strategy for the EP	Implementation strategy, including: • Environmental Management System (EMS) • performance monitoring • Oil Pollution Emergency Plan (OPEP – per Appendix G) and 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	No activity, or part of the activity, undertaken in any part of a declared World Heritage property	Section 3 Section 4 Section 6

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Criteria for acceptance	Content requirements/relevant regulations	Elements	Section of EP
	▪ (ii) Commonwealth land within the meaning of that Act		
Regulation 34(g): (i) the Titleholder has carried out the consultations required by Regulation 25 (ii) the measures (if any) that the Titleholder has adopted, or proposes to adopt, because of the consultations are appropriate	Regulation 25: • Consultation with relevant authorities, persons and organisations, etc Regulation 24(b): • A report on all consultations between the Titleholder and any relevant person	Consultation undertaken in the preparation of this EP.	Section 5
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 (OPGGS) Act 2006* (Cth) and the Environment Regulations	Section 1.6.1 Section 7.5

1.6 Description of the Titleholder

Woodside will be conducting the GPGT Surveys Program as Operator of the Angel CCS JV and on behalf of the Titleholders of GHG Assessment Permit G-10-AP. The details of petroleum and greenhouse gas titles located within the Operational Area are set out in Table 1-3.

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Table 1-3: Greenhouse gas and petroleum titles relevant to the Geophysical and Geotechnical Surveys Program

Originating title: G-10-AP (Angel CCS title) Titleholders: Woodside Energy Ltd, BP Low Carbon Australia (CCS) Pty Ltd, Chevron Australia New Energies (G-10-AP) Pty Ltd, Japan Australia LNG (MIMI) Pty Ltd, Shell Australia Pty Ltd	
Location	**GHG and petroleum titles overlapping the Operational Area**
Within G-10-AP	***WA-3-L, WA-4-L, WA-52-L and WA-28-P*** Titleholders: Woodside Energy Ltd, BP Developments Australia Pty Ltd, Chevron Australia Pty Ltd, CNOOC NWS Private Limited, Japan Australia LNG (MIMI) Pty Ltd, Shell Australia Pty Ltd, Woodside Energy (North West Shelf) Pty Ltd ***WA-9-L*** Titleholders: Woodside Energy Ltd, BP Developments Australia Pty Ltd, Chevron Australia Pty Ltd, CNOOC NWS Private Ltd, Jadestone Energy (CWLH) Pty Ltd, Japan Australia LNG (MIMI) Pty Ltd, Shell Australia Pty Ltd, Woodside Energy (North West Shelf) Pty Ltd
Outside G-10-AP	***G-9-AP:*** Titleholders: Santos Offshore Pty Ltd and Chevron Australia Pty Ltd
	WA-1-L Titleholders: 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 Ltd and CNOOC NWS Private Limited

1.6.1 Details of Titleholder and nominated liaison person

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

1.6.1.1 Titleholder

Woodside Energy Ltd

11 Mount Street

Perth, Western Australia

T: 08 9348 4000

ACN: 63 005 482 986

1.6.1.2 Nominated liaison person

Nicolas Wirtz

Corporate Affairs Manager

11 Mount Street

Perth, Western Australia

Telephone: 08 9348 4000

Email: feedback@woodside.com

1.6.2 Arrangements for notifying of 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.

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1.7 Woodside Management System

The Woodside Management System (Our WMS) defines the core mandatory activities that support safeguarding the business and enabling its people to achieve objectives, manage uncertainty and meet obligations to deliver value for the company and its stakeholders.

1.7.1 Our WMS purpose

Our WMS is a series of integrated business processes that contribute to value delivery. A process is defined as the core mandatory activities that are material to converting inputs to outputs for value delivery from the defined business area. A process must reflect relevant corporate drivers and may have associated tools that support its implementation. Our WMS activities are divided into two categories; Deliver Value Chain – for activities directly involved in value delivery and Enable Value Chain – for activities supporting the enterprise and value delivery. The Health, Safety and Environment sub-category is included in the Enable Value Chain category. Given this, there is interdependence between processes across these activities.

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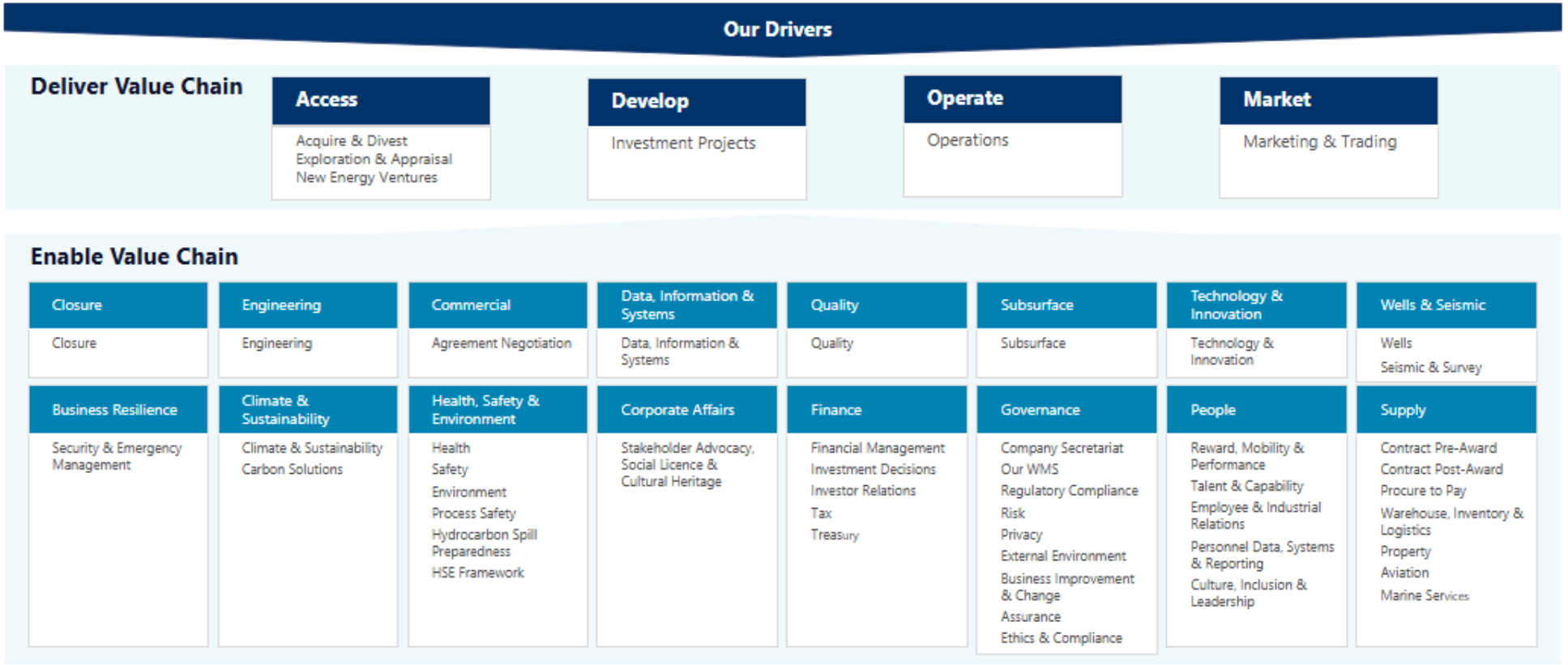


Figure 1-1: The Woodside Management System structure

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Our WMS content is structured in a hierarchy as illustrated in Figure 1-2. This hierarchy begins with the "why" through Our Drivers, which are defined by the Board and Executive. It is followed by the "what" with Our Expectations, which establish mandatory requirements for executing process activities to deliver value in accordance with the relevant Our Drivers. Finally, it includes the "how" through Tools, which support the implementation, execution, or understanding of Our Expectations. Additionally, there is non-WMS content that is subordinate to, but sits outside, Our WMS.

Adaptations of Our WMS tools may, as applicable and justified, be created for regional application.

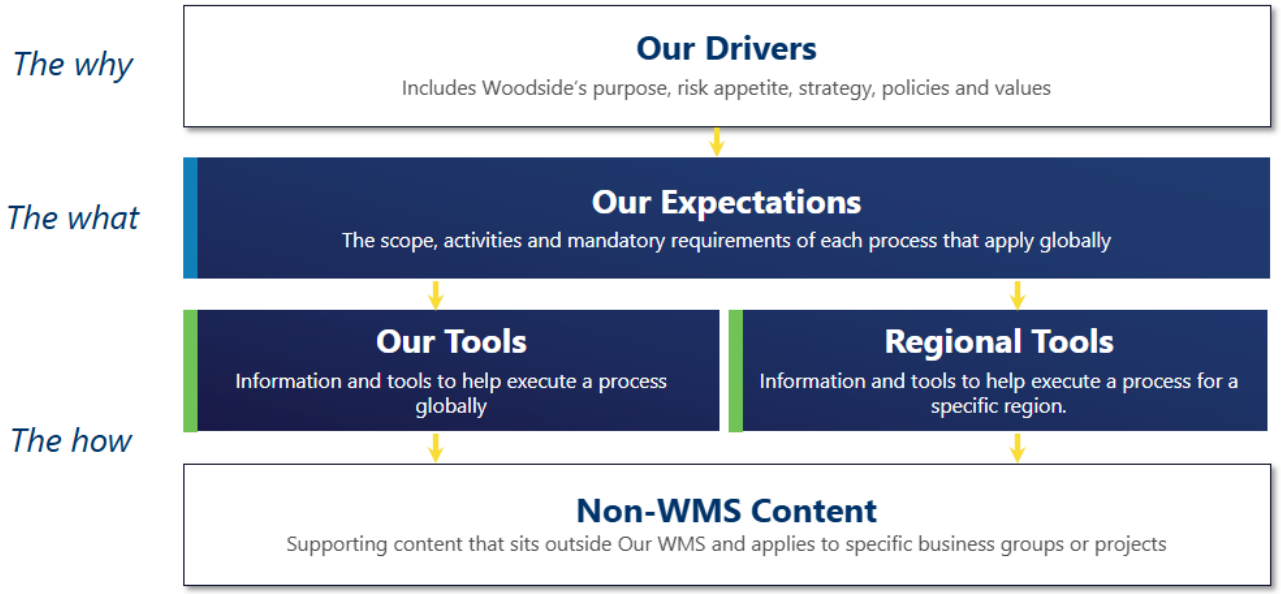


Figure 1-2: Our WMS information structure and document hierarchy

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

1.8 Description of relevant requirements

In accordance with Regulation 21(4) of the Environment Regulations, a description of requirements, including legislative requirements, that apply to the activity and relevant to managing the risks and impacts of the GPGT Surveys Program are detailed in Appendix B and summarised in the following paragraphs.

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

The OPGGS Act legislates offshore petroleum activities beyond 3 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.

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

1.8.2 *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (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 that aims to ensure actions taken 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.

As outlined by Section 146(B) of the EPBC Act, separate EPBC approval is not required for this EP.

1.8.2.1 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 GPGT Surveys Program against all relevant recovery plans and threat abatement plans is contained in Section 6.10.

1.8.2.2 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 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 describes the AMPs that are overlapped by the environment that may be affected (EMBA).

The Operational Area does not overlap any AMPs. Activities will be undertaken in an area, the Offshore Borrow Ground, that lies adjacent to the Dampier Marine Park. The survey vessels will not enter the Dampier Marine Park at any time (unless there is an emergency that requires it).

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1.8.2.3 World Heritage properties

Australian World Heritage Properties 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 that World Heritage Properties within Australia are managed in a way that maintains their values. Table 1-4 outlines the principles that are relevant to assessing impacts from the GPGT Surveys Program on World Heritage Properties within the EMBA/Operational Area, which are identified in Section 4.

Table 1-4: 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 4.9 and considered in the assessment of impacts and risks for the GPGT Surveys Program in Section 6. 3.03 (c): Public consultation methods for this EP are outlined in Section 5. Relevant persons consultation and feedback received in relation to impacts and risks to the Ningaloo Coast World Heritage Property, and Murujuga Cultural Landscape World Heritage Property are outlined in Section 4.9 and Appendix F.
	3.04 An action should not be approved if it would be inconsistent with the protection, conservation, presentation or transmission to future generations of the World Heritage values of the property.	3.04, 3.05 and 3.06: 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.	
	3.06 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.	

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

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2. ENVIRONMENT PLAN PROCESS

2.1 Overview

This section outlines the process Woodside follows to prepare the EP once an activity has been defined as a GPGT Surveys Program. 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 Environment Plan process

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

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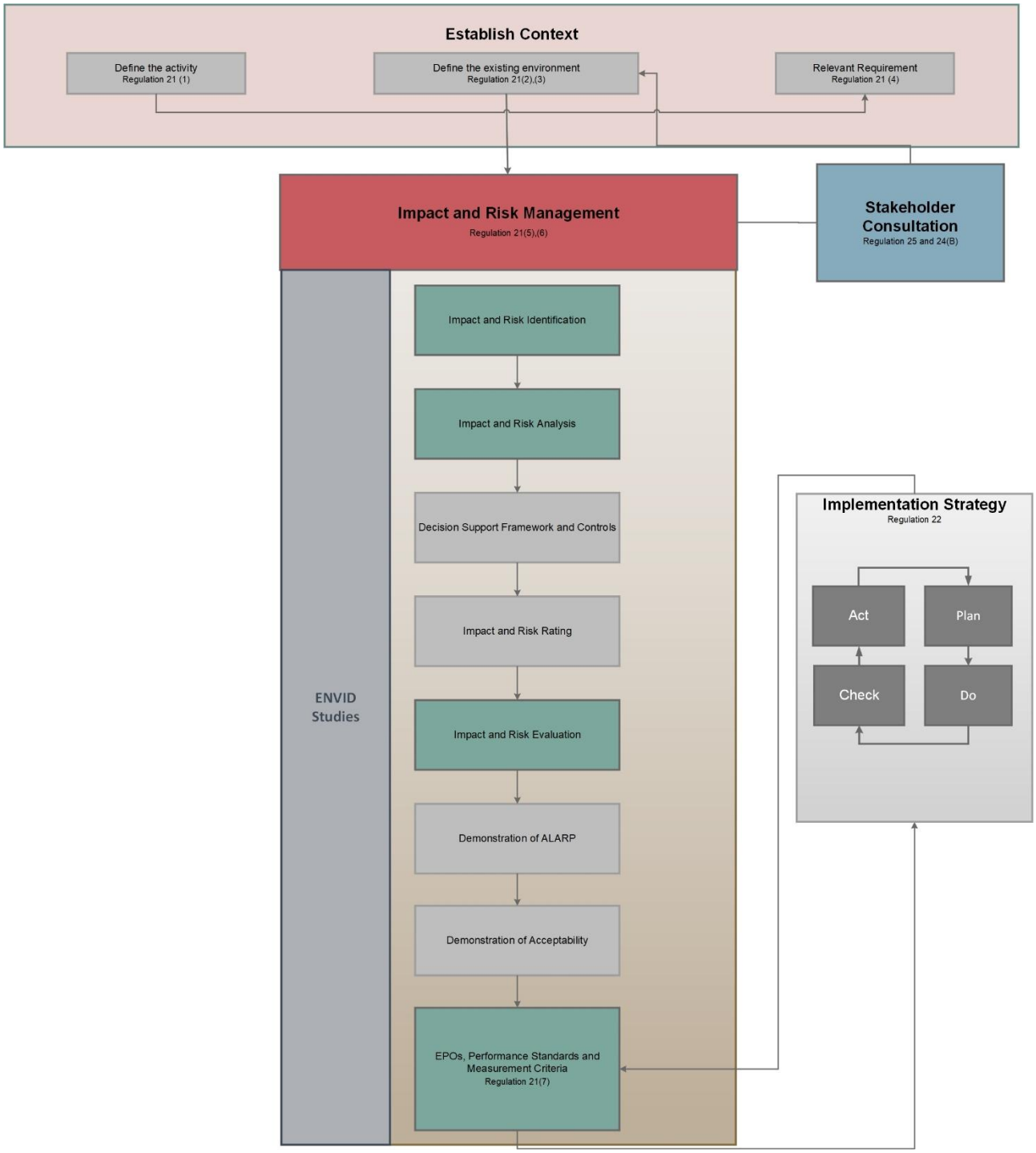


Figure 2-1: Environment Plan development process

2.3 Establish the context

Context is established by considering the proposed activities associated with the GPGT Surveys Program, and the environment in which the activities are planned to take place.

Describing the activity involves the evaluation of whether the activity meets the definition of a ‘greenhouse gas activity’ as defined in the Environment Regulations. The activity is then described in relation to the location, what is to be undertaken and how - this allows for the identification of environmental aspects for each activity.

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2.3.1 Activity description

The EP describes the activity including the following:

- The location or locations of the activity;
- An outline of the operational details of the activity and proposed timetables for undertaking the activity;
- Additional information relevant to consideration of environmental impacts and risks of the activity.

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

This activity is described in Section 3 and is referred to as the GPGT Surveys Program.

2.3.2 Existing environment description

The values and sensitivities relevant to environment where the GPGT Surveys Program is proposed to be undertaken have been identified in Section 3.6, to the extent required to inform impact and risk assessment to environmental receptors from the GPGT Surveys Program.

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

2.3.3 Environmental legislation and other requirements

Relevant legislation and other requirements that apply to the GPGT Surveys Program are presented in Section 1.8 and Appendix B. These requirements have been considered throughout the development of this EP.

2.3.4 Impact and risk management

2.3.4.1 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, including those directly and indirectly associated with the GPGT Surveys Program and potential emergency and accidental events. This may include environment impacts and risks 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, that have the potential for inherent changes to the environment, are termed environmental 'impacts.'
- Unplanned events, including potential emergency and accidental events, that have the potential to result in a change to the environment, are termed environmental 'risks.'

An environmental impacts and risk identification and assessment workshop (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. Impacts and risks were identified, during the workshop, for both planned (routine and non-routine) activities and unplanned (accidents/incidents/emergency conditions) events. During this process, risks identified as not applicable (not credible) were removed from the assessment.

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

The environmental impact and risk assessment presented in this EP has been informed by historic as well as more recent hazard and environmental risk identification studies (e.g. HAZID/ENVID) and consequence modelling studies for high consequence, low probability environmental risks. These studies have been reviewed and revalidated, as required, for the development of a new EP. Further, feedback from NOPSEMA to Woodside across Woodside's portfolio of environment plans has been considered and integrated, where relevant.

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Impacts, risks and potential consequences were identified based on planned and potential interaction with the activity (based on the description in Section 3), the existing environment (Section 4 and the outcomes of Woodside's stakeholder engagement process (Section 5). The environment outputs of applicable risk and impact workshops and associated studies are referred to as ENVID in this EP.

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

Table 2-1: Example of layout of identification of risks and impacts in relation to risk sources

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
Summary of source of impact/risk													

2.3.4.2 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 types A, B and C, which are discussed further below.

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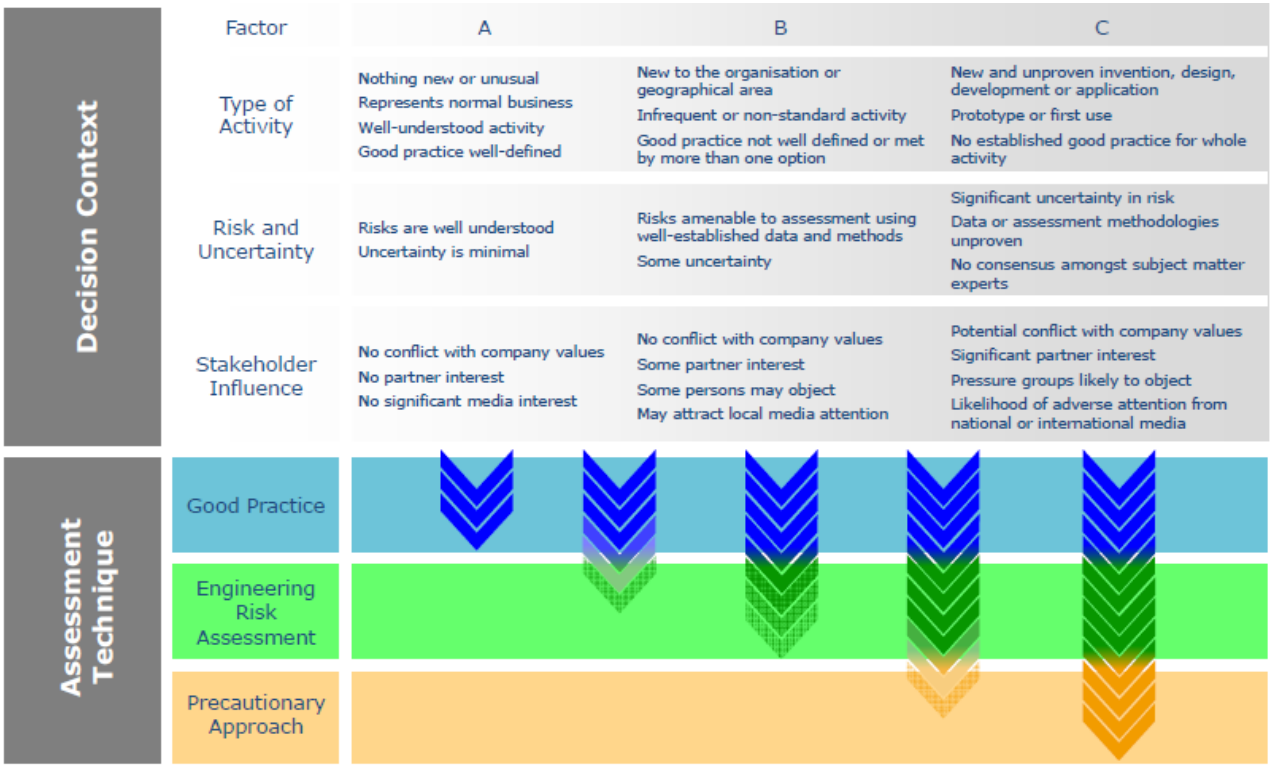


Figure 2-2: Risk-related decision-making framework

Source: (Oil and Gas UK 2014)

2.3.4.2.1 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.

2.3.4.2.2 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.

2.3.4.2.3 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.

2.3.4.3 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.

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- 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 impacts or risks.
- Societal Values (SV): identifies the views, concerns and perceptions of relevant stakeholders and addresses relevant stakeholder views, concerns and perceptions.

2.3.4.4 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.

2.3.5 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:
  - 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.

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

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- 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).

2.3.6 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.

2.3.6.1 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 2-2. 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 2-2: Determination of impact significance level

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

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.

The steps for risk classification are described in the subsections below.

2.3.6.1.1 Select the risk consequence Level

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

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2.3.6.1.2 Select the likelihood level

Error! Reference source not found. describes the possible likelihood levels for each identified risk. Likelihood is determined based on the chance of the selected worst-case consequence occurring, assuming reasonable effectiveness of preventative and mitigative controls.

Table 2-3: Woodside risk matrix likelihood levels

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

2.3.6.1.3 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 **Error! Reference source not found.**.

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

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

2.4 Impact and risk evaluation

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

2.4.1 Demonstration of 'as low as reasonably practicable'

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

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

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.		

2.4.2 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 good industry practice and RBA are used, 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 – the environment consequence and stakeholder acceptability are considered • other requirements – the proposed controls and consequence/risk level are consistent with national and international industry standards, laws and policies, and consideration of applicable plans for management and conservation advices, conventions and significant impact guidelines (e.g. MNES). Additionally, very high and severe risks require 'escalated investigation' and mitigation. If after further investigation the risk remains in the very high or severe category, the risk requires appropriate business engagement, with increasing involvement of senior management in accordance with Woodside's Risk Management Procedure, to accept the risk. This includes due consideration of regulatory requirements.		

2.5 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 (refer Section 1.8.2.1). 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 6.10).
- List all objectives and (where relevant) the action areas of these plans and assess whether these objectives/action areas apply to government, the Titleholder, and the GPGT Surveys Program (Section 6.10).

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- For those objectives/action areas applicable to the GPGT Surveys Program, identify the relevant actions of each plan, and evaluate whether impacts and risks resulting from the activity are clearly not inconsistent with that action (Section 6.10).

2.6 Environmental performance objectives/outcomes, standards and measurement criteria

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

- legislation (such as the OPGGS Act)
- regulator guidance notes such as the Matters of National Environmental Significance– Significant Impact Guidelines (DoE, 2013), or
- specific agreements or expectations with other relevant persons (e.g. fishers or other marine users).

For each evaluated impact and risk, controls adopted during the ENVID and through demonstrating ALARP are paired with activity-specific EPOs, 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.**

2.7 Implement, monitor, review and report

An implementation strategy for the GPGT Surveys Program 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 GPGT Surveys Program 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 GPGT Surveys Program 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.

2.8 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.

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3. DESCRIPTION OF THE ACTIVITY

3.1 Overview

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

3.2 Project overview

Woodside plans to collect high resolution geophysical and geotechnical data within the Operational Area. This data will inform the design of pipeline and umbilical routes, subsea structure foundation locations and planning for MODU anchoring or jack-up rig placement. The GPGT Surveys Program will also support baseline studies, provide data on existing infrastructure and potential future Angel CCS Project activities.

Table 3-1 provides an overview of the GPGT Surveys Program, including location, water depths and key activities.

Table 3-1: Geophysical and Geotechnical Surveys Program overview

Item	Description
GHG and petroleum titles[2]	G-10-AP WA-3-L WA-4-L WA-9-L WA-52-L WA-28-P WA-1-L G-9-AP
Location	North West Shelf
Water depth	Ranges between approximately 35 m and 135 m
Vessels	Multi-purpose and geotechnical vessels (refer to Section 3.9)
Key activities	Geophysical surveys within the Operational Area using: • multibeam echo sounders (MBES), single beam echo sounders, altimeters • side scan sonar (SSS) including variants such as synthetic aperture sonar and interferometric side scan sonar • magnetometers • sub-bottom profilers (SBP), such as but not limited to boomer, sparker, pinger, chirp, and parametric SBP • refraction SBP (including mini airgun) Geotechnical surveys within the Operational Area using: • box cores/grab samplers • shallow cores and probes: piston cores/gravity cores/vibrocores • drilling core holes • piezocone penetrometer testing (CPT/PCPT/CPTu) Other survey equipment being used: • water samplers • sound velocity sensors and multi-parameter conductivity-temperature-depth profilers (CTDs) • ultra-short baseline (USBL) positioning system • doppler velocity log and Inertial navigation systems • underwater cameras

[2] *WA-208-P located in G-9-AP was referenced in Woodside's Consultation Information Sheet (Appendix F) The Exploration Permit has since been surrendered.*

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Item	Description
	• underwater laser scanners • remotely operated vehicles (ROVs) • autonomous underwater vehicles (AUVs)
Other petroleum and GHG titles that overlap the operational areas.	WA-3-L WA-4-L WA-9-L WA-52-L WA-28-P G-9-AP * Applications for short term title and Key GHG operation will be submitted to NOPTA in parallel to support the submission of this EP.

3.3 Location

The GPGT Surveys Program is located in Commonwealth waters on the North West Shelf of Western Australia extending from the Commonwealth/State waters boundary out to the Angel Field located in GHG Assessment Permit G-10-AP. The Operational Area includes the Offshore Borrow Ground (Figure 3-1).

Water depths range from approximately 35 m at the Commonwealth/State waters boundary to 135 m in the Angel Field. A narrow survey corridor extends west out from the Angel Field to petroleum title WA-1-L. The Operational Area is located 7.5 km from the nearest shoreline (Legendre Island) and between 35 km and 140 km to Dampier on mainland WA.

The Offshore Borrow Ground within Commonwealth waters is approximately 30 km², located adjacent to the Dampier Marine Park, although offset by a minimum of 150 m from the park boundaries.

The activities will occur within multiple titles, as shown in Figure 3-1, within the Operational Area, as defined in Section 3.4.

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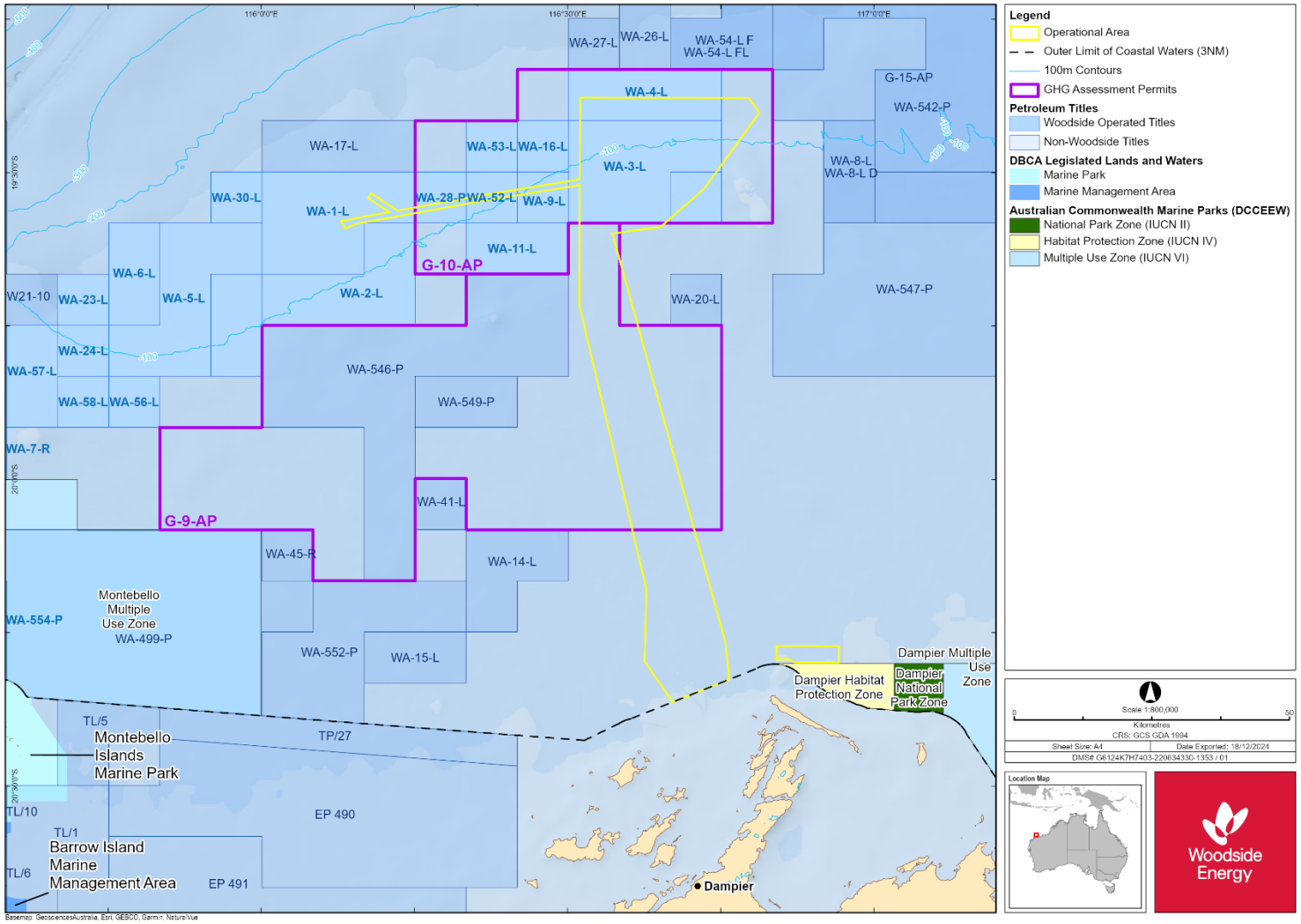


Figure 3-1: Location of the Geophysical and Geotechnical Surveys Program

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3.4 Operational Area

The Operational Area applicable to the scope of this EP is shown in Figure 3-1 (Operational Area). The coordinates of the Operational Area are provided in Table 3-2.

As the exact location of the proposed surveys within the Operational Area may vary during the GPGT Surveys Program, a conservative approach has been employed to assess risks and impacts. This approach considered the existing environment of the entirety of the Operational Area (along with the environment potentially impacted by the credible hydrocarbon spill scenarios) to provide context for the risk assessment (Section 4).

Vessels transiting to and from the Operational Area are outside the scope of this EP. Vessels when outside the Operational Area must adhere to applicable maritime regulations and other requirements. This EP applies to activities undertaken within the Operational Area, as described in this section.

Woodside notes that the Operational Area is larger than the area of GHG Assessment Permit G-10-AP and there are overlapping petroleum titles within G-10-AP. The Angel CCS JV participants will separately seek 'key GHG operations' and 'GHG special authority' approvals.

Table 3-2: Location of Operational Area (GDA94)

Location	Latitude	Longitude
Commonwealth survey area:	19° 31' 34.359" S	116° 43' 22.354" E
Offshore area in Commonwealth waters including GHG and petroleum titles:	19° 35' 18.320" S	116° 39' 06.558" E
	19° 35' 57.638" S	116° 34' 23.093" E
G-10-AP	20° 15' 54.774" S	116° 45' 27.037" E
WA-3-L	20° 19' 33.990" S	116° 45' 50.227" E
WA-4-L	20° 21' 46.789" S	116° 40' 16.961" E
WA-9-L	20° 17' 49.079" S	116° 37' 33.362" E
WA-52-L	20° 10' 42.448" S	116° 37' 42.242" E
WA-28-P	19° 42' 58.071" S	116° 31' 09.470" E
WA-1-L	19° 31' 10.091" S	116° 31' 11.574" E
G-9-AP	19° 31' 19.011" S	116° 30' 38.038" E
	19° 32' 39.510" S	116° 22' 16.080" E
	19° 35' 01.321" S	116° 09' 14.078" E
	19° 35' 26.418" S	116° 08' 14.970" E
	19° 34' 45.208" S	116° 07' 47.574" E
	19° 33' 52.082" S	116° 12' 33.998" E
	19° 32' 28.487" S	116° 10' 27.117" E
	19° 32' 01.775" S	116° 10' 46.702" E
	19° 33' 43.511" S	116° 13' 21.128" E
	19° 32' 07.493" S	116° 22' 09.990" E
	19° 30' 47.223" S	116° 30' 30.517" E
	19° 30' 36.276" S	116° 31' 11.673" E
	19° 22' 40.255" S	116° 31' 13.073" E
	19° 22' 42.119" S	116° 47' 45.355" E
	19° 24' 08.149" S	116° 48' 46.696" E
	19° 31' 34.359" S	116° 43' 22.354" E
Borrow ground	20° 16' 17.851" S	116° 56' 34.716" E
	20° 17' 55.121" S	116° 56' 34.626" E
	20° 17' 54.855" S	116° 52' 14.764" E
	20° 17' 36.215" S	116° 51' 45.215" E
	20° 17' 36.333" S	116° 50' 27.616" E
	20° 16' 17.443" S	116° 50' 27.487" E
	20° 16' 17.851" S	116° 56' 34.716" E

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3.5 Timing

The GPGT Surveys Program is anticipated to commence from ~Q1 2027. Geophysical and geotechnical activities may be completed over several multi-week campaigns split over the five-year period of this EP and could consist of approximately 100 days of survey activities in total. The vessels involved in the activity will be operating 24 hours a day.

Timing and duration may be subject to change due to survey vessel availability, unforeseen circumstances and weather. To allow for some flexibility for contingency purposes, the EP allows for the activities to occur at any time throughout the year and at any time within the calendar years 2027 to 2031. Therefore, this EP has assessed risks relevant to geophysical and geotechnical survey activities in all seasons to provide operational flexibility on project schedule changes and survey vessel availability.

3.6 Geophysical surveys

A geophysical survey is the systematic collection of geophysical data. Survey methods used for the geophysical surveys in this GPGT Surveys Program involve acoustic measurements to characterise the seabed features, seabed morphology and the sub-seabed stratigraphy. A variety of geophysical systems described below may be used depending on seabed soil conditions and required penetration and resolution. Some of the systems act as the transmitter and receiver; others have a separate transmitter and a short hydrophone streamer as a receiver The industry accepted techniques are outlined in Table 3-3 and described in the following sections. These will be adopted to achieve the objectives of the geophysical survey scope.

The geophysical survey techniques may occur anywhere within the Operational Area. Geophysical sources emit sound at a variety of intensities and frequencies depending on the resolution of information required. A summary of estimated source levels and operating frequencies for the proposed geophysical survey techniques is provided in Table 3-3.

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Table 3-3: Acoustic source characteristics of geophysical survey techniques

Geophysical survey technique	Estimated source sound pressure level ($L_{S,P}$) (dB re 1 µPa m/ dB re 1 µPa @ 1 m)	Estimated source peak pressure level ($L_{S,pk}$) (dB re 1µPa m/ dB re 1 µPa @ 1 m)	Estimated sound exposure level ($L_{S,E}$) (dB re 1µPa^2.s @1m)	Proposed dominant frequency range (kHz)
Multibeam echo sounder	210 to 245 [1,2,3,5]	N/A	173 to 188 [2]	150-300 kHz
Side scan sonar	200 to 235 [1,2,5]	N/A	200 [2]	75 to 900 [1,2]
Sub-bottom profiler – Chirp	192 to 210 [2,4,5]	198 to 218 [2,4]	171 to 193 [2, 4]	2 to 30 [1,2,4]
Sub-bottom profiler – Boomer	200 to 206 [2,4]	210 to 217 [2,4]	175 to 180 [2,4]	0.2 to 16 [2,4]
Sub-bottom profiler – Sparker	200 to 220 [1]	N/A	N/A	0.05 to 4 [1]
Refraction source[6]	200 to 245.3[5]	207 to 209[5]	195[5]	<0.01 to 1.4[5]
Ultra-short baseline (USBL) positioning system	184 to 202[1]	N/A	N/A	19 to 34 [1]

1. *Jiménez-Arranz et al. 2017*
2. *Zykov 2013*
3. *MacGillivray et al. 2013*
4. *McPherson and Wood 2017*
5. *Jiménez-Arranz et al. 2020*
6. *It is noted that the acoustic energy emitted by a refraction source is not the same in all directions (similar to the other geophysical survey techniques); the acoustic source is designed to project most of its energy vertically downwards, and as a result pressure levels emitted horizontally are 15 to 24 dB lower (Jiménez-Arranz et al. 2020).*

3.6.1 Multibeam echo sounder

Multibeam echo sounders (MBES), like other sonar systems, transmit sound energy and analyse the return signal (echo) from the seabed or other objects. The sound waves are transmitted from a transducer mounted on the hull of the survey vessel (or ROV/AUV) to produce a fan-shaped coverage of the seabed. The coverage area on the seabed depends on the equipment used, the settings of the equipment and the depth of the water. Typically, coverage is two to four times the water depth (below the transducer). Sound emitted from MBES, including proposed operating frequency and source intensity, is summarised in Table 3-3.

3.6.2 Side scan sonar

Side scan sonar (SSS) is a hydro-acoustic technique. The sensor array comprises a set of transducers which are mounted on either side of a towfish or AUV. The transducers produce a high frequency pulse of sound energy which is formed into the shape of a fan that sweeps the seabed. The return signal (echo) comprises acoustic energy reflected from the seabed and waterborne discontinuities. The strength of the return echo is continuously recorded, creating an ‘image’ of the ocean bottom which can be used to indicate the texture of the seabed. Sound emitted from SSS, including proposed operating frequency and source intensity, is summarised in Table 3-3.

A variation to traditional SSS is synthetic aperture sonar, which uses information from a number of overlapping pulses along the track to digitally combine the received signals to create a virtual array significantly longer than the physical sonar, which improves resolution.

SSS may also use interferometric processing where the sonar has multiple rows in each transducer and can use the phase differencing between the received signals to produce bathymetry data. This is typically useful in shallow water where the SSS would be mounted to the vessel rather than towed.

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3.6.3 Magnetometer

A magnetometer is used to detect ferrous materials on or buried under the seabed by measuring small variations in the earth's magnetic field. This is used to detect anchors, chains, buried pipelines or cables or identify other magnetic anomalies that may require further investigation. The magnetometer is a passive sensor that does not rely on generating a magnetic field but measures perturbations in the ambient total field strength in the environment. The sensor is typically towed behind the SSS.

3.6.4 Sub-bottom profiler

SBPs are devices that convert electrical energy into acoustic energy. They produce an acoustic profile which extends from the seabed down to the limit of penetration. Geophysical surveys use a variety of profilers which operate at differing energy levels and are characterised by different dominant frequencies. Higher energy sources are needed to transmit the acoustic signals to greater depth, but they have correspondingly lower dominant frequencies which reduce the resolution of the resultant record. Hence, the type of profiler used depends on the nature of the substrate, penetration and resolution required. Typical SBP systems associated with this GPGT Surveys Program may include the following:

- Chirp/parametric sub-bottom profiler: A chirp system emits an acoustic signal that includes a sweep through a range of frequencies and amplitudes. The chirp system also acts as a receiver for the reflected signal. The chirp SBP may be hull mounted, contained in a towfish or fitted to an AUV. Parametric sub-bottom profilers combine two slightly different high frequencies transmitted simultaneously to create a low frequency pulse from the interference between the high frequency pulses. The low frequency pulse is comparable in frequency and amplitude to a chirp system but is focused in a narrow beam directed below the transducer.
- Boomer sub-bottom profiler: A boomer SBP system consists of two spatially separated units; the boomer plate acoustic source mounted within a catamaran, and a hydrophone receiver. These are both towed on the surface immediately astern of the vessel, usually on opposite sides. The boomer plate is an electro-mechanical transducer comprising an electrical coil adjacent to a metal plate. A shipboard power supply charges a capacitor which is discharged through the electrical coil causing a magnetic field to repel a metal plate. This energetic motion generates a broad band, high amplitude impulsive acoustic signal in the water column that is directed vertically downward. The hydrophone system consists of individual hydrophone elements located within neutrally buoyant synthetic hydrocarbon filled tubing (approximately 5 L). They typically contain eight to 12 hydrophone elements evenly spaced in a 2.5 to 4.5 m long, 25 mm diameter tube.
- Sparker sub-bottom profiler: A sparker system consists of two spatially separated units; the sparker array acoustic source mounted within a catamaran and a hydrophone receiver. These are both towed on the surface immediately astern of the vessel, usually on opposite sides. The sparker is an acoustic source which uses an electrical arc which momentarily vaporises water between positive and negative electrodes, producing an omni-directional acoustic pulse. The hydrophone system consists of individual hydrophone elements located within neutrally buoyant synthetic hydrocarbon filled tubing (approximately 5 L). They typically contain eight to 12 hydrophone elements evenly spaced in a 2.5 to 4.5 m long, 25 mm diameter tube.

3.6.5 Refraction sub-bottom profiler

Refraction sub-bottom profilers are similar to sub-bottom profilers described above (that use reflection of the acoustic signal) but use the principle of acoustic refraction where the sound path travels along the boundary between sub-bottom layers of different density. The technique requires the acoustic source (usually a mini airgun less than 25 cubic inches) and receive array (neutrally buoyant ~100 m long hydrophone streamer) to be close to the seabed to create the correct geometry. There are several techniques to achieve the precise position of the acoustic source that have limited contact with the seabed:

- The acoustic source is mounted in positive buoyant canister, towed ~1 to 2 m above the seabed. A wire strop or chain is dragged to provide the down force to keep the canister at the desired height. As the towing force acts to lift the canister more of the wire strop is lifted off the seabed increased weight acting on the canister and balancing the altitude of the canister at the required height.

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- The acoustic source can be mounted in a small skid/sled to maintain the offset from the seabed. The skid is ~0.5 m wide and consists of two narrow (<50 mm diameter) steel pipes that will contact the seabed along the tow path.

The neutrally buoyant streamer is towed behind the source.

3.6.6 Geophysical equipment deployment

A survey vessel, together with a towfish and/or towed catamaran (Figure 3-2), will be used to deploy geophysical sources and collect data. An ROV or AUV may be deployed with a payload of applicable sensors. Proposed deployment methods are summarised in Table 3-4 and illustrated in Figure 3-2 and Figure 3-3. Depending on the method of deployment, geophysical sources can sit at a variety of locations within the water column (Table 3-5).

Table 3-4: Proposed geophysical survey equipment deployment method

Geophysical survey technique	AUV/ROV	Towfish	Towed catamaran	Hull mounted
MBES	✓			✓
SSS	✓	✓*		✓***
Magnetometer	✓	✓		
USBL	✓**	✓**		✓**
SBP – chirp	✓	✓		✓
SBP – boomer			✓	
SBP – sparker			✓	

** Towfish can also attach several acoustic sources, including side scan sonar or chirp.*

*** USBL has a hull mounted or towed transceiver.*

**** SSS may be hull mounted for shallow typically <30 m water depths.*

Table 3-5: Proposed geophysical survey equipment deployment depth

Geophysical survey technique	AUV	Towfish	Towed catamaran	Hull mounted
Deployment depth	35 m above seabed (nominal)	10 to 20 m above seabed	Within 1 m of surface	Dependent on draft of vessel (approximately 10 m)

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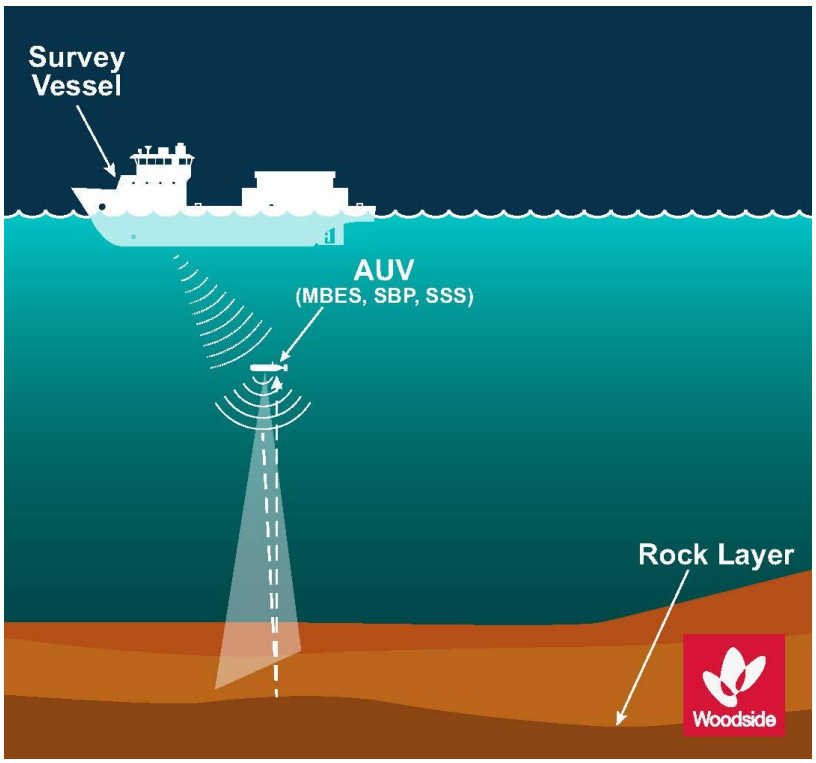


Figure 3-2: Deployment of geophysical equipment via autonomous underwater vehicle

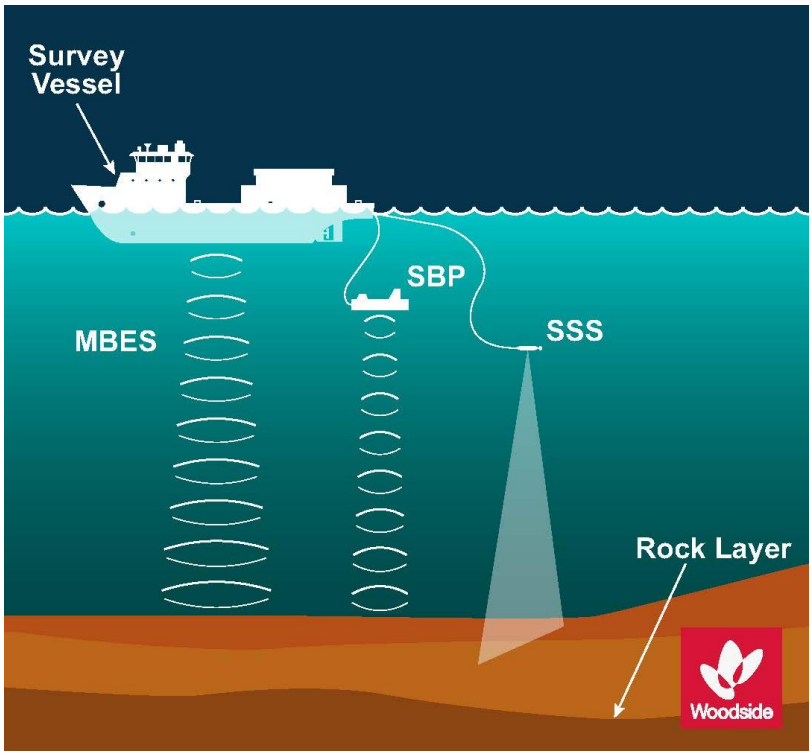


Figure 3-3: Deployment of geophysical survey equipment from a survey vessel

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3.7 Geotechnical surveys

The geotechnical surveys will be performed using standard industry equipment and will consist of in situ testing and the recovery of soil/rock samples at locations within the Operational Area to ground truth existing geophysical data and provide geotechnical data for engineering design.

The geotechnical survey methods that are expected to be used during the GPGT Surveys Program include but are not limited to:

- penetration testing
- cored borehole
- piston core /gravity core and vibrocore sampling
- box core and grab sampling.

Each of these methods are described in the following sub-sections.

3.7.1 Penetration testing

Penetration testing involves pushing a penetrometer (probe) into the seabed at a constant rate of penetration, and continuously measuring resistance, friction and pore pressure. The piezocone penetration test (PCPT/CPTu) is performed most frequently. In suitable seabed sediments, the cone penetrometer can be replaced with a T-bar penetrometer or ball penetrometer to continuously measure resistance, friction and pore pressure during both the push-in and pull-out phases of the test. Figure 3-4 shows the probes that may be used for the GPGT Surveys Program.

When the required final penetration depth is reached, all equipment is withdrawn from the seabed. A small hole will remain in the seabed, which will eventually collapse and infill as surface sediments move in the ocean current. The hole remaining in the seabed immediately after test completion will depend on the geometry of the type of penetrometer used:

- piezocone penetrometers: about 25 mm to 40 mm (diameter)
- T-bar penetrometers: a slot of about 40 mm × 250 mm
- ball penetrometers: about 56 mm to 133 mm (diameter).

PCPT testing will generally be undertaken to depths of between 3 m and 35 m below the mudline. Sub-seabed conditions in Operational Area may include cemented layers that prevent the penetration of the PCPT equipment to the required depth. Depending on the depth and thickness of any cemented layer, it may be necessary to continue the PCPT in order to investigate the conditions below. This would be done by drilling through the cemented layer and the diameter of the drilled hole would depend on the type of equipment utilised (80 mm to 125 mm) The section within a borehole subject to drilling would probably remain open but depending on the layer depth below seabed may eventually infill with the movement of surface sediments in ocean current.

PCPT testing may be undertaken using a remotely operated subsea frame positioned on the seabed and capable of continuously driving the probe to target depth or from a remotely operated subsea drilling rig as described in Section 3.7.2. Alternatively, the testing may be undertaken from the surface on a vessel, as described in Section 3.7.2.

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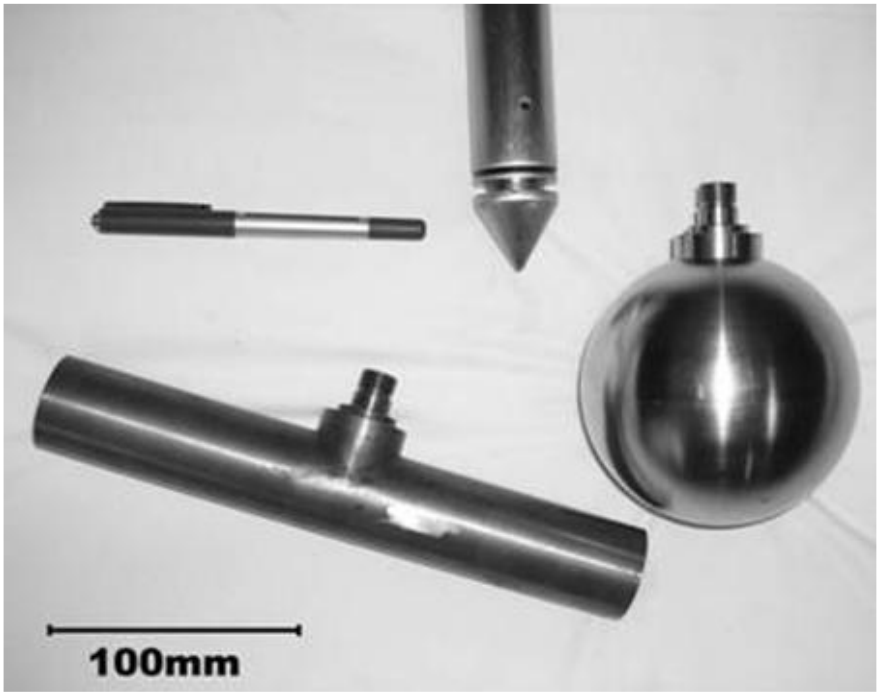


Figure 3-4: Examples of piezocone, T-bar and ball penetrometers

3.7.2 Cored borehole

Some boreholes will be required at the proposed rig sites to recover physical samples at greater depths than can achieved using piston core sampling (Section 3.7.3) and especially where significant layers of cemented material are present. The equipment used to drill each borehole could involve drilling from the sea surface from a vessel (Figure 3-2), where drilling takes place through a riser spanning the water depth and which is slotted into a base frame located on the seabed (Figure 3-6). The drilling vessels generally have a length of less than 100 m and always have dynamic positioning capability.

In the first case, the borehole is advanced by either push sampling (thin or thick-walled tubes) at intervals or PCPT testing (Section 3.7.1), each interval followed by drilling to each completed depth using a bit of diameter approximately 125 mm. Where cemented layers are encountered, coring equipment is used to recover representative samples for those layers. In some cases, depending on the strength of the formation, the borehole may need to be stabilised by running sufficient casing to span the weak formation. Drilling mud is generally used in the process, in order to lubricate the drill bit, keep the borehole stable and hopefully preclude the necessity for casing. Seawater is the primary constituent of geotechnical drilling fluids. In suitable seabed sediments the base fluid (seawater) can be used as the drilling fluid. However, often one or more drilling fluid additives are mixed with the base fluid to produce a drilling fluid with the appropriate properties for the seabed conditions. The geotechnical survey would involve discharge of a small amount of drill cuttings and associated fluids to the marine environment at seabed level. The drill fluid additives will only be known after the contract is awarded and the specific type of seabed coring is confirmed. However, all drilling fluid products proposed by the geotechnical contractor will be assessed by Woodside using the Chemical Selection and Assessment Environment Guideline prior to approval for use.

The second case involves deploying a self-contained drilling unit to the seafloor rather than using a dedicated vessel. In this scenario there is no drill pipe between the vessel and the seafloor and only a combined lifting wire and umbilical runs from the drill unit up to the vessel. Apart from being remote from the vessel this is a similar operation where the drilling unit can provide either core samples or CPT investigations using a combination of drilling and pushing the CPT probe through the drill pipe.

The seafloor units typically use a smaller diameter pipe and do not always need the use of drilling mud.

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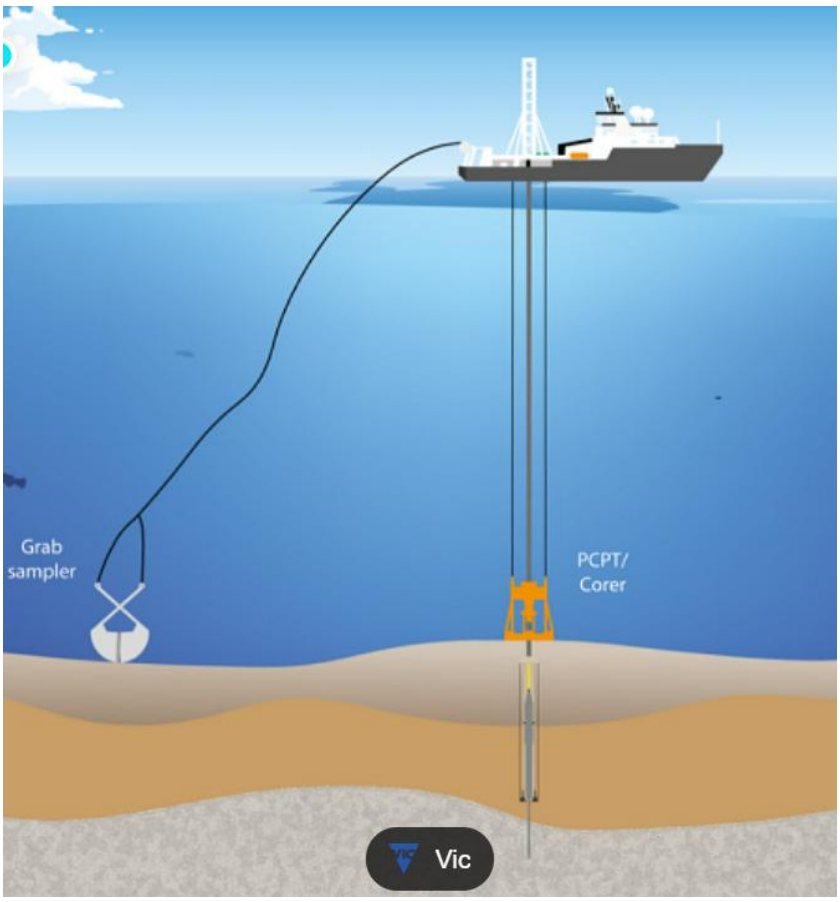


Figure 3-5: Geotechnical drilling and testing from a vessel

Source: Victoria State Government, 2021

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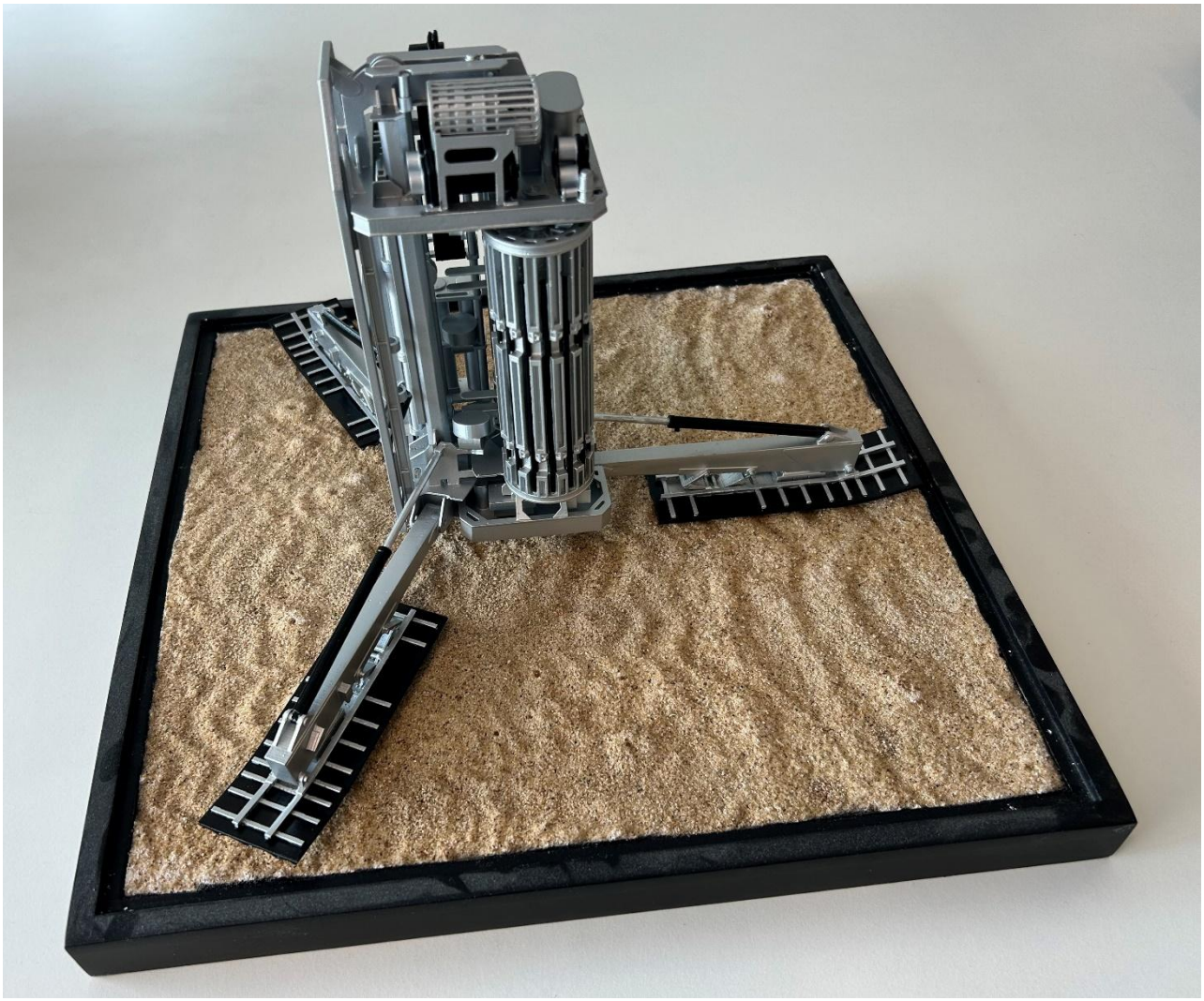


Figure 3-6: Model of a typical remote subsea drilling rig (not to scale)

3.7.3 Piston core and vibrocore sampling

Piston coring is normally used on soft, unconsolidated sediments. A piston corer is lowered by wire rope to the seabed, at approximately 1 m/s so the duration of lowering and recovery operation is short (minutes at each site). It has a counterweight attached to a trigger device that hits the seabed to release the corer allowing it to freefall a set distance and the momentum drives the core barrel into the seabed (Figure 3-8). As the barrel enters the sediment, a special internal piston creates a vacuum and helps to draw the core into the barrel. This suction reduces compaction of the sample in the inner sleeve. Core catchers prevent the sediment from coming out of the coring tube. The leading edge of the coring tube is tapered to minimise disturbing the sample and seabed. Sampling itself is of short duration, typically approximately 15 minutes at each location.

When the depth of sampler refusal is reached, all equipment is withdrawn from the seabed. A small hole will remain in the seabed, which if does not collapse immediately, will infill with time. Typically, the hole left in the seabed will be proportional to the geometry of the sample tube (i.e. typically 3 m depth by 105 mm diameter).

Piston core samples are typically 72 to 105 mm in diameter and 1 m to 6 m in length (Figure 3-10).

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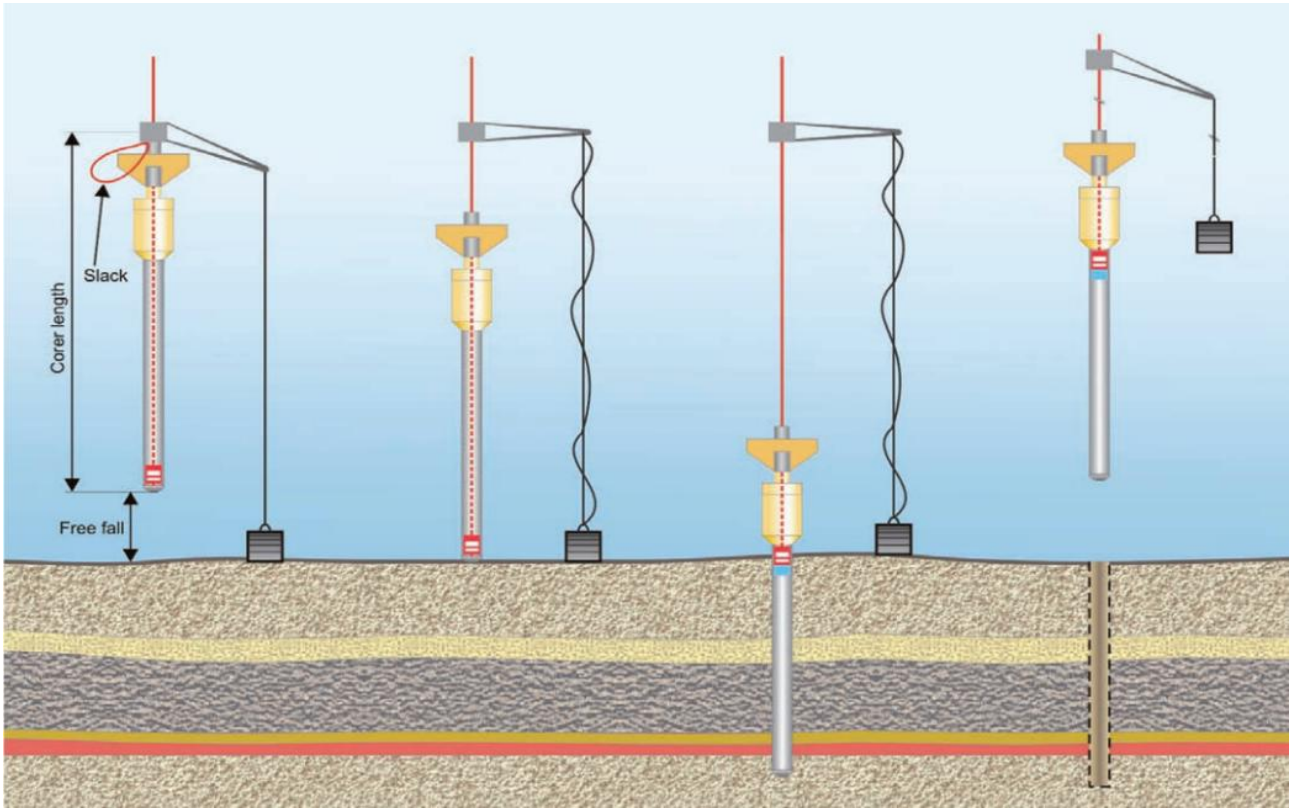


Figure 3-7: Example of a geotechnical piston corer

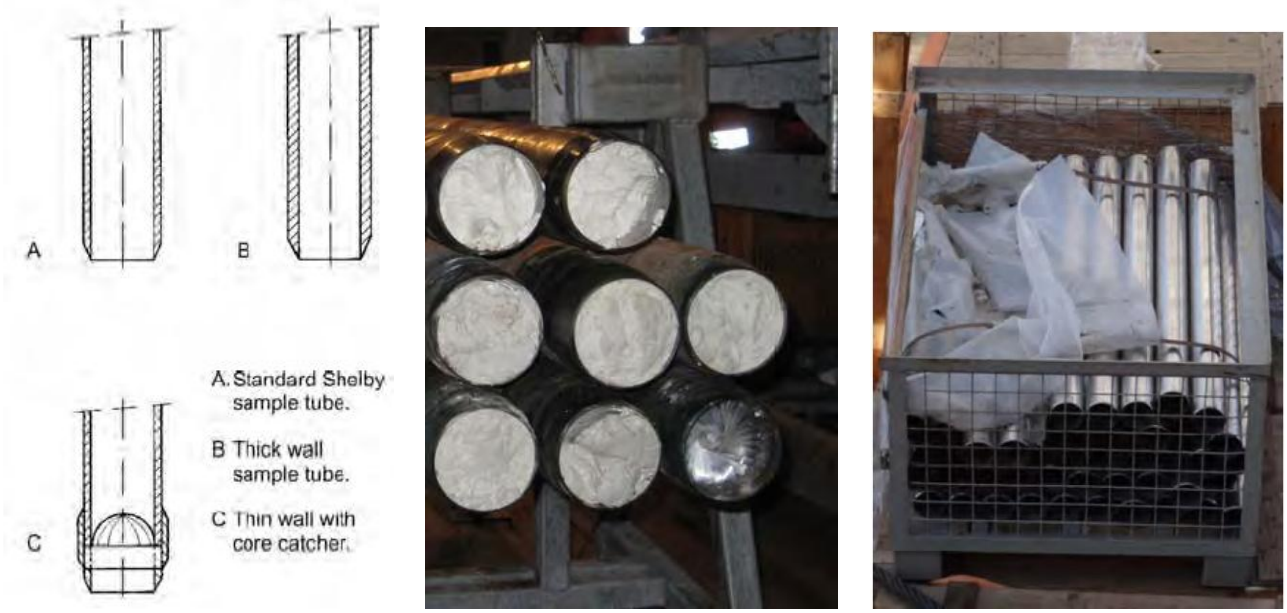


Figure 3-8: Examples of geotechnical piston core sample tubes

A vibrocore achieves a similar sample to a piston core but rather than using free fall momentum to drive the core barrel into the seabed, a vibrocore uses a motor above the barrel to vibrate the corer and the weight helps drive the barrel into the sediment. The sample is typically more disturbed, but the method produces better seabed penetration in sandy soils where a piston corer is of limited use.

3.7.4 Box core and grab sampling

Box core samplers (Figure 3-9) are designed to recover bulk, undisturbed samples of soft surficial material. Box dimensions of 0.5 m by 0.5 m by 0.5 m are typically used for offshore geotechnical surveys. The box

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corer is mounted on a frame, which is lowered to the seabed. A self-releasing trigger mechanism, initiated once the frame reaches the seabed, allows the box corer to penetrate into the seabed. Penetration is limited by a stopper to 0.5 m depth.

The volume of sample recovery is typically approximately 0.125 m³.



Figure 3-9: Examples of box core samplers

3.8 Water sampling and profiling

3.8.1 Water sampling

Discrete water samples may be taken from desired water depths using for example a Niskin or Van Dorn water sampler. The samplers are deployed to the desired depth by hand or using a winch.

3.8.2 Water profiling

Water profiling can be used with a variety of sensors to establish for example: water temperature, conductivity, turbidity, pH and dissolved oxygen level, at differing depth through the water column. The profiler is lowered through the water column by hand or using a winch. After the desired depth is reached the profiler will be recovered to the deck and recorded data downloaded.

3.9 Vessels

3.9.1 Survey vessels

Several types of survey vessels will be required to complete the activities associated with the GPGT Surveys Program. A multi-purpose survey vessel will be used that can conduct geophysical surveys, ROV survey operations and light geotechnical operations. Other vessels will be used to undertake geotechnical surveys such as a geotechnical drilling vessel. A conservative approach has been employed to select vessel parameters to assess the risks and impacts. Uncrewed surface vessels are controlled from a remote operations centre and are likely to replace conventional vessels for numerous survey tasks over the life of

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the EP. The uncrewed surface vessels are typically significantly smaller than a crewed vessel of equivalent capability offering a reduced environmental impact.

Conservative details for survey vessels are provided in Table 3-2.

Table 3-6: Typical survey vessel parameters

Purpose	Length (overall)	Maximum persons onboard	Fuel type	Largest tank size
Geophysical survey	65 m	40	Marine diesel	150 m³
Geotechnical survey[1]	100 m	60	Marine diesel	150 m³

1. A vessel used to deploy subsea geotechnical investigation drilling equipment is likely to have similar characteristics.

It is feasible, although unlikely, that two vessels will perform surveys in the Operational Area at any one time.

Geotechnical vessels may hold station in the Operational Area using dynamic positioning (DP) with Class 2 capability as a minimum. No anchoring is planned within the Operational Area. A typical geotechnical survey vessel is shown in Figure 3-10.

All survey vessels are required to pass a Woodside marine assurance inspection audit (to audit compliance with safety management requirements and marine compliance laws) and operate in accordance with Woodside's HSE policies.

Vessels will mobilise and demobilise either from international waters or domestically from within Australia and will comply with the relevant maritime safety requirements and marine order requirements as appropriate for the vessel. Port calls may be required, to change crew or reconfigure the vessel to use different survey equipment (for example between the completion of the geophysical and commencement of the geotechnical surveys). No bunkering at sea will be performed as part of the GPGT Surveys Program. Any bunkering would be performed during a port call, out of the scope of this EP.

Vessels associated with the GPGT Surveys Program are to comply with this EP when they are within the Operational Area. When vessels associated with the GPGT Surveys Program are transiting to or from the Operational Area they are to comply with applicable maritime regulations, laws and other relevant requirements.

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Figure 3-10: Typical geotechnical investigation vessel

3.9.2 Autonomous underwater vehicles

An AUV is a self-propelled submersible vehicle that tracks a programmed course. An AUV is not tethered to the survey vessel and typically returns to the vessel to change batteries, download data and receive mission planning (new course program). Typically, the vessel USBL system will be used to track the AUV during a dive and to communicate with the vehicle using acoustic telemetry. AUVs have options to include additional payloads such as synthetic aperture sonar, forward looking sonar, turbidity sensors, doppler velocity log and digital cameras.

3.9.3 Remotely operated vehicles

An ROV is a tethered underwater vehicle. ROVs can be fitted with various tools and are fitted with camera systems (still/video). Additional sensors may include, altimeter, doppler velocity log, laser scanners, manipulator use to take sediment or water samples, or pipe trackers to locate buried cables or pipes.

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4. DESCRIPTION OF THE EXISTING ENVIRONMENT

4.1 Overview

In accordance with Regulations 21(2) and 21(3) of the Environment Regulations, this section describes the existing EMBA by the 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 and/or socio-cultural 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 scenario. The ecological impact thresholds used to delineate the EMBA are defined in Section 6.9.1.2. The worst-case credible spill scenario for this EP is accidental vessel collision resulting in a breach of survey vessel fuel tanks. The EMBA also includes any areas that are predicted to experience shoreline contact with hydrocarbons above threshold concentrations. For the purpose of this EP, the EMBA is based on the combined outcome of quantitative hydrocarbon spill modelling of one vessel collision scenario at two different locations within the Operational Area: one offshore and one at the State waters boundary.

Woodside recognises that hydrocarbons may be visible at lower concentrations than the ecological impact thresholds defined in Table 4-1. These visible hydrocarbons have the potential to cause socio-cultural impacts. In respect to this, the EMBA also includes hydrocarbon thresholds where socio-cultural impact could occur. Receptors relevant to the socio-cultural hydrocarbon thresholds include cultural values and heritage, Commonwealth and State marine protected areas (MPAs), National and Commonwealth Heritage Listed places, areas of tourism and recreation, and commercial and traditional fisheries. For this EP, the socio-cultural hydrocarbon thresholds for surface hydrocarbons encompasses an area wider than the EMBA for ecological impacts. The EMBA and socio-cultural EMBA are shown in Figure 4-1 and described in Table 4-1. The combined EMBA is shown in Figure 4-2.

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

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

Hydrocarbon type	Ecological hydrocarbon thresholds[1]	Socio-cultural hydrocarbon thresholds[1]	Planning area for 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 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 2019). This area is described further in Appendix G. In the event of a spill, DNP will be notified of AMPs that may be contacted

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Hydrocarbon type	Ecological hydrocarbon thresholds[1]	Socio-cultural hydrocarbon thresholds[1]	Planning area for scientific monitoring
Entrained	100 ppb This represents potential toxic effects, particularly sublethal effects to highly sensitive species (NOPSEMA 2019). As entrained hydrocarbons are within the water column and not visible, impacts to socio-cultural receptors are associated with ecological impacts. Therefore, entrained hydrocarbons at this threshold also represent the level at which socio-cultural impacts may occur.		by hydrocarbons at this threshold (Table 7-5).
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 6.9.1.2.

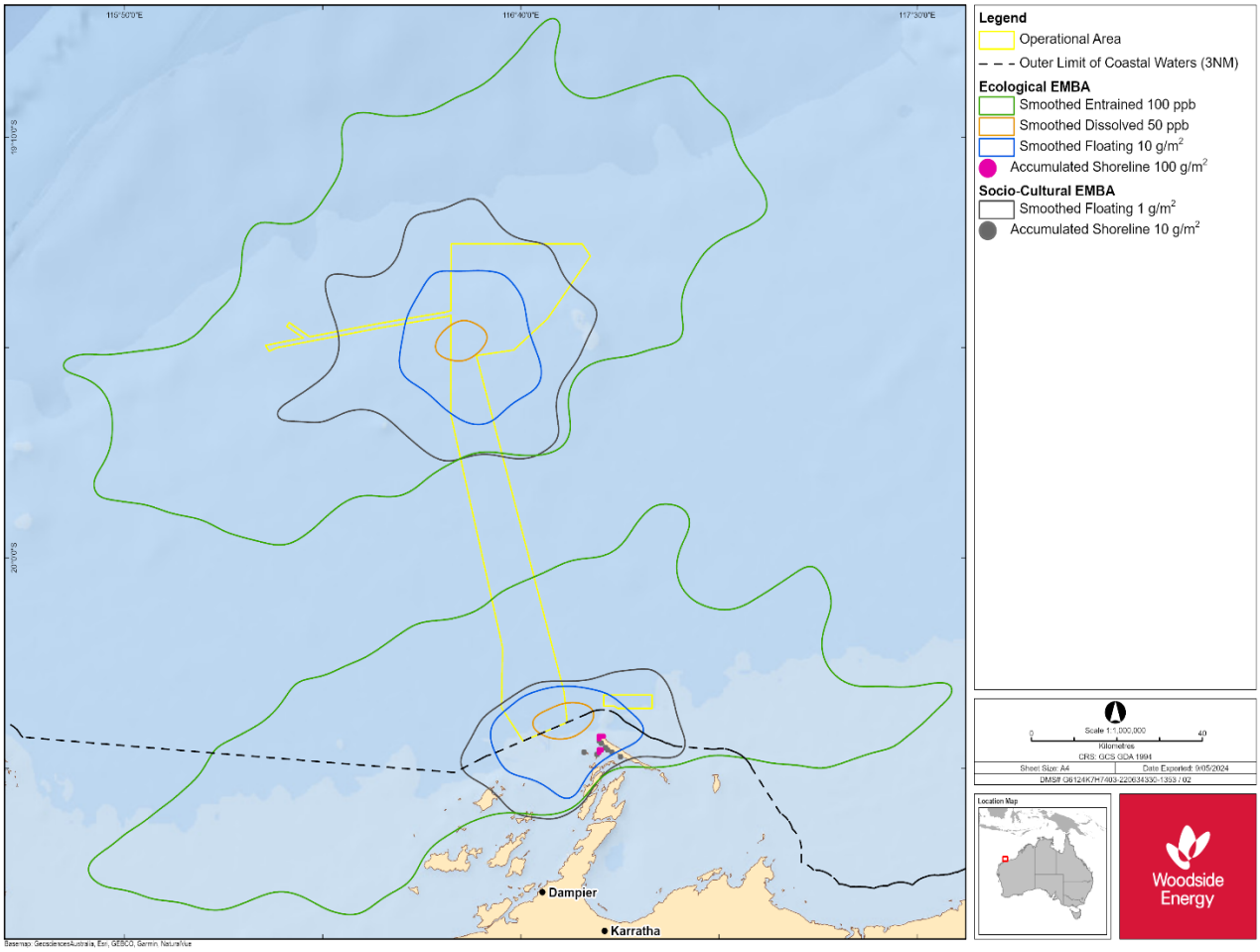


Figure 4-1: EMBA by the Geophysical and Geotechnical Surveys Program

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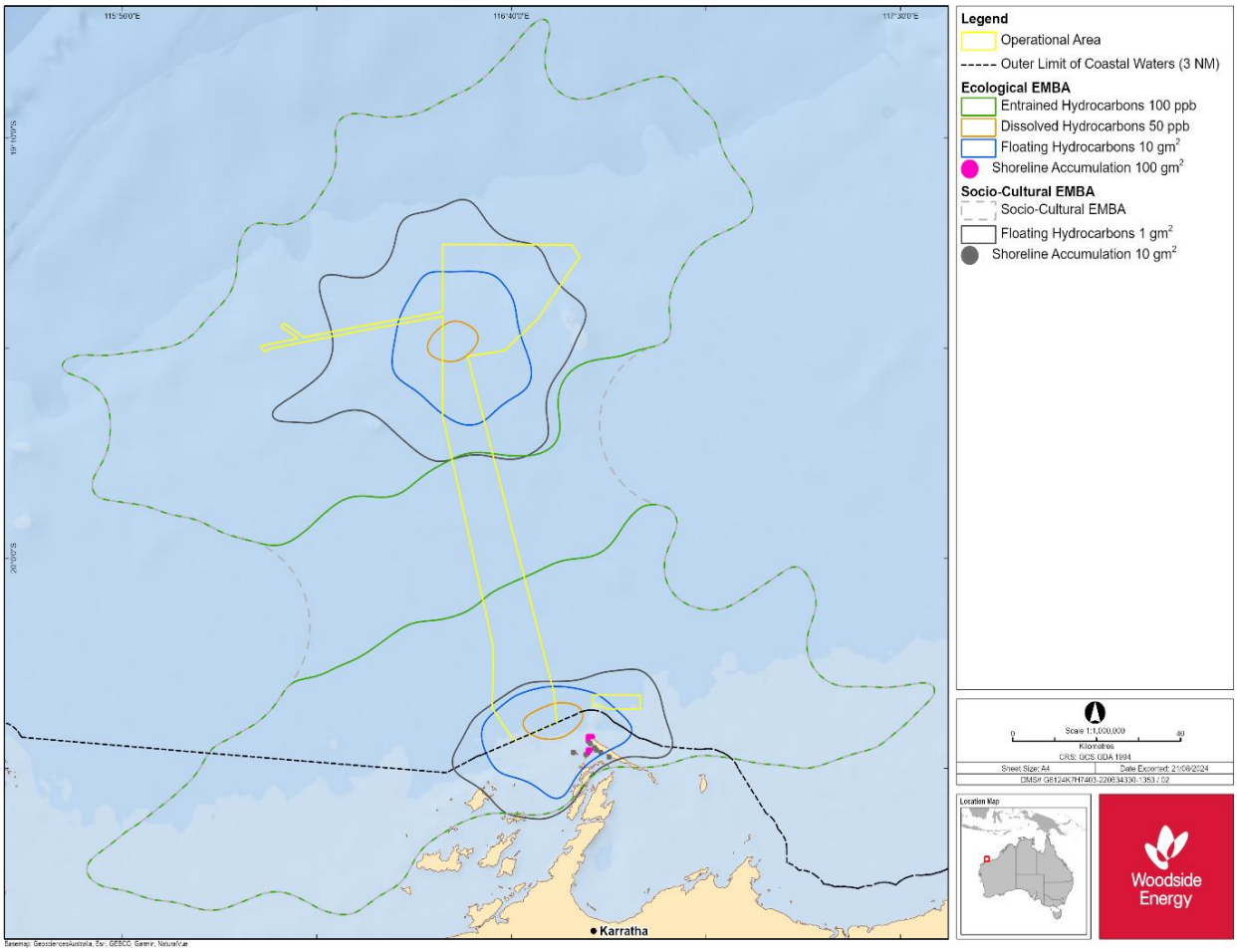


Figure 4-2: Combined EMBA by the Geophysical and Geotechnical Surveys Program

4.2 Regional context

The Operational Area is located in Commonwealth waters within the North-west Marine Region (NWMR), as defined under the Integrated Marine and Coastal Regionalisation of Australia (IMCRA v4.0) (Commonwealth of Australia 2006), in water depths of approximately 200 m. Within the NWMR, the Operational Area lies within the Northwest Shelf (NWS) Province (Figure 4-3). Woodside's Existing Environment (Appendix C) summarises the characteristics for the relevant marine bio-regions.

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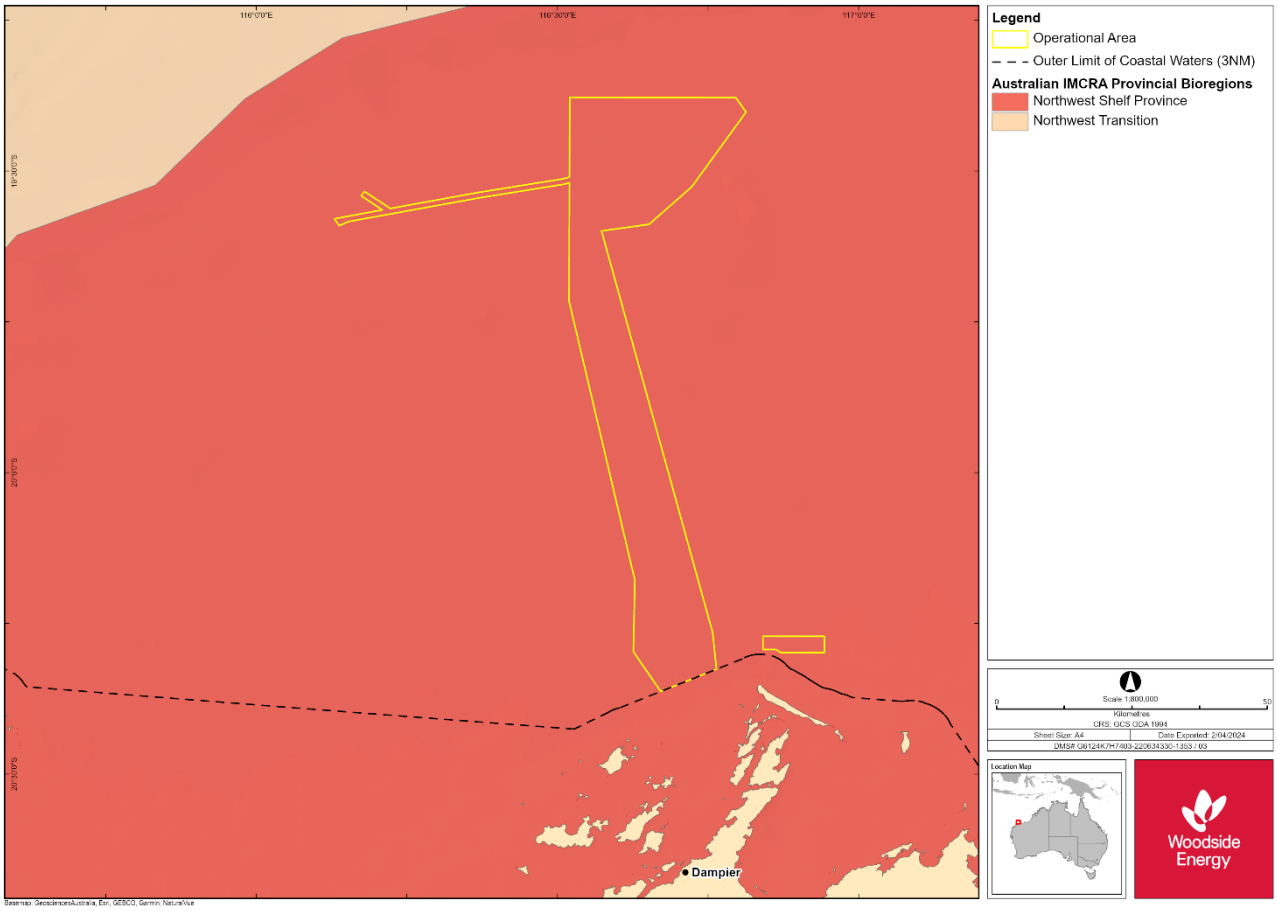


Figure 4-3: Location of the Operational Area and relevant marine bio-regions

4.3 Matters of national environmental significance (EPBC Act)

Table 4-2 summarises the matters of national environmental significance (MNES) overlapping the Operational Area 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 Area or EMBA. To ensure the accurate consideration of any impacts from the GPGT Surveys Program on MNES, shapefiles (provided for by Department of Climate Change, Energy, the Environment and Water [DCCEEW]) have been assessed using Geographic Information System software to determine the actual presence and distance to MNES.

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

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Table 4-2: Summary of relevant matters of national environmental significance identified by the EPBC Act Protected Matters Search Tool as potentially occurring within the Operational Area and EMBA

MNES	Number of MNES in Operational Area	Number of MNES in EMBA	Relevant section
World Heritage Properties	0	1	Section 4.9 Section 11.2 of the Master Existing Environment (Appendix C)
National Heritage Places	0	1	
Wetlands of International Importance (Ramsar)	0	0	Section 4.9 Sections 4 and 5 of the Master Existing Environment (Appendix C)
Commonwealth Marine Area	2	2	
Listed Threatened Ecological Communities	0	0	
Listed Threatened Species	26	32	Section 4.6 Sections 3 to 8 of the Master Existing Environment (Appendix C)
Listed Migratory Species	41	54	

4.4 Physical environment

The Operational Area lies in waters approximately 35 m to 135 m deep on the continental shelf (Figure 4-4). The bathymetry within the Operational Area is generally flat, which is consistent with the broader NWS Province shelf region (Baker *et al.* 2008). The seabed has a gentle (0.05°) seaward gradient, extending to a 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 summarises the physical characteristics of the environment within the EMBA.

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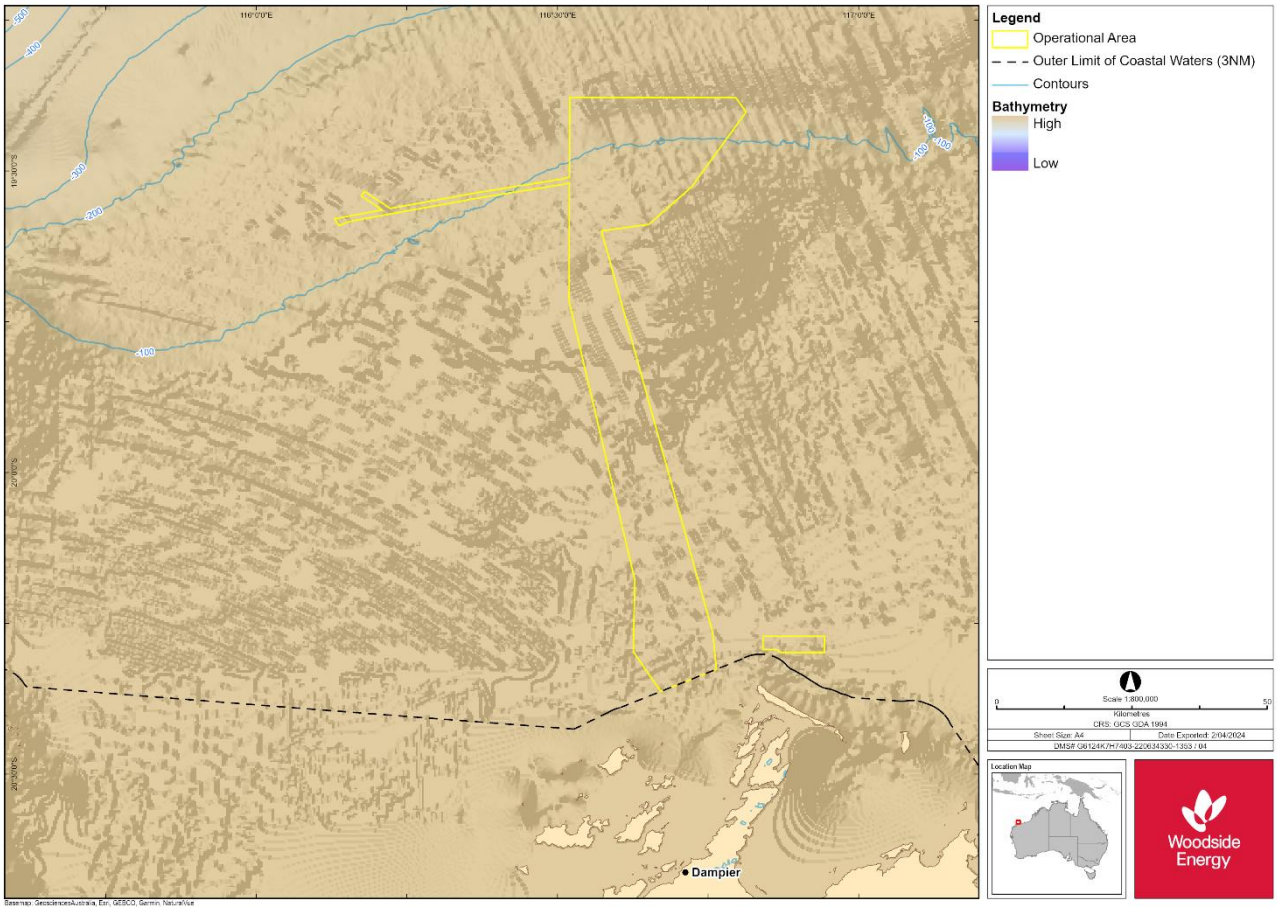


Figure 4-4: Bathymetry of the Operational Area

4.5 Habitats and biological communities

Sediments in the Operational Area are broadly consistent with those in the NWS Province, as found in a survey conducted by BMT in 2021 around the Angel facility which found across all sites tested, the sediments collected were predominantly well sorted, yellow/brown coloured fine to coarse sand with large proportions of shell fragments (BMT 2021). Based on surveys conducted in 2014, as part of the Lambert Deep baseline investigations the sediment surveyed within the Operational Area are classified as sub-littoral sediments predominantly coarse silt and some shell fragments with burrows, mounds, polychaetes and occasional hydroids, interspersed with areas of muddy sand and occasionally polychaetes and sparse epibiota (Jacobs 2014).

This is reasonably consistent with the Woodside sampling programs undertaken at Glomar Shoals and the Goodwyn Alpha (GWA) platform (AIMS 2014, BMT Oceanica 2015). 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).

Approximately 18.34% of the Glomar Shoals KEF is overlapped by the Operational Area, in water depths between approximately 26 and 70 m (Figure 4-11). These submerged shoals are large (215 km²), complex bathymetrical features on the outer continental shelf off the Pilbara. The shoals rise 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 shoals 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.

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Glomar Shoals has been identified as a KEF of the continental shelf within the NWMR, based on its regionally important habitat supporting high biological diversity and high localised productivity (Falkner *et al.* 2009). On a regional level, the Glomar Shoals KEF is also known to be an important area for a number of commercial and recreational fish species.

Benthic habitats of the Glomar Shoals KEF 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 (Abdul *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. The results of a baseline survey and habitat modelling, undertaken by Australian Institute of Marine Science (AIMS) in 2013, indicate that the portion of the Glomar Shoals KEF overlapping the Operational Area 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 Shoals KEF.

Overall, the benthic habitats of the Glomar Shoals KEF are considered pristine and hosts regionally distinct ecological communities. The fish abundance and diversity of the demersal fish communities of the Glomar Shoals KEF 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 the Glomar Shoals KEF are considered comparable with other reefs and the submerged shoals and banks in the region (Abdul *et al.* 2018).

The Operational Area overlaps 1.28% the Ancient Coastline KEF, which is an ancient, submerged coastline, with areas of hard substrate which has the potential to provide habitat that supports the KEF's higher diversity and enhanced species richness, comparatively 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. However, from five sample locations within the Operational Area conducted in 2014 as part of the Lambert Deep baseline surveys, two overlap the Ancient Coastline KEF, with no areas of habitat characterised by hard substrate found within the Angel Operational Area (Jacobs 2014). The sediment identified within the samples that are found within both the Operational Area and the Ancient Coastline KEF are characterised by sublittoral sediment with a mix of coarse silt and fine sand.

Although several areas with sensitive habitat and features are present within the EMBA and Operational Area, the majority of the seabed is characterised by relatively expansive areas of featureless sandy substrate.

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

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Table 4-3: Habitats and communities within the EMBA

Habitat/community	Key locations within the EMBA
Seabed characteristics	
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 the Operational Area. 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 overlaps the Operational Area. Areas of this KEF comprise hard substrate and may occur within the Operational Area. Hard substrate seabed habitats present within the Operational Area are likely to support filter feeding biota such as sponges and gorgonians (sea whip and fans), as reported for hard substrate seabed habitat in similar water depths along this outer shelf area of the NWS. 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 (Jacobs 2014, Fugro Survey 2002). Observations of old dead coral fragments and coral rubble were made at these same two sample locations during the 2014 survey (Jacobs 2014). A reconnaissance survey undertaken of the pipeline route linking the Angel platform and North Rankin Complex indicated occasional outcrops of cemented substrate occur in localised depressions and identified a plateau-like structure up to 4 m higher than the flat, unconsolidated soft sediment seabed habitat of the south-west section of the proposed pipeline route (SKM 2006), further supporting the potential for sparse outcrops of hard substrate within the Operational Area, which is predominantly composed of a flat, unconsolidated soft sediment seabed habitat.
Marine primary producers	
Coral and reef habitat	Locally significant coral reef habitat within the EMBA includes: • Glomar Shoals (overlaps Operational Area) • Dampier Archipelago. Coral communities of the Dampier Archipelago predominantly occur as narrow linear features fringing the shorelines of islands and the Burrup Peninsula, typically between 2 m and 10 m mean lower low water (Blakeway and Radford 2005, Jones 2004). The fringing reefs are not true coral reefs; they establish and grow on existing hard substratum (Jones 2004, WorleyParsons 2009). Corals are recognised as important to Traditional Custodians for attracting fish and other marine organisms, the potential for symbiotic relationships between fish and corals, and for their aesthetic values (Jones 2004). Coral communities at Withnell Bay, Conzinc Bay and south-west of Legendre Island were specifically noted by Traditional Custodians (Jones 2004).
Mixed communities	The Pilbara region has a very high diversity of marine sponges (Fromont *et al.* 2016); 275 sponge species have been recorded within the Dampier Archipelago. Surveys conducted by Fromont (Fromont 2004) found the highest diversity of sponges in the Dampier Archipelago occurred in sponge communities that were either low relief or pavement habitats, often with a sediment layer with strong tidal currents. Generally, the high habitat complexity of the Dampier Archipelago corresponds with high sponge species richness, contributing to the high biodiversity value of the nearshore environment of the Pilbara region (Fromont *et al.* 2016). MScience (2018) grouped sponges, soft corals and other such biota occurring together, classifying them as mixed communities.

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Habitat/community	Key locations within the EMBA
Seagrass beds and macroalgae	Seagrasses are unlikely to occur in the Operational Area due to water depths but may be present in the shallower waters of the EMBA. Seagrasses in the Dampier Archipelago are generally sparse, occurring in low abundance on shallow sandy sediments in sheltered areas and interspersed with other benthic communities and habitats (Jones 2004, Department of Conservation and Land Management (CALM) 2005, MScience 2014). Surveys and studies of the region have identified nine species: *Cymodocea angustata, Enhalus acoroides, Halophila decipiens, H. minor, H. ovalis, H. spinulosa, Halodule uninervis, Thalassia hemprichii* and *Syringodium isoetifolium* (McMahon *et al.* 2017, Woodside 2006). However, *Halophila* is the predominant genus and is typically restricted to the 6 m (chart datum) depth contour (MScience 2014). Macroalgal communities of the north-west of Western Australia are relatively poorly understood/surveyed in comparison to other regions of Australia (Huisman 2004, Huisman and Borrowitzka 2003). Macroalgae generally require a hard substrate, sufficient light and water clarity to survive, so are generally limited to shallow water. Macroalgal assemblages in the Pilbara region display an ephemeral growth pattern and may not be present year-round, despite the presence of suitable habitat. The most abundant group of algae in the region is brown algae; in particular, species from the genera *Sargassum*, *Dictyopteris* and *Padina* are very common (Woodside 2006). The most common species of green algae in the Dampier Archipelago include *Caulerpa* species and calcareous *Halimeda* species (Jones 2004, CALM 2005). A variety of red algae are also found in the Dampier Archipelago including corallines, calcified red algae and algal turf (Jones 2004).
Mangroves	Mangroves are an important part of the coastal ecosystem, contributing to primary productivity and providing habitat for fauna species including fish, sea snakes, turtles and birds (Wells and Walker 2003). The significance of tropical arid zone mangroves along the Pilbara coastline is recognised. Specific guidance documentation has been established by the Environmental Protection Authority (EPA 2001) to protect these communities, habitats and dependant habitats from development pressures. Six species of mangrove occur in the Dampier region: *Avicennia marina, Aegialitis annulata, Aegiceras corniculatum, Bruguiera exaristata, Ceriops tagal* and *Rhizophora stylosa* (Semenuik and Wurm 1987). *Avicennia marina* is the most abundant species.
Other communities and habitats	
Plankton	Plankton within the Operational Area and EMBA are expected to be representative of the wider NWMR as detailed in Section 4.3 of the Master Existing Environment (Appendix C). Primary productivity of the NWS is largely driven by offshore influences (as reported by Brewer *et al.* 2007, with periodic upwelling events and cyclonic influences driving coastal productivity, and with nutrient recycling and advection. Cyanobacteria and diatoms are the predominant phytoplankton contributors. It is expected that the dominant primary consumers are copepods, with a wide range of secondary consumers comprising larger planktonic taxa (including larval fish and invertebrates) (Wilson *et al.* 2003). Spatial and temporal patterns in the distribution and abundance of macrozooplankton on the NWS are influenced by sporadic climatic and oceanographic events, with large inter-annual changes in assemblages (Wilson *et al.* 2003). Further detail regarding productivity at other notable locations within the EMBA (e.g. North-west Cape) is provided in the Master Existing Environment, Section 4.3.3 of Appendix C.
Pelagic and demersal fish populations	Pelagic and demersal fish populations within the Operational Area and EMBA are expected to be representative of the NWMR (described in the Master Existing Environment, Section 5.3). 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 and Glomar Shoals (including the Glomar Shoals KEF). Detail regarding these features is provided in the Master Existing Environment, Section 9 of Appendix C. 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 Area due to the generally featureless, soft substrate that is present (McLean *et al.* 2017).

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Habitat/community	Key locations within the EMBA
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 at Glomar Shoals (see Master Existing Environment, Section 5.4 of Appendix C). Discrete areas of hard substrate hosting sessile filter feeding communities may also be associated within the Ancient Coastline at 125 m Depth Contour KEF, which overlaps the Operational Area. Filter feeder communities within the Operational Area are present on the subsea infrastructure and facilities, which provides hard substrate for attachment in an otherwise generally featureless, soft and sandy substrate.

4.6 Protected species

A total of 96 EPBC Act listed marine species considered to be MNES were identified as potentially occurring within the EMBA, of which a subset of 77 species were identified as potentially occurring within the Operational Area. 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. Species identified in the PMST that are not known to inhabit shorelines, nor rely on the marine environment for their diet, are not assessed. One conservation dependent species has also been identified with a potential to occur within the Operational Area and EMBA. This species, the scalloped hammerhead, is listed on the Species Profile and Threats Database (DAWE 2021a).

Species identified as potentially occurring within the Operational Area and EMBA and biologically important areas (BIAs) or habitat critical to their survival (habitat critical) that overlap the Operational Area and EMBA are listed in Table 4-4 to Table 4-12. Figure 4-5 to Figure 4-9 show the spatial overlap between relevant BIAs and habitat critical areas and the Operational Area and EMBA. Species that have been identified as having ecologically significant interactions in the Operational Area are described in further detail in this section. Key threatened and migratory species and associated biologically important behaviours in the EMBA are further described in Appendix C.

4.6.1 Fish, sharks and rays

A total of 13 EPBC Act listed threatened and migratory fish species have been identified to potentially occur within the EMBA, of which 13 may occur in the Operational Area (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 Operational Area and EMBA are presented in Figure 4-5 and Table 4-5. The Operational Area and EMBA overlap one foraging BIA for the whale shark.

Further description of BIAs is provided in Appendix C.

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

Species name	Common name	*Environment Protection and Biodiversity Conservation Act 1999* (as per PMST report Appendix D)		Potential for interaction	
		Threatened status	***Migratory status***	***Operational Area***	***EMBA***
Anoxypristis cuspidata	Narrow sawfish, knifetooth sawfish	N/A	Migratory	Species or species habitat known to occur in area	Species or species habitat known to occur in area
Carcharhinus longimanus	Ocean whitetip shark	N/A	Migratory	Species or species habitat likely to occur in area	Species or species habitat likely to occur in area
Cacharias taurus	Grey nurse shark (west coast population)	Vulnerable	N/A	Species or species habitat likely to occur in area	Species or species habitat likely to occur in area
Carcharodon carcharias	White shark, great white shark	Vulnerable	Migratory	Species or species habitat may occur in area	Species or species habitat may occur in area
Isurus oxyrinchus	Shortfin mako, mako shark	N/A	Migratory	Species or species habitat likely to occur in area	Species or species habitat likely to occur in area
Isurus paucus	Longfin mako	N/A	Migratory	Species or species habitat likely to occur in area	Species or species habitat likely to occur in area
Mobula alfredi	Reef manta ray	N/A	Migratory	Species or species habitat known to occur with area	Species or species habitat known to occur in area
Mobula birostris	Giant manta ray	N/A	Migratory	Species or species habitat likely to occur in area	Species or species habitat likely to occur in area
Pristis clavata	Dwarf sawfish, Queensland sawfish	Vulnerable	Migratory	Species or species habitat known to occur in area	Species or species habitat known to occur in area
Pristis pristis	Freshwater sawfish, largetooth sawfish, river sawfish, Leichhardt's sawfish, northern sawfish	Vulnerable	Migratory	Species or species habitat may occur in area	Species or species habitat may occur in area
Pristis zijsron	Green sawfish, Dindagubba, narrowsnout sawfish	Endangered	Migratory	Species or species habitat known to occur in area	Species or species habitat known to occur in area

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Species name	Common name	*Environment Protection and Biodiversity Conservation Act 1999* (as per PMST report Appendix D)		Potential for interaction	
		Threatened status	***Migratory status***	***Operational Area***	***EMBA***
Rhincodon typus	Whale shark	Vulnerable	Migratory	Foraging, feeding or related behaviour known to occur in area	Foraging, feeding or related behaviour known to occur in area
Sphyrna lewini	Scalloped hammerhead	Conservation dependent	N/A	Species or species habitat likely to occur in area	Species or species habitat likely 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 (km)
Whale shark	Foraging known to occur (northward from Ningaloo along 200 m isobath)	Overlaps Operational Area

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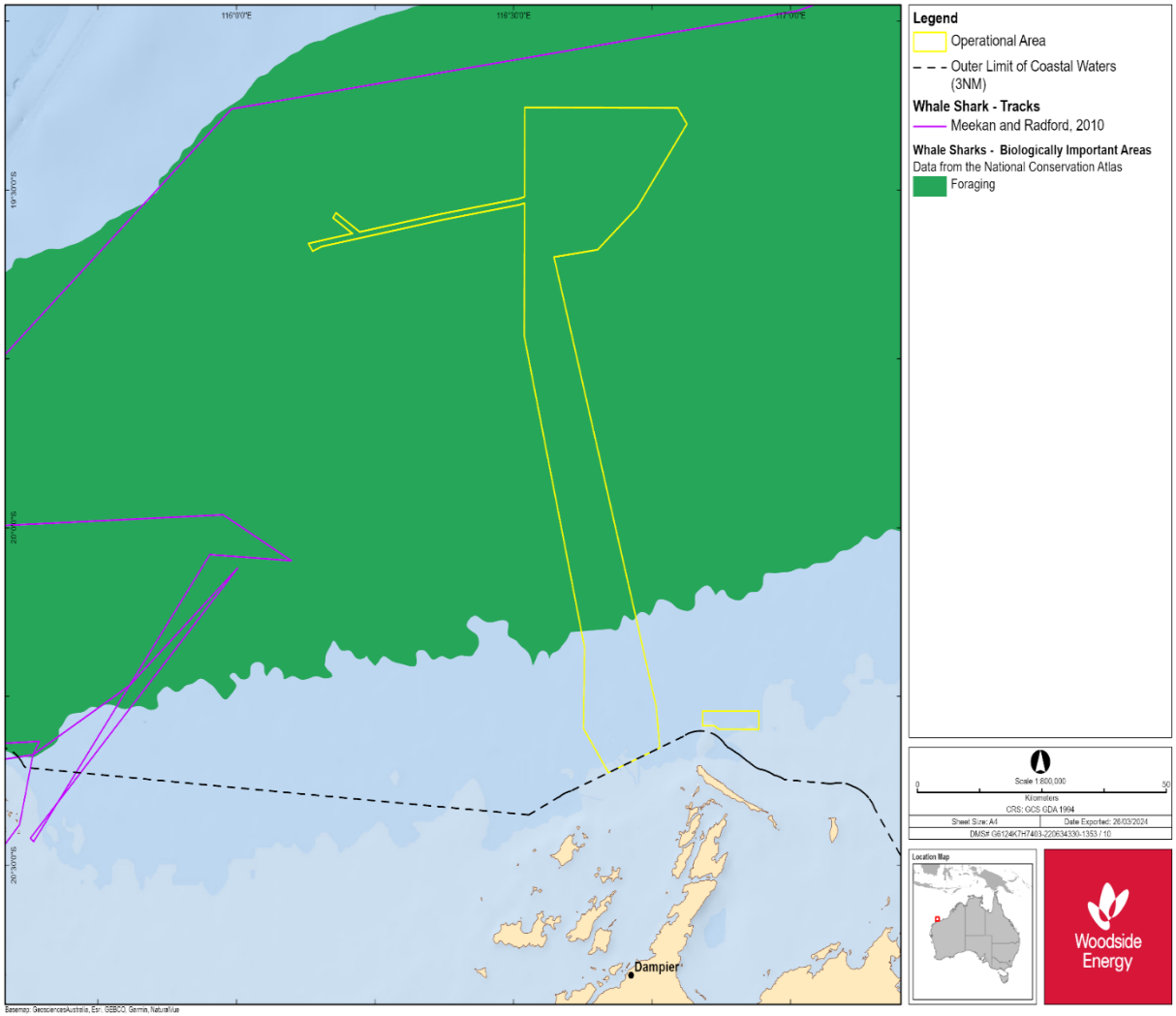


Figure 4-5: Whale shark BIAs overlapping the EMBA and tagged whale shark satellite tracks

Satellite tracks source: Meekan and Radford 2010

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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 8 may occur in the Operational Area (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 Table 4-7. Habitat critical overlapping the EMBA is presented in Table 4-8. The Operational Area also overlaps BIAs and habitat critical (Figure 4-6, Table 4-7, Figure 4-7).

Further description of BIAs is provided in Appendix C.

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

Species name	Common name	*Environment Protection and Biodiversity Conservation Act 1999* (as per PMST report Appendix D)		Potential for interaction	
		Threatened status	***Migratory status***	***Operational Area***	***EMBA***
Aipysurus apraefrontalis	Short-nosed seasnake	Critically Endangered	N/A	Species or species habitat known to occur in area	Species or species habitat known to occur in area
Aipysurus foliosquama	Leaf-scaled seasnake	Critically Endangered	N/A	Species or species habitat likely to occur in area	Species or species habitat known to occur in area
Caretta caretta	Loggerhead turtle	Endangered	Migratory	Congregation or aggregation known to occur in area	Breeding known to occur in area
Chelonia mydas	Green turtle	Vulnerable	Migratory	Congregation or aggregation known to occur in area	Breeding known to occur in area
Crocodylus porosus	Salt-water crocodile, estuarine crocodile	N/A	Migratory	Species or species habitat may occur in area	Species or species habitat may occur in area
Dermochelys coriacea	Leatherback turtle, leathery turtle, luth	Endangered	Migratory	Species or species habitat likely to occur in area	Breeding likely to occur in area
Eretmochelys imbricata	Hawksbill turtle	Vulnerable	Migratory	Congregation or aggregation known to occur in area	Breeding known to occur in area
Natator depressus	Flatback turtle	Vulnerable	Migratory	Congregation or aggregation known to occur in area	Breeding known to occur in area

Table 4-7: Marine turtle BIAs within the EMBA

Species	BIA type	Approx. distance and direction of BIA from Operational Area (km)
Flatback turtle	Foraging, migration corridor, internesting, mating, and nesting (Dampier Archipelago [islands to the west of the Burrup Peninsula])	9 km south-east of Operational Area
	Internesting buffer (Dixon Island)	Overlaps Operational Area

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Species	BIA type	Approx. distance and direction of BIA from Operational Area (km)
	Internesting buffer (Intercourse Island)	Overlaps Operational Area
	Internesting buffer (Cape Thouin/Mundabullangana/Cowrie Beach)	31 km south-east of Operational Area
	Internesting buffer (Montebello Island – Hermite Island, NW Island, Trimouille Island)	33 km south-west of Operational Area
	Internesting buffer (Dampier Archipelago (islands to the west of the Burrup Peninsula))	Overlaps Operational Area
	Internesting buffer (Legendre Island, Hauy Island)	Overlaps Operational Area
	Internesting buffer (Delambre Island)	Overlaps Operational Area
	Internesting buffer (West of Cape Lambert)	Overlaps Operational Area
	Foraging (Legendre Island, Hauy Island)	9 km south-east of Operational Area
	Nesting (Legendre Island, Hauy Island)	9 km south-east of Operational Area
Green turtle	Foraging (Legendre Island, Hauy Island)	9 km south-east of Operational Area
	Internesting buffer (Dampier Archipelago (islands to the west of the Burrup Peninsula))	Overlaps Operational Area
	Internesting buffer (Legendre Island, Hauy Island)	Overlaps Operational Area
	Internesting buffer (Delambre Island)	Overlaps Operational Area
	Foraging, migration corridor, internesting, mating, and nesting (Dampier Archipelago (islands to the west of the Burrup Peninsula))	9 km south of Operational Area
	Nesting (Legendre Island, Hauy Island)	9 km south-east of Operational Area
	Internesting buffer (Montebello Islands)	87 km south-west of Operational Area
Hawksbill turtle	Internesting buffer (Rosemary Island)	Overlaps Operational Area
	Internesting buffer (Lowendal Island Group)	94 km south-west of Operational Area
	Internesting buffer (Dampier Archipelago [islands to the west of the Burrup Peninsula])	Overlaps Operational Area
	Internesting buffer (Delambre Island)	Overlaps Operational Area
	Internesting buffer (Delambre Island [and other Dampier Archipelago Islands])	Overlaps Operational Area
	Nesting (Delambre Island [and other Dampier Archipelago Islands])	6 km south-east of Operational Area
	Internesting buffer (Varanus Island)	94 km south-west of Operational Area

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Species	BIA type	Approx. distance and direction of BIA from Operational Area (km)
	Foraging, migration corridor, internesting, mating, nesting (Dampier Archipelago [islands to the west of the Burrup Peninsula])	9 km south of Operational Area
	Nesting (Rosemary Island)	13 km south-west of Operational Area
Loggerhead turtle	Internesting buffer (Rosemary Island)	Overlaps Operational Area
	Internesting buffer (Cohen Island)	Overlaps Operational Area
	Nesting (Rosemary Island)	13 km south-west of Operational Area
	Nesting (Cohen Island)	7 km south of Operational Area

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

Species	Genetic stock	Nesting locations	Approx. distance and direction from Operational Area (km)	Internesting buffer	Nesting period	Hatching period
Green turtle	NWS	Dampier Archipelago	Overlaps Operational Area	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	60 km south-west of Operational Area			
Flatback turtle	Pilbara	Dampier Archipelago, including Delambre Island and Hauy Island	Overlaps Operational Area	60 km	Oct to Mar (peak: Nov to Jan)	Feb to Mar
		Mundabullangana Beach	47 km south-east of Operational Area			
		Barrow Island, Montebello Islands, coastal islands from Cape Preston to Locker Island	20 km south-west of Operational Area			
Hawksbill turtle	Western Australia	Dampier Archipelago, including Delambre Island and Rosemary Island	Overlaps Operational Area	20 km	Oct to Feb (peak: Oct to Jan)	All-year (peak: Dec to Feb)
		Cape Preston to mouth of Exmouth Gulf including Montebello Islands and Lowendal Islands	60 km south-west of Operational Area			

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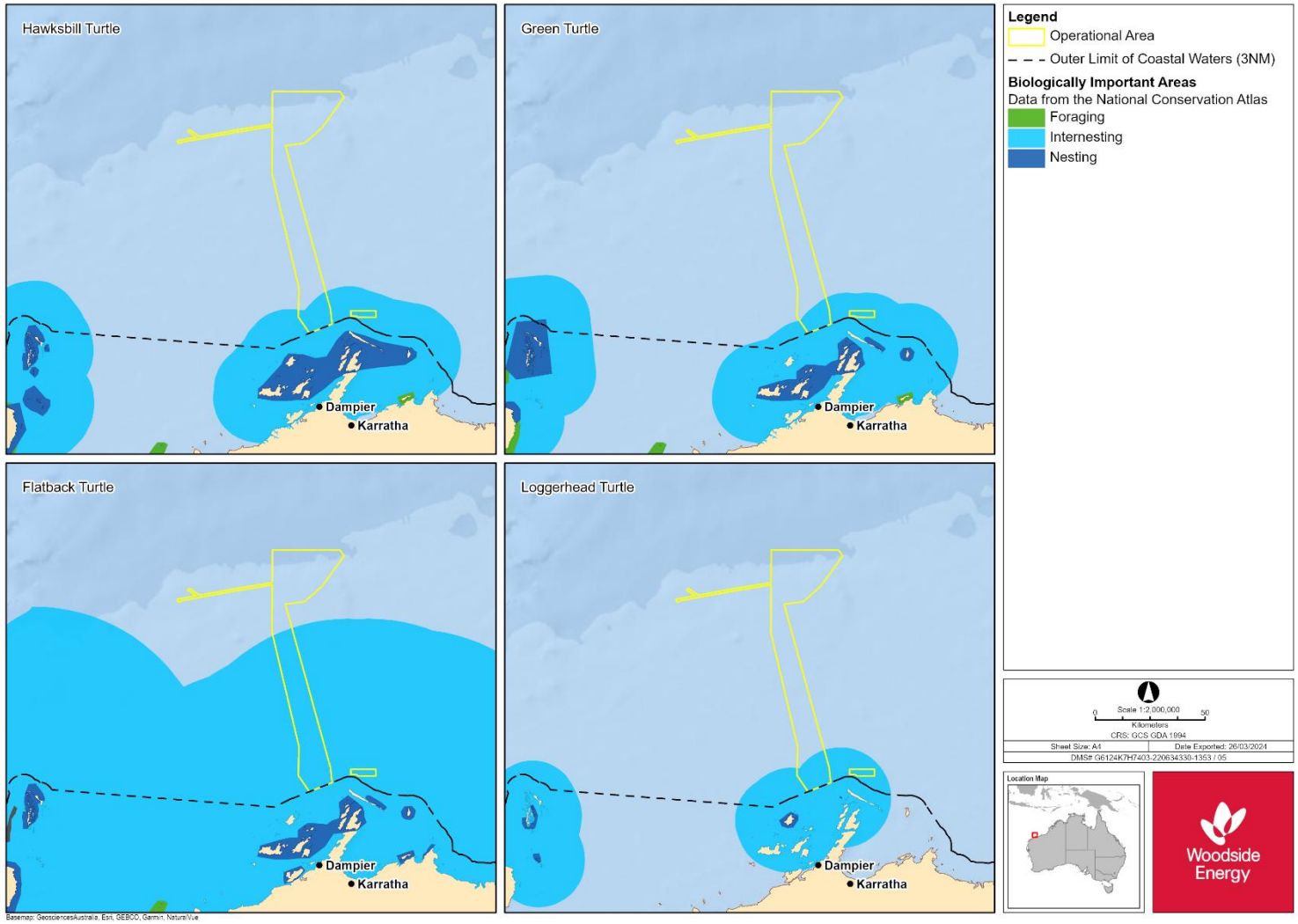


Figure 4-6: Marine reptile BIAs overlapping and adjacent to the Operational Area

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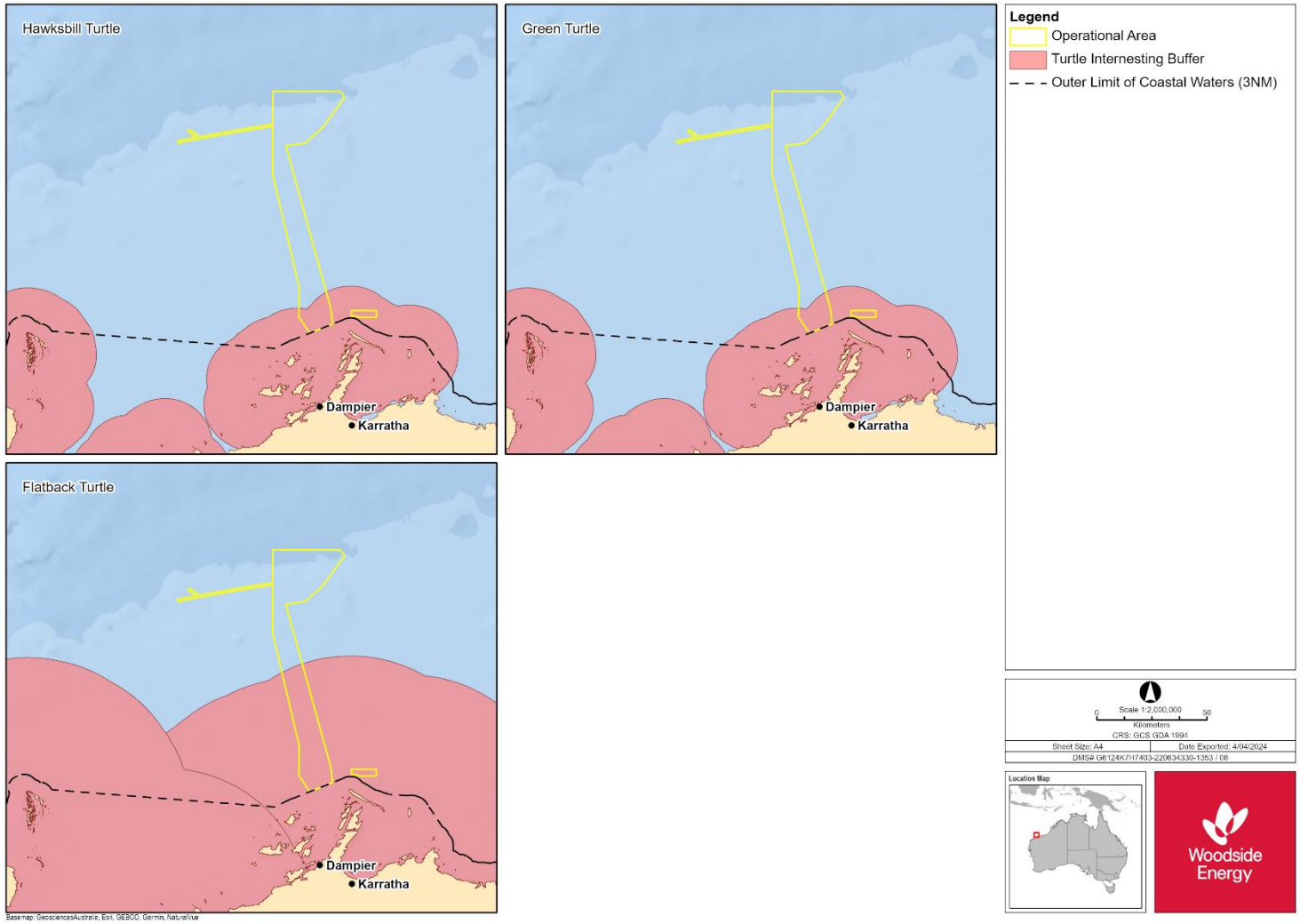


Figure 4-7: Habitat critical to the survival of marine turtles overlapping and adjacent to the Operational Area

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4.6.3 Marine mammals

A total of 12 EPBC Act listed threatened and migratory marine mammal species have been identified to potentially occur within the EMBA, of which 12 may occur in the Operational Area (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 4-8, and Figure 4-9.

Further description of BIAs is provided in Appendix C.

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

Species name	Common name	*Environment Protection and Biodiversity Conservation Act 1999* (as per PMST report Appendix D)		Potential for interaction	
		Threatened status	***Migratory status***	***Operational Area***	***EMBA***
Balaenoptera borealis	Sei whale	Vulnerable	Migratory	Species or species habitat likely to occur in area	Species or species habitat likely to occur in area
Balaenoptera edeni	Bryde's whale	N/A	Migratory	Species or species habitat likely to occur in area	Species or species habitat likely to occur in area
Balaenoptera musculus	Blue whale	Endangered	Migratory	Species or species habitat likely to occur in area	Migration route known to occur in area
Balaenoptera omurai	Omura's Whale	N/A	Migratory	Species or species habitat likely to occur in area	Species or species habitat likely to occur in area
Balaenoptera physalus	Fin whale	Vulnerable	Migratory	Species or species habitat likely to occur in area	Species or species habitat likely to occur in area
Dugong dugon	Dugong	N/A	Migratory	Species or species habitat known to occur in area	Breeding known to occur in area
Megaptera novaeangliae	Humpback whale	N/A	Migratory	Breeding known to occur in area	Breeding known to occur in area
Orcaella heinsohni	Australian snubfin dolphin	Vulnerable	Migratory	Species or species habitat may occur in area	Species or species habitat likely to occur in area
Orcinus orca	Killer whale, orca	N/A	Migratory	Species or species habitat may occur in area	Species or species habitat may occur in area
Physeter macrocephalus	Sperm whale	N/A	Migratory	Species or species habitat may occur in area	Species or species habitat may occur in area
Sousa sahulensis	Australian humpback dolphin	Vulnerable	Migratory (as Sousa chinensis)	Species or species habitat may occur in area	Species or species habitat likely to occur in area
Tursiops aduncus	Spotted bottlenose dolphin (Arafura/Timor Sea populations)	N/A	Migratory	Species or species habitat likely to occur in area	Species or species habitat known to occur in area

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Table 4-10: Marine mammal BIAs within the EMBA

Species	BIA type	Approx. distance and direction from Operational Area (km)
Humpback whale	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)	Overlaps Operational Area
Pygmy Blue Whale	Migration (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)	Overlaps Operational Area

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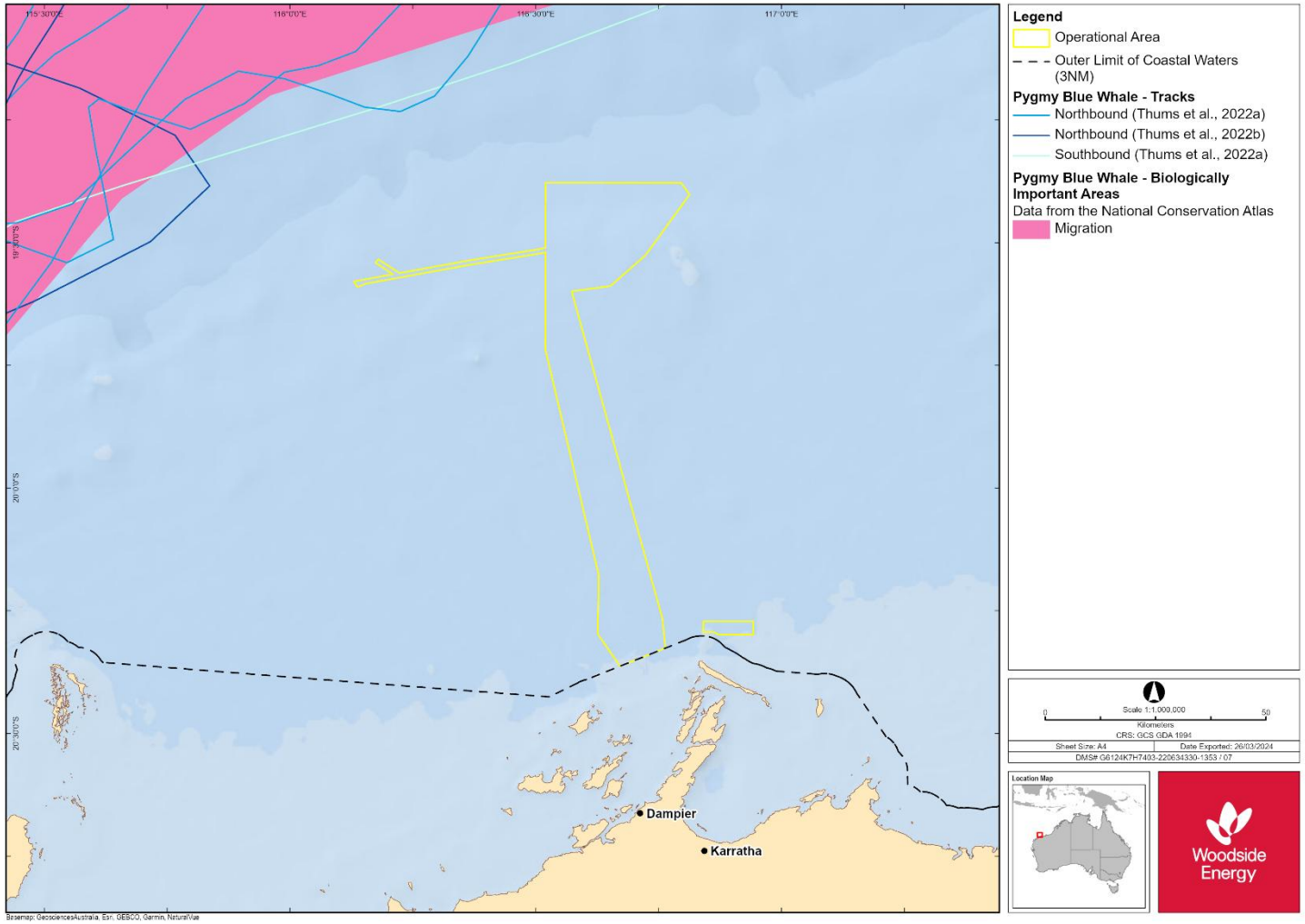


Figure 4-8: Pygmy blue whale BIAs overlapping the EMBA and tagged whale tracks for northbound migration

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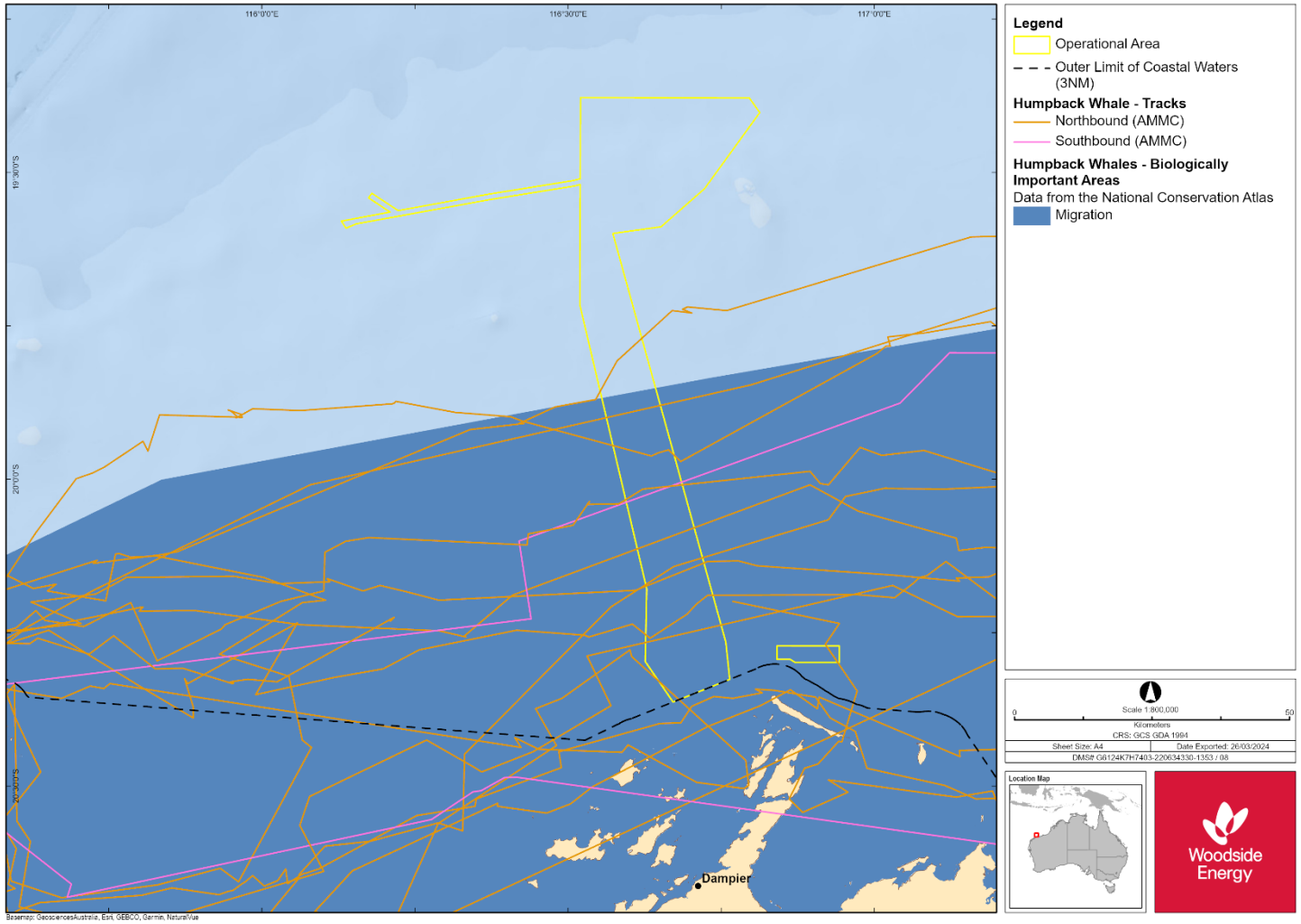


Figure 4-9: Humpback whale BIAs and tagged tracks overlapping the EMBA

Source: Double et al. 2012, Double et al. 2010..

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4.6.4 Seabirds and migratory shorebirds

A total of 8 EPBC Act listed threatened seabirds and shorebird species have been identified to potentially occur within the Operational Area, of which 5 are also migratory (Table 4-11). A total of 14 EPBC Act listed threatened seabirds and shorebird species have been identified to potentially occur within the EMBA, of which 8 are also migratory (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 area presented in Table 4-12 and BIAs that overlap the Operational Area are shown in Figure 4-10.

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

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

Species name	Common name	*Environment Protection and Biodiversity Conservation Act 1999* (as per PMST report Appendix D)		Potential for interaction	
		Threatened status	***Migratory status***	***Operational Area***	***EMBA***
Actitis hypoleucos	Common sandpiper	N/A	Migratory	Species or species habitat may occur in area	Species or species habitat known to occur in area
Anous stolidus	Common noddy	N/A	Migratory	Species or species habitat may occur in area	Species or species habitat may occur in area
Apus pacificus	Fork-tailed swift	N/A	Migratory	Species or species habitat likely to occur in area	Species or species habitat likely to occur in area
Ardenna pacifica	Wedge-tailed shearwater	N/A	Migratory	N/A	Breeding known to occur in area
Calidris acuminata	Sharp-tailed sandpiper	Vulnerable	Migratory	Species or species habitat may occur in area	Species or species habitat may occur in area
Calidris canutus	Red knot, knot	Vulnerable	Migratory	Species or species habitat may occur in area	Species or species habitat may occur in area
Calidris ferruginea	Curlew sandpiper	Critically Endangered	Migratory	Species or species habitat may occur in area	Species or species habitat likely to occur in area
Calidris melanotos	Pectoral sandpiper	N/A	Migratory	Species or species habitat may occur in area	Species or species habitat may occur in area
Calonectris leucomelas	Streaked shearwater	N/A	Migratory	Species or species habitat likely to occur in area	Species or species habitat likely to occur in area
Charadrius leschenaultii	Greater sand plover, large sand plover	Vulnerable	Migratory	N/A	Species or species habitat likely to occur in area
Charadrius veredus	Oriental plover, oriental dotterel	N/A	Migratory	N/A	Species or species habitat may occur in area
Erythrotriorchis radiatus	Red Goshawk	Endangered	N/A	N/A	Species or species habitat may occur in area

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Species name	Common name	*Environment Protection and Biodiversity Conservation Act 1999* (as per PMST report Appendix D)		Potential for interaction	
		Threatened status	***Migratory status***	***Operational Area***	***EMBA***
Fregata ariel	Lesser frigatebird, least frigatebird	N/A	Migratory	Species or species habitat likely to occur in area	Species or species habitat known to occur in area
Fregata minor	Great frigatebird, greater frigatebird	N/A	Migratory	Species or species habitat may occur in area	Species or species habitat may occur in area
Glareola maldivarum	Oriental pratincole	N/A	Migratory	N/A	Species or species habitat may occur in area
Hydroprogne caspia	Caspian tern	N/A	Migratory	N/A	Breeding known to occur in area
Hirundo rustica	Barn Swallow	N/A	Migratory	N/A	Species or species habitat may occur within area
Limnodromus semipalmatus	Asian dowitcher	Vulnerable	Migratory	N/A	Species or species habitat may occur in area
Limosa lapponica	Bar-tailed godwit	N/A	Migratory	N/A	Species or species habitat known to occur in area
Limosa lapponica menzbieri	Northern Siberian bar-tailed godwit, Russkoye bar-tailed godwit	Endangered	N/A	N/A	Species or species habitat known to occur in area
Macronectes giganteus	Southern giant petrel	Endangered	Migratory	Species or species habitat may occur in area	Species or species habitat may occur in area
Motacilla flava	Yellow Wagtail	N/A	Migratory	N/A	Species or species habitat may occur within area
Motacilla cinerea	Grey Wagtail	N/A	Migratory	N/A	Species or species habitat may occur within area
Numenius madagascariensis	Eastern curlew, far eastern curlew	Critically Endangered	Migratory	Species or species habitat may occur in area	Species or species habitat known to occur in area
Onychoprion anaethetus	Bridled tern	N/A	Migratory	N/A	Breeding known to occur in area

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Species name	Common name	*Environment Protection and Biodiversity Conservation Act 1999* (as per PMST report Appendix D)		Potential for interaction	
		Threatened status	***Migratory status***	***Operational Area***	***EMBA***
Pandion haliaetus	Osprey	N/A	Migratory	N/A	Breeding known to occur in area
Phaethon lepturus	White-tailed tropicbird	N/A	Migratory	Species or species habitat likely to occur in area	Species or species habitat likely to occur in area
Phaethon lepturus fulvus	Christmas Island white-tailed tropicbird	Endangered	N/A	Species or species habitat may occur in area	Species or species habitat may occur in area
Phaethon rubricauda westralis	Red-tailed tropicbird (Indian Ocean), Indian Ocean red-tailed tropicbird	Endangered	N/A	Species or species habitat likely to occur in area	Species or species habitat likely to occur in area
Rostratula australis	Australian painted snipe	Endangered	N/A	N/A	Species or species habitat may occur in area
Sterna dougallii	Roseate tern	N/A	Migratory	Foraging, feeding or related behaviour likely to occur within area	Breeding likely to occur in area
Sternula albifrons	Little tern	Vulnerable	Migratory	N/A	Species or species habitat may occur within area
Sternula nereis nereis	Australian fairy tern	Vulnerable	N/A	Breeding known to occur in area	Breeding known to occur in area
Thalasseus bergii	Greater crested tern	N/A	Migratory	N/A	Breeding known to occur in area

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

Species	BIA type	Approx. distance and direction from Operational Area (km)
Fairy tern	Breeding (Pilbara and Gascoyne coasts and islands)	3km south of Operational Area
	Breeding and foraging (Pilbara and Gascoyne coasts and islands)	51 km south-west of Operational Area
	Breeding and foraging (Pilbara and Gascoyne coasts and islands)	Overlaps Operational Area
Lesser crested tern	Breeding (Kimberley, Pilbara and Gascoyne coasts and islands including Ashmore Reef)	90 km south-west of Operational Area
Roseate tern	Breeding and foraging (Kimberley, Pilbara and Gascoyne coasts and islands including Ashmore Reef)	Overlaps Operational Area
	Breeding and foraging (Kimberley, Pilbara and Gascoyne coasts and islands including Ashmore Reef)	Overlaps Operational Area
	Breeding and foraging (Kimberley, Pilbara and Gascoyne coasts and islands including Ashmore Reef)	78 km south-west of Operational Area
	Breeding (Kimberley, Pilbara and Gascoyne coasts and islands including Ashmore Reef)	Overlaps the Operational Area
	Breeding (Kimberley, Pilbara and Gascoyne coasts and islands including Ashmore Reef)	10 km south-east of Operational Area
Wedge-tailed shearwater	Breeding and foraging (Kimberley, Pilbara) and Gascoyne coasts and islands including Ashmore Reef)	Overlaps Operational Area
	Breeding and foraging (Kimberley, Pilbara and Gascoyne coasts and islands including Ashmore Reef)	11 km east of Operational Area
	Breeding and foraging (Kimberley, Pilbara and Gascoyne coasts and islands including Ashmore Reef)	Overlaps Operational Area
	Breeding and foraging (Kimberley, Pilbara and Gascoyne coasts and islands including Ashmore Reef)	Overlaps Operational Area
	Breeding (Kimberley, Pilbara and Gascoyne coasts and islands including Ashmore Reef)	Directly adjacent to the Operational Area

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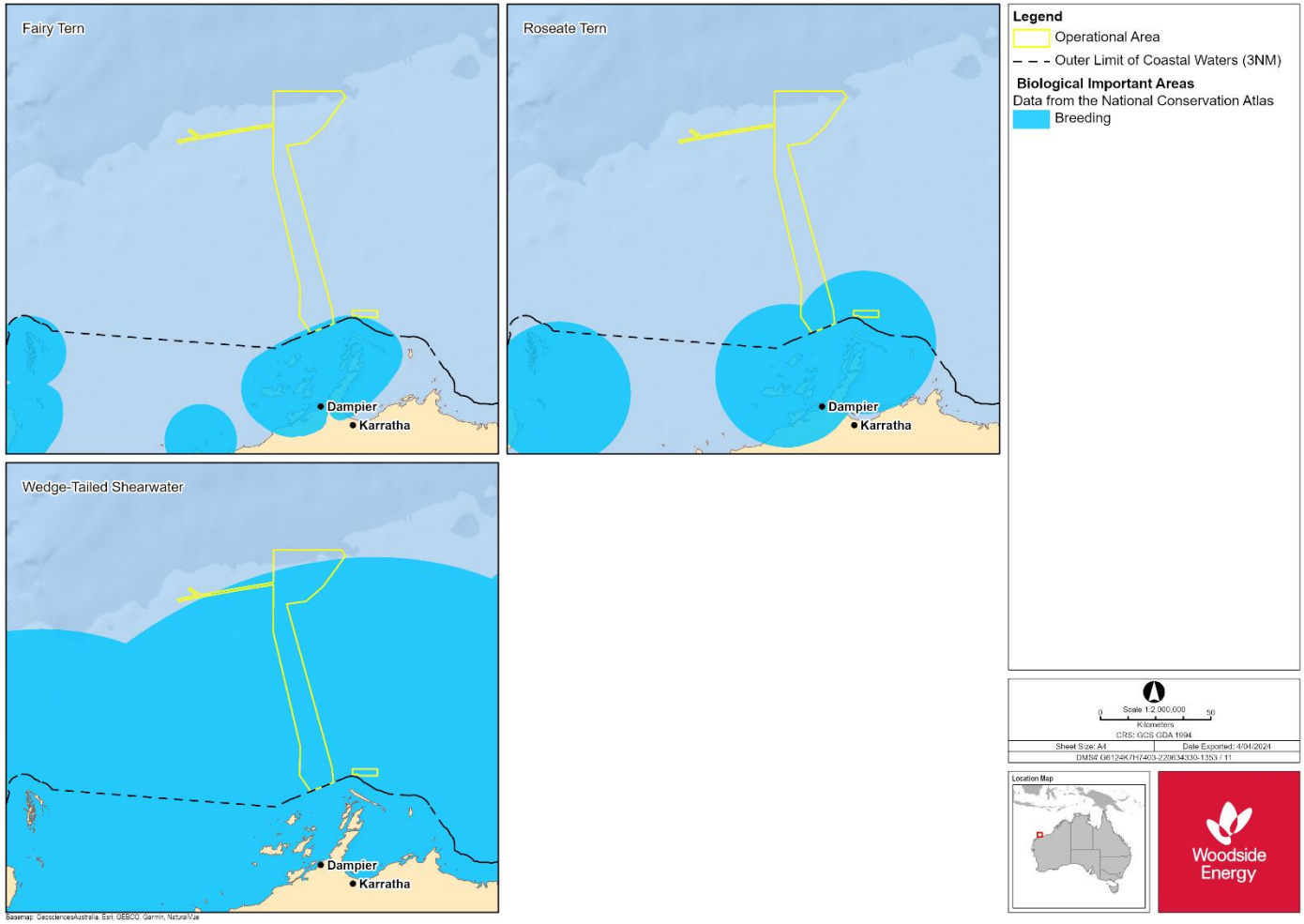


Figure 4-10: Seabird and migratory shorebird BIAs in relation to the Operational Area

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4.6.5 Seasonal sensitivities for protected species

Seasonal sensitivities for protected migratory species identified as potentially occurring within the Operational Area 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 Area

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Fish, sharks and rays												
Whale shark (NWMR) – foraging[1]												
Mammals												
Pygmy blue whale (Exmouth, Montebello, Scott Reef) – northern migration[2]												
Pygmy blue whale (Exmouth, Montebello, Scott Reef) – southern migration[2]												
Humpback whale (NWS) – northern migration[3]												
Humpback whale (NWS) – southern migration[4]												
Marine reptiles												
Flatback turtle (Pilbara) – various nesting areas[5]												
Green turtle (NWS) – various nesting areas[5]												
Hawksbill turtle (WA) – various nesting areas[5]												
Loggerhead turtle (WA) – various nesting areas[5]												
Seabirds and shorebirds												
Wedge-tailed shearwater – various breeding sites[6]												
Australian fairy tern – various breeding sites[7]												
Roseate tern – various breeding sites[9]												
Lesser crested tern – various breeding sites[8]												
Migratory shorebirds (general peak presence non-breeding)												
	Species may be present in the Operational Area.											
	Peak period. Presence of animals is reliable and predictable each year.											

References for species seasonal sensitivities:

1. *TSSC 2015, Wilson et al. 2006.*
2. *Double et al. 2014, Double et al. 2012, McCauley and Jenner 2010.*
3. *Double et al 2012, TSSC 2015.*

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4. *Double et al 2010, TSSC 2015.*
5. *Information regarding seasonal occurrence of marine turtles has been taken from the Recovery Plan for Marine Turtles in Australia 2017–2027 (Commonwealth of Australia 2017).*
6. *Wilson 2006, DoEH 2002.*
7. *DSEWPaC 2012.*
8. *Hamza 2014.*
9. *Burbidge and Fuller 1989.*

4.7 Key ecological features (KEFs)

2 KEFs overlap the Operational Area. KEFs within the Operational Area 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 Area and EMBA.

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

Key ecological feature	Distance and direction from Operational Area to KEF (km)	Description
Ancient Coastline at 125 m Depth Contour	Overlaps Operational Area	Water depths 115–135 m. Provides some hard benthic substrate for regionally significant biodiversity hotspots and localised upwelling. Recent surveys suggest less hard substrate may now exist than once thought, with prevalence of soft sediment that has infilled parts of the palaeoshoreline (Wakeford *et al.* 2023).
Glomar Shoals	Overlaps Operational Area	A submerged littoral feature located about 150 km north of Dampier on the Rowley shelf at depths of 33-77 m. High species richness including hard corals and sponge species and commercial and recreational fish species.

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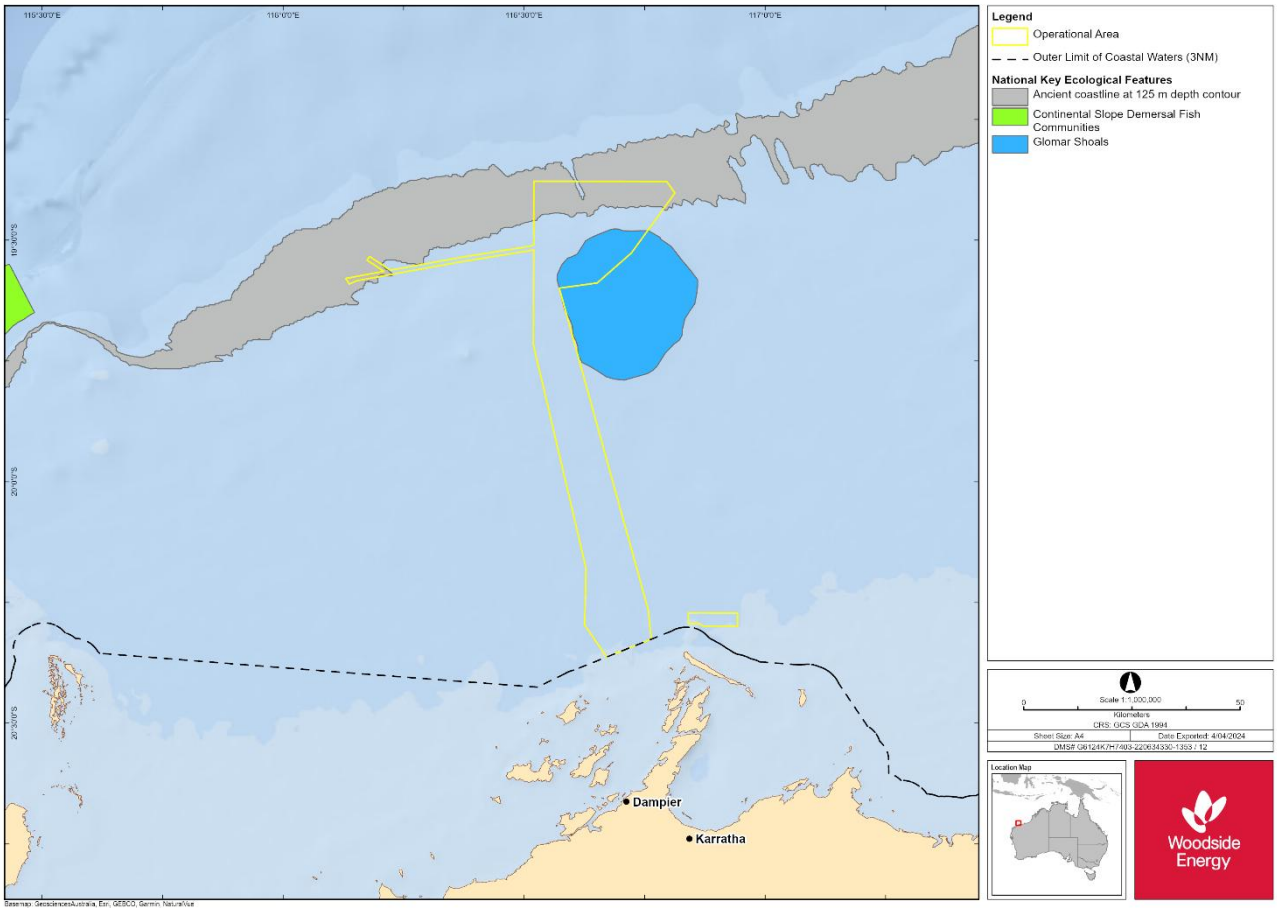


Figure 4-11: KEFs overlapping the Operational Area and EMBA

4.8 Protected places

No protected places overlap the Operational Area. Protected places within the 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 EMBA.

Table 4-15: Established protected places and other sensitive areas in relation to the Operational Area and EMBA

	Distance and direction from Operational Area to protected place or sensitive area (km)	IUCN category* or relevant park zone overlapping the Operational Area and/or EMBA
AMPs		
NWMR		
Dampier	Directly adjacent to the Operational Area	Habitat Protection Zone – IV
Dampier	9 km south-east from Operational Area	National Park Zone – II
Dampier	18 km south-east from Operational Area	Multiple Use Zone – VI
State Marine Parks and Nature Reserves		
Marine Parks		
None		
Marine Management Areas		
None		

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	Distance and direction from Operational Area to protected place or sensitive area (km)	IUCN category* or relevant park zone overlapping the Operational Area and/or EMBA
Fish Habitat Protection Areas		
None		
Nature Reserves		
Dolphin Island	14 km south from Operational Area	Ia
5(1)(h) Reserve		
Rosemary Island	13 km south from Operational Area	5
Other sensitive areas		
None		

**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.

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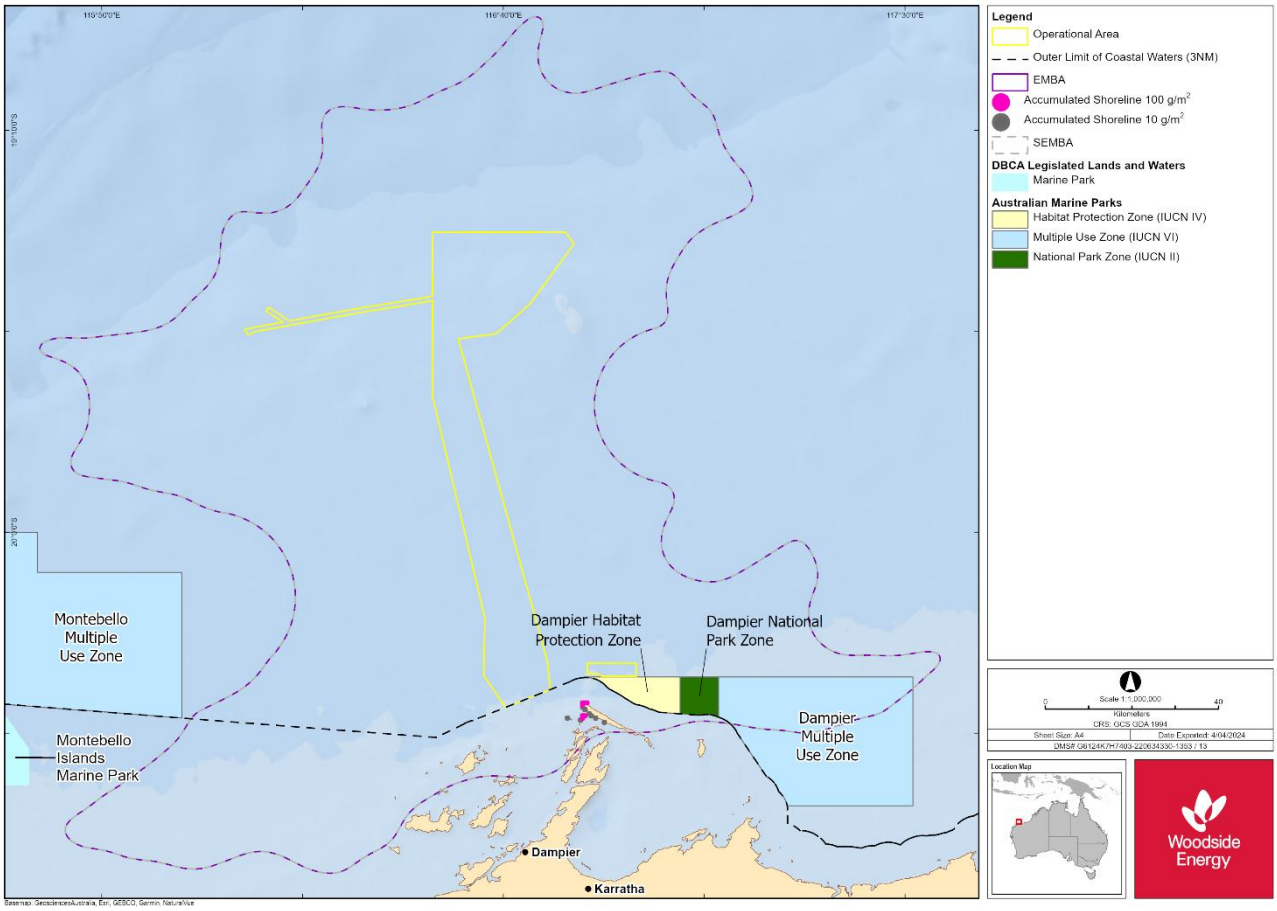


Figure 4-12: Protected areas overlapping the Operational Area and EMBA

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 Area and EMBA and the cultural features of these areas are described. Cultural values and heritage as they relate to the wider NWMR are described in Appendix C.

4.9.1.1 Native title

For the activity in this EP, there are two Native Title claims overlapping 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.

There are also four Indigenous Land Use Agreements (ILUAs) overlapping the EMBA. Figure 4-13 shows the relevant Native Title determinations and ILUAs relevant to the EMBA. Further description of how Woodside considers Native Title rights and interests is provided in Appendix C.

4.9.1.2 Coastally adjacent First Nations groups

To identify cultural features and heritage values that may exist outside of a Native Title claim, determination and ILUA areas, Woodside considers Native Title claims, determinations and ILUAs coastally adjacent to the

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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.

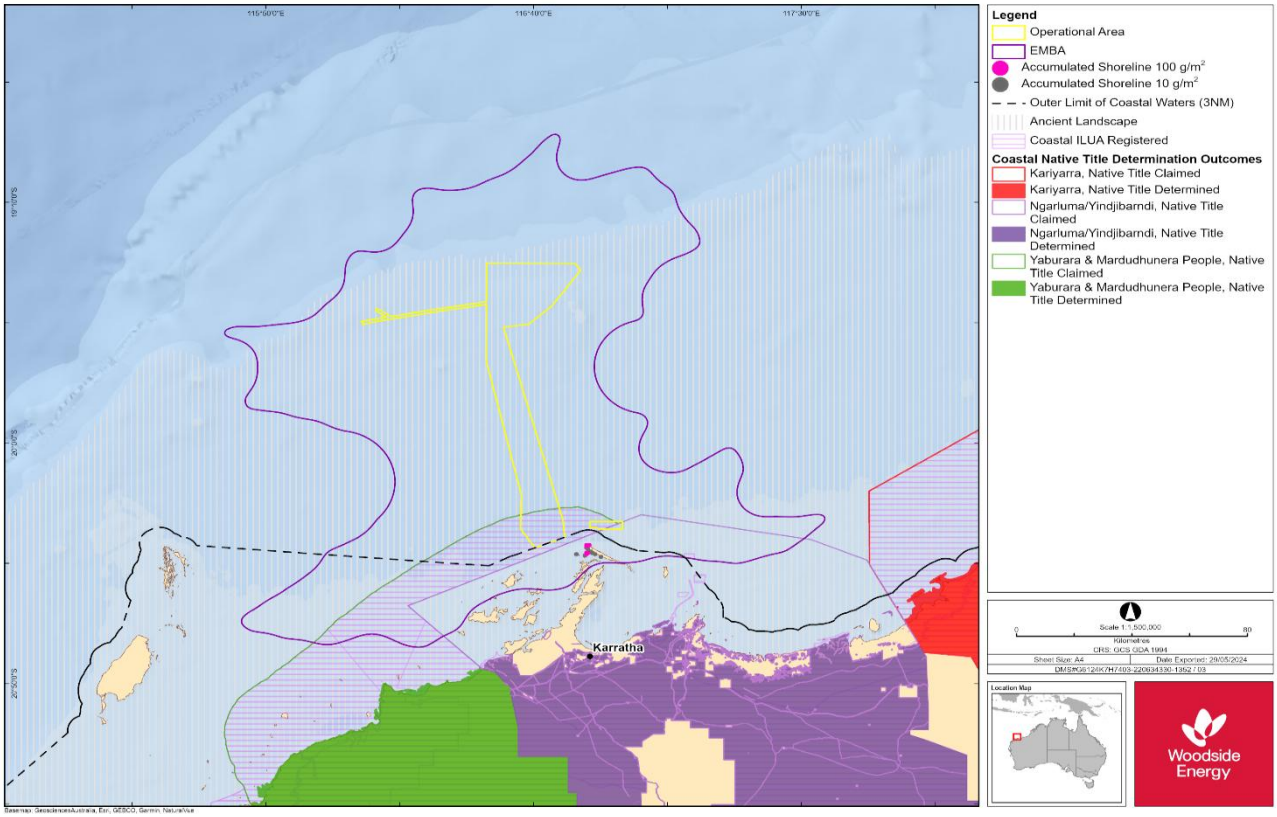


Figure 4-13: Operational Area and socio-cultural hydrocarbon thresholds in relation to Native Title claims, determinations and ILUAs

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Table 4-16: Summary of Native Title claims, determinations and Indigenous Land Use Agreements (ILUAs) that overlap with the Operational Area or are coastally adjacent to the EMBA

Claim/determination/ILUA	Registered Native Title Body Corporate	Overlap with Operational Area	Coastally adjacent to the EMBA
Claim/determination			
Yaburara and Mardudhunera People	Wirrawandi Aboriginal Corporation	No	Yes
Ngarluma/Yindjibarndi	Yindjibarndi Aboriginal Corporation, Ngarluma Aboriginal Corporation	No	Yes
ILUA			
Kuruma Marthudunera and Yaburara and Coastal Mardudhunera Indigenous Land Use Agreement	Yamatji Marlpa Aboriginal Corporation	Yes	Yes
Kuruma Marthudunera & Yaburara and Coastal Mardudhunera Indigenous Land Use Agreement 2018	Wirrawandi Aboriginal Corporation, Robe River Kuruma Aboriginal Corporation	Yes	Yes
Cape Preston Project Deed (Yaburara and Coastal Mardudhunera Mardie ILUA)	Wirrawandi Aboriginal Corporation	No	Yes
Anketell Port, Infrastructure Corridor and Industrial Estates Agreement	Ngarluma Aboriginal Corporation	No	Yes
Cape Preston West Export Facility	Wirrawandi Aboriginal Corporation	No	Yes
RTIO Ngarluma Indigenous Land Use Agreement (Body Corporate Agreement)	Ngarluma Aboriginal Corporation	No	Yes

4.9.1.3 Marine and national parks

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

Woodside considers the management plans of marine parks that overlap the Operational Area and the EMBA to determine whether cultural features and heritage values have been identified and whether there are specified Traditional Custodians or representative bodies referenced to contact regarding potential cultural features and heritage values. For completeness, Woodside considers cultural features and heritage values identified in the management plans, where EP relevant Traditional Custodians or representative bodies are represented. These values are outlined in Table 4-18.

The Operational Area does not overlap any Commonwealth Marine Parks. The EMBA does overlap with features of the Dampier AMP managed under the North-west Marine Parks Network Management Plan 2018. The EMBA does not overlap any 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. Three identifiable representative bodies were specified for the marine parks overlapped by the Operational Area and EMBA (Table 4-17).

The Marine Park Management Plans note for the Dampier AMP that Ngarluma Aboriginal Corporation, Yindjibarndi Aboriginal Corporation and Yamatji Marlpa Aboriginal Corporation are the relevant Native Title Representative Bodies.

Murujuga National Park

The Murujuga National Park is located ~5.7 km south of the GPGT Survey Program area at its closest point and lies within a larger National Heritage Listed place, the Burrup Peninsula and the Dampier Archipelago.

Covering 4,913 hectares (44 per cent) of the Burrup Peninsula on the Pilbara coast of WA, the land is privately owned by the Murujuga Aboriginal Corporation and jointly managed with DBCA as a national park (DBCA, 2024). The Murujuga National Park Management Plan 78 (2013, amended in 2023) was the first management plan used by the Murujuga Land Sea Unit & the Department of Parks and Wildlife (now the

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Department of Biodiversity, Conservation and Attractions – Parks and Wildlife Service) as a key component of the Burrup and Maitland Industrial Estates Agreement.The management plan created by Ngarda ngarli and their joint management partners seeks to ensure the protection of the area and to revive Ngarda-ngarli knowledge, associations and responsibility. This plan acknowledges the coexistence of Woodside production facilities and the Park identifying its objective to 'To promote effective, integrated and cooperative management between Murujuga National Park and adjacent land managers' (DBCA, 2013).

In 2007, the Australian Government signed a Conservation Agreement with Woodside Energy Ltd to protect and research the National Heritage values of the Dampier Archipelago. In July 2017, Woodside signed the 'Ngajarli (Deep Gorge) Joint Statement' reaffirming the cooperative commitments made under each of the Conservation Agreements.

It is under the Conservation Agreement that Woodside Energy Ltd provides ongoing funding to continue supporting research into, and monitoring of, the National Heritage values of the park so activities are carried out in a manner that is consistent with the *Murujuga National Park Management Plan 78* (DEC, 2013). Further protections and management practices have been integrated into Woodside's cultural heritage management plans and engagement protocols. Outcomes of funded programs include processes to identify sites with National Heritage values, present and transmit information about the National Heritage values, and manage the National Heritage values so they are conserved for future generations.

Further consideration demonstrating that activities relating to the GPGT Survey Program are not inconsistent with the management objectives of the Murujuga National Park are outlined in Section 6.11.

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.

A number of management plans for the state marine parks also note First Nations and maritime heritage within the marine parks. These are addressed in Sections 4.9.1.4.3 and 4.9.1.8.

Table 4-17: Summary of the EMBA that overlap with Commonwealth and State Marine Park Management Plan areas

Marine Park Management Plan	EMBA overlap	Specified bodies
Commonwealth Marine Park Management Plan		
North-west Marine Parks Network Management Plan 2018	Yes	Ngarluma Aboriginal Corporation, Yindjibarndi Aboriginal Corporation, Yamatji Marlpa Aboriginal Corporation
National Park Management Plan		
Murujuga National Park Management Plan	Yes	Murujuga 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 6.

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

Cultural features or heritage values related to marine species within the Operational Area or EMBA raised by Traditional Custodians in the course of preparing the EP are outlined in Table 4-19. Values identified in publicly available literature are summarised in Table 4-18.

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 Area. 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.

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

First Nations group	Features and values	Source	Potential for overlap	
			Operational Area	EMBA
Ngarda-Ngarli (Mardudhunera, Ngarluma, Wong-Goo-Tt-Oo, Yaburara and/or Yindjibarndi)	Value: Traditional knowledge recalls that the sea is a source of creation for flying foxes. Value: Petroglyphs are understood as permanent signs left by ancestral beings. Value: Petroglyphs depict the law. Value: Cultural obligations to look after places of special potency. Value: Petroglyphs are important in initiation and education.	DEC 2013	Possible (unspecified) No No Possible No	Possible (unspecified) Possible (shoreline accumulation only) Possible (shoreline accumulation only) Possible Possible (shoreline accumulation only)
	Value: The sea is acknowledged a starting point for songlines, including the flying fox songline.	MAC 2023	Possible (unspecified)	Possible (unspecified)
	Feature: Resources including fishes, turtles and dugong. Value: Traditional knowledge recalls a sea serpent which travelled from the coast to inland pools.	Water Corporation 2019	Possible (turtles, dugong, fish) Possible (unspecified)	Possible (turtles, dugong, fish) Possible (unspecified)
	Value: Traditional knowledge recalls a water serpent from the ocean now lives in an inland pool. He created many sites and punishes law breakers. Value: In a separate account a sea serpent punishing people was driven back to the sea by a freshwater serpent.	Barber and Jackson 2011	Possible (unspecified) Possible (unspecified)	Possible (unspecified) Possible (unspecified)
	Value: Traditional knowledge recalls Manggan created the seas.	Ngarluma Aboriginal Corporation	Yes	Yes
	Value: Traditional knowledge recalls Pannawonica Hill being carried from the sea near Barrow Island or Murujuga by a spirit bird.	Hook *et al.* 2004	Possible (unspecified)	Possible (unspecified)
	Value: Traditional knowledge recalls Murujuga is where ancestral beings emerged from the sea and brought the Law.	Australian Heritage Council 2012	Possible (unspecified)	Possible (unspecified)
	Feature: Submerged First Nations archaeological sites in Cape Bruguieres channel.	Benjamin *et al.* 2020	No	Possible

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First Nations group	Features and values	Source	Potential for overlap	
			Operational Area	EMBA
	Feature: Submerged First Nations archaeological sites in Cape Flying Foam Passage.	Benjamin *et al.* 2023	No	Possible
	Value: Traditional knowledge recalls Maarga (creation ancestors) lifted the land and sky out of the ocean.	Milroy and Revell 2013 Japingka Aboriginal Art Gallery 2023	Possible (unspecified)	Possible (unspecified)
	Feature: Submerged waterholes related to the Kangaroo songline. Value: Traditional knowledge holds that Songlines continue beyond the current coast and across the submerged landscape.	Kearney *et al*. 2023	Possible Possible (unspecified)	Possible Possible (unspecified)
	Value: Songlines are captured through storytelling, rock art, songs and dance, and in the landmarks themselves. Value: Murujuga is the start of many songlines, including the Seven Sisters.	Bainger 2021	Possible (unspecified) Possible (unspecified)	Possible (unspecified) Possible (unspecified)
	Value: Songlines at Murujuga date back to times when the sea-level was lower.	MAC 2023	Possible (unspecified)	Possible (unspecified)
	Feature: Rock art. Feature: Sacred sites.	Weerianna Street Media Production 2017	Possible (submerged) Possible (unspecified)	Possible (submerged) Possible (unspecified)
	Feature: Resources including fish, turtles. Feature: Fish traps exist throughout the archipelago. Feature: Shell middens exist on coastal margins. Feature: Submerged archaeological sites. Value: Law emerged from the sea and travelled inland.	Leach *et al.* 2021	Possible (turtles, fish) No No No Possible (unspecified)	Possible (turtles, fish) Possible Possible Possible Possible (unspecified)
	Feature: Resources including mangrove seeds, turtles, turtle eggs) Value: It is recalled that ceremonies were conducted on islands.	Smyth 2007	Possible (turtles) No (other resources)	Possible (turtles, turtle eggs, mangrove seeds) Possible (unspecified)
	Feature: Archaeological sites on Murujuga.	McDonald 2015 McDonald 2023	No	Possible (submerged and/or shoreline accumulation)
	Feature: Archaeological sites on Enderby Island.	McDonald *et al.* 2023a	No	No

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First Nations group	Features and values	Source	Potential for overlap	
			Operational Area	EMBA
	Feature: Archaeological sites on Rosemary Island.	McDonald *et al.* 2023b	No	Possible (shoreline accumulation only)
	Feature: Petroglyph and other archaeological sites at Murujuga. Feature: Archaeological evidence of the use of resources including fish, turtles, marine mammals, crocodiles, crabs and sea urchins.	*Dortch et al*. 2019	No Possible albeit unlikely (submerged)	Possible (submerged) (shoreline accumulation only) Possible (submerged, highly unlikely for most evidence of faunal use to survive inundation)
Unspecified	Value: Totem relationships with animals, plants, tides and currents.	Smyth 2008	Possible (unspecified)	Possible (unspecified)
	Feature: Archaeological sites in submerged landscapes.	Australian Heritage Council 2012	Possible	Possible
	Value: Sea Country has customary law defining ownership and management rights and responsibilities.	Crabtree *et al.* 2021	Possible	Possible
	Value: Knowledge of Sea Country	Muller 2008	Possible	Possible
	Value: Connection to Sea Country.	Kearney *et al.* 2023	Possible	Possible
	Value: Care for Sea Country.		Possible	Possible
	Value: Activities relating to resources included: • dugong [hunting] (1) • turtle [hunting] (2) • turtle egg [collecting] (3) • seabird egg [collecting] (4) • fish [spearing, reef trapping, herding, line, collecting and poisoning] (5) • stone fish traps (6) • gathering shellfish (7) and other marine resources (8)	Smyth 2007	Possible (1 to 3, 8) No (3, 5 to 7)	Possible (1 to 6, 8) No (7)
	Value: Kinship relationships with plants and animals.		Possible (unspecified)	Possible (unspecified)
	Feature: Tangible and intangible heritage.		Possible (unspecified)	Possible (unspecified)

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First Nations group	Features and values	Source	Potential for overlap	
			Operational Area	EMBA
	Feature: Archaeological evidence of varied occupation and adaptation.	Macfarlane and McConnel 2017	No	Possible (shoreline accumulation only)
	Value: Distinct way of life centred around the use of limited water and coastal resources.		Possible	Possible
	Value/s: Dugongs (1), marine turtles (2), open shell middens (3), burial sites (4).		Possible (1, 2) No (3, 4)	Possible (1, 2) No (3, 4)
	Feature: Resources including bluebone (1), molluscs (2), fish (3), crustaceans (4), oysters (5), birrga-birrga (cockles) (6), mulj (periwinkle) (7), njiwa (green crab) (8), umung-umung (hermit crab) (9).	CALM 2005	Possible (1 to 6, 8) No (7, 9)	Possible (1 to 6, 8, 9) No (7)

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4.9.1.4.2 First Nations archaeological heritage assessment

First Nations archaeological heritage in relation to the NWMR is described in Appendix C.

The Department of Planning, Lands and Heritage (DPLH) Aboriginal Heritage Inquiry system was searched for the EMBA, which indicated no Registered Aboriginal Sites or Other Heritage Places in the Operational Area. Within the EMBA, 4 lodged Aboriginal Sites and 43 registered Aboriginal Sites were identified (see Appendix D). The Operational Area intersects part of the Ancient Landscape but also extends beyond the furthest extent of the Ancient Landscape. 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 hydrocarbon release, would involve prioritising further consultation with key contacts within DPLH and relevant local First Nations communities.

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

4.9.1.4.3 Submerged cultural heritage values

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

Planned activities overlapping the Ancient Landscape have potential for seabed contact as outlined in Section 4.7. All actions involving seabed contact, and most actions undertaken in proximity to the seabed, have potential to cause adverse impact to UCH if present (DCCEEW,2024c).

Planned activities include seabed contact. Woodside engages a qualified consultant to undertake a desktop assessment of the potential for submerged archaeological material in areas of proposed seabed disturbance, using available geophysical and bathymetric data. This approach is consistent with Assessing and Managing Impacts to Underwater Cultural Heritage in Australian Waters (DCCEEW, 2024c). Management controls and further assessment of the potential impacts on archaeological material by the proposed activity is discussed in Section 6.11.

4.9.1.4.4 Feedback received via consultation to describe the 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 2020). Dhawura Ngilan also specifically notes that “Aboriginal and Torres Strait Islander...intangible knowledge systems, which are held in songlines and language, are endangered. This knowledge is held by Elders and the community...” Through consultation with relevant persons, Registered Native Title Bodies Corporate have identified or raised topics relating to environmental values of cultural interest. These include a broad interest in the marine fauna, including whales and turtles (Table 1 in Appendix F).

Feedback received on potential cultural features and heritage values during consultation is described in Table 4-19.

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).

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

Relevant First Nations group/ individuals	Consultation context	Description of value/ feature/interest	Potential for overlap	
			Operational Area	EMBA
Ngarluma Aboriginal Corporation	Raised during the course of consultation for another EP	Interest: Management of onshore heritage sites.	No	Possible (shoreline accumulation only)
		Interest: Submerged heritage.	Possible	Possible
Robe River Kuruma Aboriginal Corporation	Raised during consultation for this EP	Value: Underwater sea country values.	Possible (unknown)	Possible (unknown)
	Raised during the course of consultation for another EP	Feature: Coastline.	No	Possible (shoreline accumulation only)
		Feature: Underwater heritage.	Possible	Possible
Wirrawandi Aboriginal Corporation representing Ngarda-Ngarli (Mardudhunera and Yaburara)	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.	No	Possible (shoreline accumulation only)
		Interest: Submerged heritage.	Possible	Possible
Yindjibarndi Aboriginal Corporation	Raised during consultation for this EP	No values raised.	-	-
Yamatji Marlpa Aboriginal Corporation	Raised during consultation for this EP	No values raised.	-	-
Kimberley Land Council	Raised during consultation for this EP	No values raised.	-	-

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Relevant First Nations group/ individuals	Consultation context	Description of value/ feature/interest	Potential for overlap	
			Operational Area	EMBA
Murujuga Aboriginal Corporation representing Ngarda-Ngarli people (Mardudhunera, Ngarluma, Wong-Goo-Tt-Oo, Yaburara and Yindjibarndi)	Raised in context of consultation on activities subject to other EPs	Value: Mermaid Sound – ecosystem health.	No	Possible
		Feature: Whale. Value: A whale thalu is an increase at a totemic site that brings whales into beach. Value: Whales and other species of totemic importance need to be protected, including their populations, biodiversity and migration patterns. Value: Whales are culturally important species that migrate through Mermaid Sound; humpback whales in particular.	Possible Possible (unspecified) Possible Possible	Possible Possible (unspecified) Possible Possible
		Feature: Dolphins. Value: There are cultural ceremonies associated with communicating with dolphins.	Possible Possible (unspecified)	Possible Possible (unspecified)
		Feature: Dugongs. Value: Dugongs are a food source associated with seagrasses near Gidley Island.	No No (location specific)	No No (location specific)
		Feature: Fish. Value: There are thalu ceremonies associated with increasing fish stocks.	Possible Possible (unspecified)	Possible Possible (unspecified)
		Feature: Sea snakes. Specifically mentioned as culturally important species.	Possible	Possible
		Feature: Flatback, green, hawksbill, loggerhead and leatherback turtles. Turtles are culturally important species that moves through Mermaid Sound. Turtles are most often seen in shallower areas and where there are seagrasses. Most beaches are nesting sites for turtles, including those on Gidley and Legendre Islands. Value: 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.	Possible (turtle) No (Beaches based on specific location) Possible	Possible No (Beaches based on specific location) Possible

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Relevant First Nations group/ individuals	Consultation context	Description of value/ feature/interest	Potential for overlap	
			Operational Area	EMBA
		Interest: Coral. Fish are attracted to areas with 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). Spawning events should be avoided (associated with full moon). Locations identified during consultation include Withnell Bay; Conzinc Bay; south-west of Legendre Island.	No (location specific)	No (location specific)
		Feature: Seagrass. Seagrasses provide protection for animals. Locations identified during consultation include Conzinc Island; between Angel and Gidley Island.	No (location specific)	Possible
		Value: 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 (location specific)	Possible
		Interest: Macroalgal communities, which are important primary production sites, habitats, and food sources (not explicitly identified by elders). Interest: Subtidal soft-bottom communities, which support invertebrate diversity (not explicitly identified by elders). Interest: Intertidal sand and mudflat communities, which are important primary production sites, support invertebrate diversity and provide food for shorebirds (not explicitly identified by elders). Interest: Rocky shores, which are habitats for intertidal organisms and provide food for shorebirds (not explicitly identified by elders).	No No No No	Possible Possible Possible Possible

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Relevant First Nations group/ individuals	Consultation context	Description of value/ feature/interest	Potential for overlap	
			Operational Area	EMBA
		Feature: Fish traps. There are known fish traps in Conzinc Bay, and others would have or do exist in coastal areas of islands, such as Angel and Gidley Islands. People still use the Conzinc Bay fish traps regularly for catching mangrove jack, trevally and other fish. Value: Squidding (harvesting of squid from the ocean) around Conzinc Island.	No No	Possible No (location specific)
		Value: Appropriate cultural authority for Murujuga.	Possible	Possible
		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
		Value/s: Stingrays	Possible	Possible
		Value/s: Sharks	Possible	Possible
		Value/s: Crustaceans	Possible	Possible
		Value/s: Octopus	Possible	Possible
		Value/s: Sea stars	Possible	Possible
		Value/s: Sea urchins	Possible	Possible
		Value/s: Sponges	Possible	Possible
		Value/s: Molluscs	Possible	Possible
		Value/s: Submerged Landscape Potential impact to Aboriginal heritage, due to the submerged coastline at initial occupation of the region, landscape features that would have defined the first travel routes used to move through Country.	Possible	Possible

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Relevant First Nations group/ individuals	Consultation context	Description of value/ feature/interest	Potential for overlap	
			Operational Area	EMBA
		Murujuga seasonal calendar: Any change to the feeding, breeding or migratory behaviour of culturally significant species would impact significantly on subsistence, cultural and ceremonial activities.	Possible	Possible
Self-identified First Nations groups				
Ngarluma Yindjibarndi Foundation Ltd (NYFL)	-	No values raised	-	-
Save Our Songlines	Consultation for this EP	No values raised	-	-
	Raised specific to GPGT Surveys Program (see Appendix F; Table 2) 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
	Raised in Concise Statement and Affidavit 3 in context of Scarborough seismic activities	Value: Caring for Country.	Possible (unspecified)	Possible (unspecified)
		Feature: Whales. *“Whales carry important songlines, the whale Dreaming, and connection between land and sea”.* *"As the biggest animal on earth, the whale has the greatest heart connection to songlines, people and animals and carries the songlines around the ocean, connecting places."* *“Whale Dreaming story has a strong connection to the heart centre in each person, this story helps people to open up and to realise,*	Possible (whales) Possible (songlines, unspecified)	Possible (whales) Possible (songlines, unspecified)

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Relevant First Nations group/ individuals	Consultation context	Description of value/ feature/interest	Potential for overlap	
			Operational Area	EMBA
		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."*		
		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)

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Relevant First Nations group/ individuals	Consultation context	Description of value/ feature/interest	Potential for overlap	
			Operational Area	EMBA
		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)
		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)

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Relevant First Nations group/ individuals	Consultation context	Description of value/ feature/interest	Potential for overlap	
			Operational Area	EMBA
		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

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Relevant First Nations group/ individuals	Consultation context	Description of value/ feature/interest	Potential for overlap	
			Operational Area	EMBA
		Interest: Seabirds. *"Potential impacts on marine species and natural environment, relevant to the natural environment, relevant to the Applicant's interests, including but not limited to:* *v. potential impacts on water quality and consequent potential impacts on marine fauna such as whales, dugongs, sharks, rays, and seabirds from the risk of unplanned chemical discharges (non-hydrocarbon)".*	Possible	Possible
		Interest: Where saltwater and freshwater meet. *"The places where the saltwater from the sea and the freshwater from the land connect are where the biggest energy lines[3] 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 (shoreline accumulation only)
		Value: Bungarra, eagle, kangaroo. Identified totemic species.	No	No
		Feature: Murujuga. Interest: Climate Change. Potential damage to Murujuga rock art due to "acid gas emissions from operations on the Burrup" and climate change.	No	Possible (Murujuga) (shoreline accumulation only)

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

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4.9.1.5 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 confirm whether there is any potential for these to exist within the Operational Area or EMBA. As previously described, topics that have been raised in the context of an interest linked to the natural environment are impact and risk assessed in Sections 6.8 and 6.9.

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

Where cultural features are physical elements of a place, these can generally be assessed for impacts; where a feature is avoided, impacts from planned activities are not predicted. Heritage values relate less to what is significant and more to why something is significant; potential interactions between heritage values and the Operational Area can only be reliably informed by consultation with Traditional Custodians where they are willing to share the necessary knowledge. Assessment of heritage values beyond cultural features alone is addressed in Section 6.11 subject to these caveats.

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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 Area	EMBA
Archaeological heritage and landscapes					
Coastal/island archaeological sites	Coastal archaeological sites include shell middens, artefact scatters, skeletal material/burial sites, camps, meeting places, hunting places and water sources.	✓	✓	No	Possible (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.	✓	✓	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.	x	✓	No	Possible
Submerged archaeological sites	The Ancient Landscape extends between 125 m and 130 m below current sea level. Ancient occupation of this area may have left traces through now submerged archaeological sites.	✓	✓	Possible	Possible
Rivers, waterholes, tidal channels and seeps	Water sources on the Ancient Landscape which may be culturally significant or archeologically prospective. Traditional knowledge retains knowledge of some water sources on the Ancient Landscape and some submerged waterholes are related to a Kangaroo songline.	x	x	No	No
Submerged hills	Hills on the Ancient Landscape which may be culturally significant or archeologically prospective. As sea level rose these hills would have become islands and eventually submerged.	x	x	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)

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Identified cultural features and heritage values	Context	EP source		Potential for overlap	
		Consultation feedback	Desktop literature assessment	Operational Area	EMBA
Ceremonial sites	Places where ceremony (e.g. thalu ceremonies) are performed. All identified ceremonial sites are located onshore.	x	x	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 Area)
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

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Identified cultural features and heritage values	Context	EP source		Potential for overlap	
		Consultation feedback	Desktop literature assessment	Operational Area	EMBA
Marine ecosystems and species					
Water quality	Interest only, raised as a natural environment interest.	✓	✓	Possible	Possible
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 communicating with dolphins. Culturally important species.	✓	✓	Possible	Possible
Marine mammals: Dugongs	Culturally important species. Used as a resource.	✓	✓	Possible	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.	✓	x	Possible	Possible

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

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4.9.1.6 Historic sites of significance

There are no known sites of historic cultural heritage significance within the Operational Area. These are identified in the following sections and described in Appendix C.

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 Area; however, two sites (shipwrecks) exist within the EMBA.

Table 4-21 lists sites identified within 10 km of the Operational Area. Shipwreck locations in the wider NWMR and descriptions of National heritage listed shipwrecks are provided in Appendix C.

Table 4-21: Underwater heritage sites within 10 km of the Operational Area

Vessel name	Year wrecked	Wreck location	Latitude (D.MM °S)	Longitude (D.MM °E)	Distance and direction from Operational Area (km)
Zelma	1990	Legendre Island, Dampier Archipelago	20°22.63	116°52.48	9 km south from Operational Area

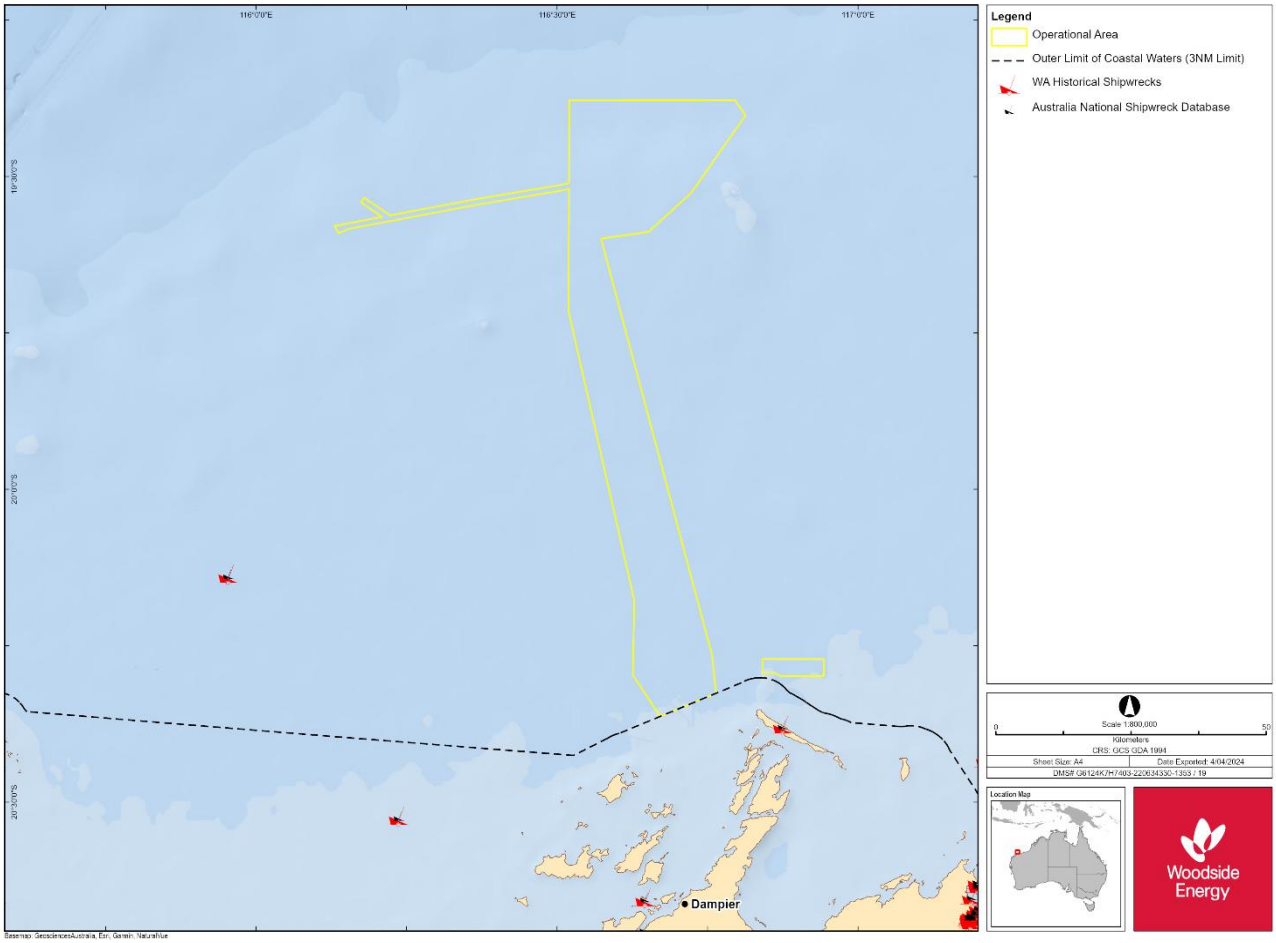


Figure 4-14: Shipwrecks in the vicinity of the Operational Area

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4.9.1.8 World, National and Commonwealth heritage listed places

Two listed heritage place overlaps the Operational Area. World, National and Commonwealth heritage places within the EMBA are identified in Table 4-22.

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

Listed place	Distance and direction from Operational Area to listed place (km)
World Heritage Places (Properties)	
Murujuga Cultural Landscape	5.7 km south
National Heritage Places	
Dampier Archipelago (including Burrup Peninsula)	7 km south
Commonwealth Heritage Places	
None	

4.9.1.8.1 Murujuga Cultural Landscape World Heritage property

Murujuga Cultural Landscape located 5.7 km from the Operational Area has global significance, is rich with heritage values, included on Australia's National Heritage list and inscribed onto the UNESCO World Heritage List. The landscape encompasses one of the largest, densest, and most diverse collections of rock art in the world. The area is estimated to contain over a million engravings (petroglyphs) demonstrating a broad range of styles and subjects. The landscape also boasts various archaeological sites including quarries, middens, fish traps, rock shelters, ceremonial sites, artefact scatters, grinding patches and stone arrangements that evidence tens of thousands of years of human occupation. These significant places are linked through the stories, knowledge and customs maintained by Traditional Custodians of Murujuga.

National Heritage Place – Dampier Archipelago

The Dampier Archipelago, including Murujuga, was included in the National Heritage List in 2007. Values listed against National Heritage criteria in the gazettal notice include:

- engravings of a wide range of terrestrial, avian and marine fauna, which provide an "outstanding visual record of the course of Australia's cultural history through the Aboriginal responses to the rise of sea levels at the end of the last Ice Age"
- engraved "archaic faces" that demonstrate the long contact between Aboriginal societies on the Dampier Archipelago and inland arid Australia
- diversity in representation of the human form in engravings, including depictions of groups of people "engaged in both mundane and sacred activities"
- standing stones, stone pits and circular stone arrangements associated with various uses
- ability to link research on archaeological remains (middens, grinding patches, quarries) and associated rock engravings to "contribute to an understanding of the cultural and economic meaning".

Further detail of these values can be found in the publicly available Gazettal[4].

UNESCO World Heritage Listing

UNESCO "seeks to encourage the identification, protection and preservation of cultural and natural heritage around the world considered to be of outstanding value to humanity" via the World Heritage List, established under the World Heritage Convention 1972 (UNESCO 2024). The Murujuga Cultural Landscape was nominated by the Federal Department of the Environment and Energy in 2020 and was inscribed on the UNESCO World Heritage List on 11 July 2025. This property is comprised of 99,881 hectares, includes 8,356 hectares of the Burrup Peninsula, 42 islands of the Dampier Archipelago and adjacent marine areas.

[4] https://www.dcceew.gov.au/sites/default/files/env/pages/d53ee213-2f1e-481e-b0f6-85d861a52de2/files/10572701.pdf

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The outstanding universal values (OUV) of the Murujuga Cultural Landscape World Heritage property include:

- Petroglyphs demonstrate artistic achievement assembled over 50,000 years. The petroglyphs are visually outstanding, demonstrate technical skill, and represent multiple phases in the development of regional and local styles.
- The Murujuga Cultural Landscape bears testimony to the living cultural traditions of Ngarda-Ngarli and the spiritual relationship between people and landscape that is at least 50,000 years old.
- The Murujuga Cultural Landscape is an outstanding example of human interaction with the environment over at least 50,000 years. The landscape is patterned by this long-term presence persisting through irreversible environmental and climatic changes.

The Murujuga Cultural Landscape is inscribed under Cultural Criterion i, iii and v which are reflective of the OUV.

Further information on the Murujuga Cultural Landscape can be found on the publicly available UNESCO World Heritage Listing[5].

As stated by the State Department of Biodiversity, Conservation and Attractions, “World Heritage Listing also brings a commitment at local, state and national levels to protect and manage the property for present and future generations.” World Heritage listing and industry can occur in parallel, as long as there are no significant impacts on World Heritage values.

Murujuga Cultural Landscape Management Framework

Woodside acknowledges and considers management plans relevant to the Murujuga Cultural Landscape, ensuring that its objectives align with Australia’s duties and obligations under the World Heritage Convention.

Applicable plans include:

- Murujuga National Park Management Plan (2013, as amended in 2023)
- Murujuga Cultural Management Plan (2016)
- Murujuga Cultural Landscape Strategic Management Framework (2022)

The Murujuga Cultural Landscape Strategic Management Framework[6] establishes the management structure for the recently inscribed Murujuga Cultural Landscape World Heritage Property. Existing laws and regulations, joint management agreements, statutory management plans and complementary policies, strategies and programs in place for Murujuga remain active and support the Listing. Demonstration of alignment with the management objectives under these plans and under relevant regulatory structures is addressed in Section 6.116.9.

The Murujuga Cultural Landscape World Heritage Property boundary in relation to the Operational Area for Angel CCS is illustrated in Figure 4-15.

[5] https://whc.unesco.org/en/list/1709.

[6] https://library.dbca.wa.gov.au/static/FullTextFiles/158097.pdf.

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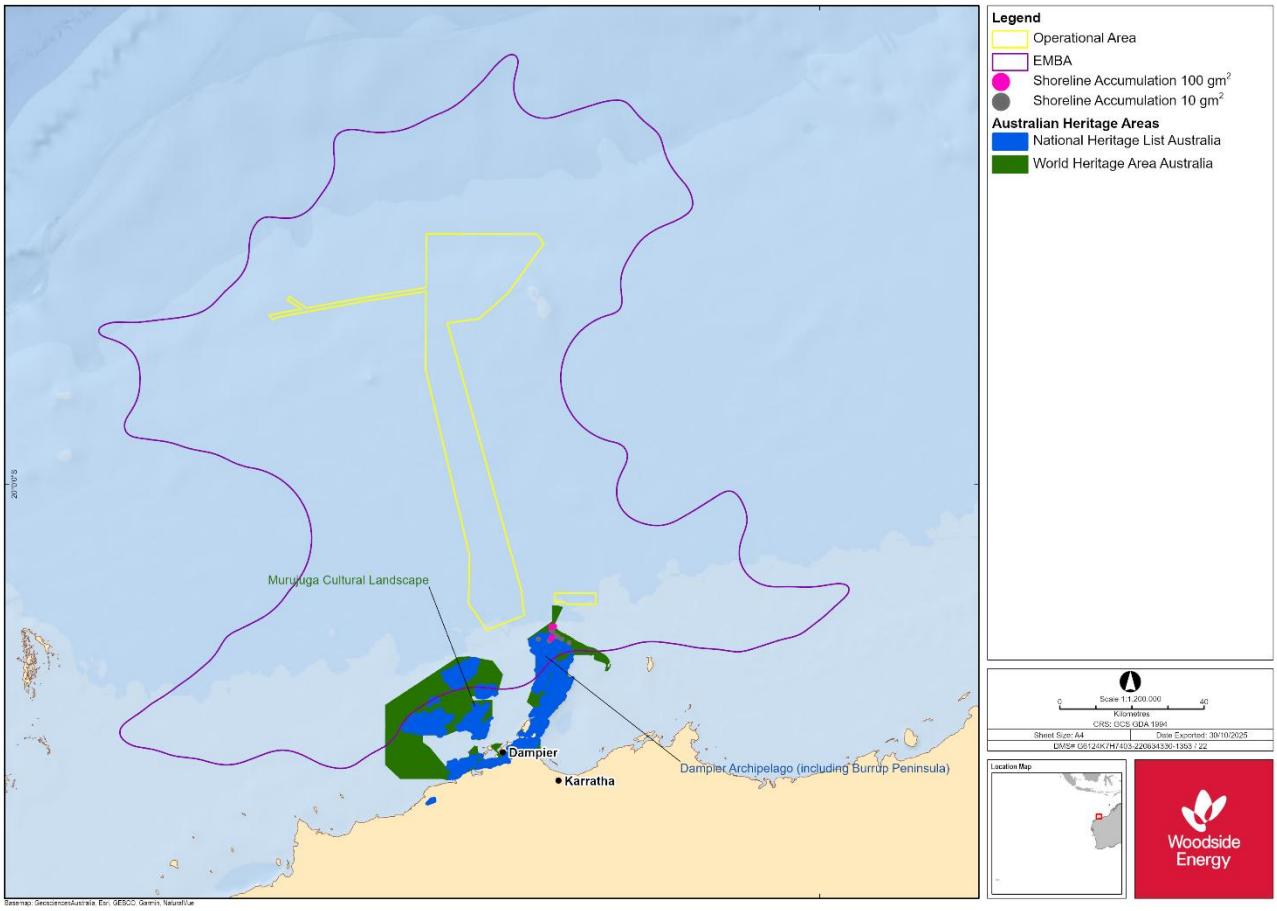


Figure 4-15: Murujuga Cultural Landscape World Heritage property boundary in relation to the Operational Area for the Geophysical and Geotechnical Surveys Program

4.9.2 Commercial fisheries

A number of Commonwealth and State fishery management areas are located within the Operational Area and EMBA. Data from the Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES) were used to identify if Commonwealth managed fisheries have fished within the Operational Area and EMBA in the most recently available five-year period of catch and effort data (2018 to 2022). FishCube data were also requested from the WA Department of Primary Industries and Regional Development (DPIRD) for the most recently available five-year period of fishery catch and effort data (2018 to 2022) to analyse the potential for interaction of fisheries with the Operational Area and EMBA. Data was reviewed from the last five years as a subset of past fishing effort. This was deemed an appropriate period to represent potential future fishing effort over the lifecycle of this EP.

This information was used to determine relevant fisheries for consultation who may be impacted by the proposed GPGT Surveys Program. Table 4-23 provides an assessment of the potential interaction and Appendix C provides further detail on the fisheries that were identified through desk-based assessment and consultation (Section 5).

No Commonwealth managed fisheries were identified as having a potential interaction with the GPGT Surveys Program within the Operational Area and one within the EMBA. Nine State managed fisheries were identified as having a potential interaction with the GPGT Surveys Program within the Operational Area and 10 within the EMBA (Figure 4-16).

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

Fishery	Potential for interaction during activity[7]		Description
	Operational Area	EMBA	
Commonwealth managed fisheries			
North West Slope Trawl Fishery	x	✓	The North West Slope Trawl Fishery management area overlaps the EMBA. Between one to six vessels have been active in the fishery since 2005. Three vessels operated in the 2022 to 2023 season and trawl hours increased from 3950 in 2021/2022 to 4349 in 2022/2023. Fishery Status Reports indicate most recent activity inside the EMBA occurred in the 2022 to 2023 season (Butler *et al.* 2024). Accordingly, Woodside considers it a possibility that interactions with the fishery may occur in the EMBA.
Western Tuna and Billfish Fishery	x	x	The Western Tuna and Billfish Fishery management area overlaps the EMBA and Operational Area; however, the majority of Australian catch has concentrated in south-eastern Australia (Patterson *et al.* 2021). There has been no fishing effort reported within the Operational Area in the last five years. Accordingly, Woodside considers there to be no potential for interaction with this fishery and the GPGT Surveys Program.
Southern Bluefin Tuna Fishery	x	x	The Southern Bluefin Tuna Fishery management area overlaps the EMBA and Operational Area. 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). There has been no fishing effort reported within the Operational Area in the last five years. Accordingly, Woodside considers there to be no potential for interaction with this fishery and the GPGT Surveys Program.
Western Skipjack Tuna Fishery	x	x	The Western Skipjack Tuna Fishery management area overlaps the Operational Area and the EMBA. 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 (Patterson *et al.* 2022). Accordingly, Woodside considers there to be no potential for interaction with this fishery and the GPGT Surveys Program.
State managed fisheries			
Pilbara Crab Managed Fishery	✓	✓	The Pilbara Crab Managed Fishery overlaps the Operational Area and EMBA. The fishery is 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; however, effort was reported in one 60 NM block overlapping the Operational Area, with less than three vessels operating in the last five years (DPIRD 2023). Accordingly, Woodside considers it a possibility that interactions with the fishery may occur within the EMBA and Operational Area.

[7] *x indicates no spatial overlap with management area and therefore no potential for interaction with planned activities.*

✓indicates spatial overlap with management area.

✓with shading indicates spatial overlap with management area and potential for interaction with planned activities.

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Fishery	Potential for interaction during activity[7]		Description
	Operational Area	EMBA	
Mackerel Managed Fishery	✓	✓	The Mackerel Managed Fishery overlaps the Operational Area and EMBA. FishCube data reported active fishing by up to five vessels in two 60 NM CAES block between the 2018 to 2023 seasons within the Operational Area (DPIRD 2023). FishCube data reported fishing effort in six 10 NM CAES blocks overlapping the Operational Area, up to three vessels operating in the last five years (DPIRD 2023). FishCube data reported fishing effort by up to six vessels within six 60 NM CAES blocks overlapping the EMBA in the last five years (DPIRD 2023). Woodside considers there to be potential for interaction with the fishery in the Operational Area and EMBA.
Nickol Bay Prawn Managed Fishery	✓	✓	The Nickol Bay Prawn Managed Fishery overlaps the Operational Area and EMBA. FishCube data reported active fishing by up to eight vessels in one 60 NM CAES block between the 2018 to 2023 seasons within the Operational Area (DPIRD 2023). FishCube data reported no fishing effort 10 NM CAES blocks overlapping the Operational Area (DPIRD 2023). The fishery is active in the EMBA, with three 60 NM CAES blocks reporting up to eight vessels across the 2018 to 2023 seasons (DPIRD 2023). Woodside considers there to be potential for interaction with the fishery in the Operational Area and EMBA.
Onslow Prawn Managed Fishery	✓	✓	The Onslow Prawn Managed Fishery overlaps the Operational Area and EMBA. FishCube data reported active fishing in the Operational Area by less than three vessels in one 60 NM CAES block in the last five years (DPIRD 2023). FishCube data reported no fishing effort 10 NM CAES blocks overlapping the Operational Area (DPIRD 2023). The fishery is active in the EMBA, with two 60 NM CAES blocks reporting less than three vessels across the 2018 to 2023 seasons (Wakefield *et al.* 2023). Woodside considers there to be potential for interaction with the fishery in the Operational Area and EMBA.
Pilbara Fish Trawl (Interim) Managed Fishery	✓	✓	The Pilbara Fish Trawl (Interim) Managed Fishery overlaps the Operational Area and EMBA. FishCube data reported active fishing in the Operational Area by up to four vessels in two 60 NM CAES blocks between the 2018 to 2023 seasons (DPIRD 2023). FishCube data also reported fishing effort in eleven 10 NM CAES blocks overlapping the Operational Area, with up to four vessels operating in the last five years (DPIRD 2023). The fishery is active in the EMBA, with four 60 NM CAES blocks reporting up to four vessels across the 2018 to 2023 seasons (DPIRD 2023). Woodside considers there to be potential for interaction with the fishery in the Operational Area and EMBA.
Pilbara Line Fishery	✓	✓	The Pilbara Line Fishery licensees are permitted to operate anywhere within Pilbara waters (Wakefield *et al.* 2023), overlapping the Operational Area and EMBA. The fishery is active in the EMBA, with five 60 NM CAES blocks reporting up to five vessels across the 2018 to 2023 seasons (DPIRD 2023). FishCube data for the Pilbara Line Fishery is not provided at the 10 NM scale, however effort was reported in two 60 NM CAES block overlapping the Operational Area, with up to three vessels operating in the last five years (DPIRD 2023). Therefore, Woodside considers it a possibility that interactions with the fishery may occur in the Operational Area and EMBA.

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Fishery	Potential for interaction during activity[7]		Description
	Operational Area	EMBA	
Pilbara Trap Managed Fishery	✓	✓	The Pilbara Trap Managed Fishery overlaps the Operational Area and EMBA. The fishery is active in the EMBA, with six 60 NM CAES blocks reporting up to three vessels in the last five years (DPIRD 2023). FishCube data for the Pilbara Trap Managed Fishery is not provided at the 10 NM scale, however effort was reported in two 60 NM blocks overlapping the Operational Area, with up to three vessels operating in the last five years (DPIRD 2023). Accordingly, Woodside considers it a possibility that interactions with the fishery may occur within the EMBA and Operational Area.
Western Australian Sea Cucumber Fishery	x	✓	The Western Australian Sea Cucumber Fishery licensees are permitted to operate anywhere within Western Australian waters, therefore overlapping the Operational Area and EMBA. The fishery is active in the EMBA, with two 60 NM CAES blocks reporting less than three vessels across the 2018 to 2019 season only (DPIRD 2023). Accordingly, Woodside considers it a possibility that interactions with the fishery may occur within the EMBA.
Marine Aquarium Managed Fishery	✓	✓	The Marine Aquarium Fish Managed Fishery management area overlaps the Operational Area and EMBA, however generally collects fish for display in water depths of less than 30 m. The fishery is active in the EMBA, with three 60 NM CAES block reporting up to six licences across the 2018 to 2023 seasons (DPIRD 2023). FishCube data reported active fisheries at one 60 NM CAES block overlapping the Operational Area, with up to six licences operating in the last five years (DPIRD 2023). Effort was also recorded in two 10 NM CAES blocks overlapping the Operational Area, with up to four licences operating in the 2021 to 2022 season (DPIRD 2023). Therefore, Woodside considers it a possibility that interactions with the fishery may occur in the Operational Area and EMBA.
Specimen Shell Managed Fishery	✓	✓	The Specimen Shell Managed Fishery management area overlaps the Operational Area and EMBA. The fishery is active in the Operational Area, with one 60 NM CAES block reporting less than three vessels in the 2020 to 2021 season (DPIRD 2023). Effort was also recorded in one 10 NM CAES blocks, with less than three vessels operating in the 2018 to 2019 season (DPIRD 2023). The fishery is active in the EMBA, with two 60 NM blocks reporting less than three licences across the 2018 to 2023 seasons (DPIRD 2023). Therefore, Woodside considers it a possibility that interactions with the fishery may occur in the Operational Area and EMBA.
Abalone Managed Fishery	x	x	The Abalone Managed Fishery management area overlaps the Operational Area and EMBA. However, FishCube data reported no fishing effort within the Operational Area or EMBA in the last five years (2018 to 2023) (DPIRD 2023). Accordingly, Woodside considers there to be no potential for interaction with this fishery and the activity.
South West Coast Salmon Managed Fishery	x	x	The South West Coast Salmon Managed Fishery management area overlaps the Operational Area and EMBA. However, FishCube data reported no fishing effort within the Operational Area or EMBA in the last five years (2018 to 2023) (DPIRD 2023). Accordingly, Woodside considers there to be no potential for interaction with this fishery and the activity.

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Fishery	Potential for interaction during activity[7]		Description
	Operational Area	EMBA	
West Coast Deep Sea Crustacean Managed Fishery	x	x	The West Coast Deep Sea Crustacean Managed Fishery management area overlaps the Operational Area and EMBA. However, FishCube data reported no fishing effort within the Operational Area or EMBA in the last five years (2018 to 2023) (DPIRD 2023). Accordingly, Woodside considers there to be no potential for interaction with this fishery and the 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 report consistent effort across four 60 NM CAES blocks that overlap the EMBA (DPIRD 2023). Effort was reported by up to 20 vessels across the 2018 to 2023 seasons (DPIRD 2023). The FishCube data reported effort in one 60 NM CAES block overlapping the Operational Area, reporting up to four vessels within the last five years (DPIRD 2023). Effort was also reported across five 10 NM CAES blocks within the Operational Area, with less than three licences operating in the last five years (DPIRD 2023). Accordingly, Woodside considers it a possibility that interactions with tour operators may occur within the Operational Area and EMBA.

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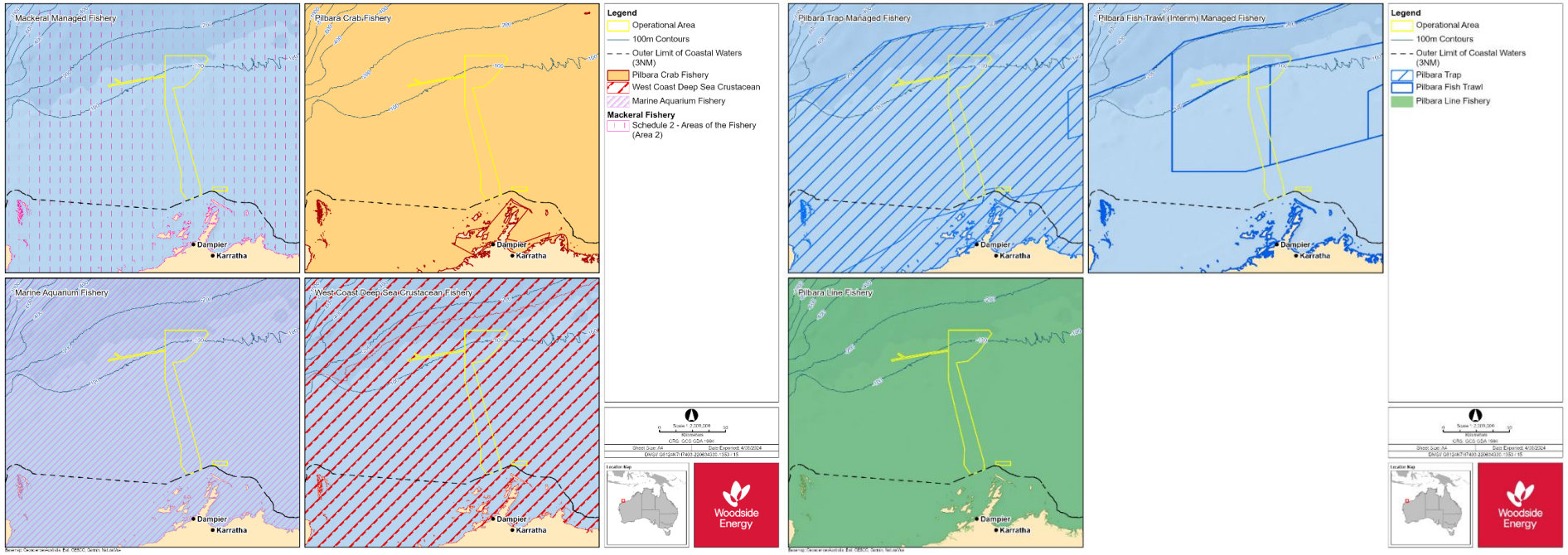


Figure 4-16: State-managed fisheries with a potential for interaction with the Geophysical and Geotechnical Surveys Program

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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 Area. The First Nations communities who are traditionally from the Burrup Peninsula have strong connections and uses for the sea, which includes the coastal areas adjacent to the Operational Area.

The local First Nations community has a relationship with the marine environment which began thousands of years ago and continues to this day to rely on the coastal and marine environments for their cultural identity, wellbeing, and their domestic and commercial economies (Smyth 2007).

As described in Section 4.9.1, the petroglyphs of the Burrup Peninsula contain many depictions of marine fauna, including those hunted for food by the local Indigenous communities (Integrated Heritage Services 2018). Midden sites have also been located, indicating shellfish foraging (Integrated Heritage Services 2018). The First Nations community continues to use the marine environment for a diverse range of traditional fishing methods, including hunting (dugongs, turtles, egg collecting (turtles, seabirds), capturing fish (spearing, reef trapping, herding, line fishing, collecting in stone fish traps, poisoning), and gathering shellfish and other marine sources.

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

Charter fishing, cruising, diving, snorkelling, whale watching, and marine turtle and dolphin watching are the main commercial tourism activities in and adjacent to the NWMR. Except for offshore charter fishing, most marine tourism activities occur in nearshore waters, including in the Dampier Archipelago (DEWHA 2008). FishCube data containing tour operator activity was acquired from DPIRD for the period 2018 to 2023 (inclusive) for five 10 NM CAES blocks that overlap the Operational Area (DPIRD 2023). The data show that less than three tour operators have been active within the 10 NM CAES blocks in 2021–2022, suggesting some recent activity in the area. The popularity of recreational fishing has grown substantially in the Pilbara region over recent years, with a distinct seasonal peak in winter when significant numbers of metropolitan and interstate tourists travel through the area and visit the Dampier Archipelago. The high tidal range in the area means beach fishing is limited to periods of flood tides and high water (Penn *et al.* 2005). Consequently, much of the angling activity is boat-based. The Pilbara region has the highest boat ownership per capita in Australia (CALM 2005). The Montebello Islands (located 110 km south-west of the Operational Area) are the closest for tourism, with some charter boat operators taking visitors to these islands (DEC 2007).

Some recreational fishing has historically taken place at the Glomar Shoals KEF (overlaps the Operational Area). However, due to the distance from access nodes, such as Dampier and Onslow (approximately 35 km south and 219 km south-south west from the Operational Area at the closest point respectively) recreational fishing effort is expected to be restricted to relatively large vessels and hence is considered to be low.

As most marine nature-based activities take place generally in nearshore waters and away from the working port areas between the Dampier Cargo Wharf and NWS liquefied natural gas (LNG) jetties, it is expected that there is little potential for interacting with tourism and recreational fishing within the Operational Area.

Tourism and recreation in the context of the wider NWMR is described in Appendix C.

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4.9.5 Commercial shipping

The region supports significant commercial shipping activity, mostly associated with the mining and oil and gas industries. Major shipping routes in the area are associated with entering the ports of Dampier and Barrow Island. Shipping activities in the region include:

- international bulk freighters/tankers arriving and departing from Dampier including mineral ore, hydrocarbons (LNG, liquefied petroleum gas, condensate) and salt carriers
- domestic support vessels servicing offshore facilities and Barrow Island development
- offshore support vessels.

Analysis of vessel traffic data acquired through Australian Maritime Safety Authority's (AMSA) Craft Tracking System determined that in 2022, most of the Operational Area had densities between 0 and 250 vessels per year. Significantly higher densities were recorded at the State waters boundary, with densities between 3250 and 5500 vessels per year.

AMSA has introduced a network of marine fairways across the NWMR to reduce the risk of vessel collisions with offshore infrastructure. It is noted that two of these fairways intersect with the Operational Area; (Figure 4-17). Vessel tracking data suggest shipping is concentrated to the south and east of the Operational Area.

The fairway intended to direct northeast/southwest traffic between Barrow Island/Montebello Islands and Dampier Archipelago overlaps with the Operational Area. The fairway intended to direct traffic northbound from Dampier Archipelago also overlaps the southern part of the Operational Area (Figure 4-17).

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 Area.

Appendix C describes current oil and gas development within the EMBA, also shown in Figure 4-18.

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

Facility or asset	Operator	Distance and direction from Operational Area (km)
Karratha Gas Plant	Woodside	28 km south
Pluto LNG Park	Woodside	29 km south
North Rankin Complex	Woodside	Overlaps
Okha	Woodside	6 km west
Goodwyn Alpha	Woodside	22 km west
Reindeer	Santos	29 km west
FPSO MODEC Venture 11	MODEC	10 km north
Stag A	Jadestone	36 km west
Dampier Spirit	Teekay Shipping	36 km west
Wandoo B	Vermillion Oil and Gas	18 km west

4.9.7 Submarine communications infrastructure

The GPGT Survey Program is located in a region with submarine communications infrastructure. The submarine communications infrastructure located within 100 km of the GPGT Survey Program is listed in Table 4-25 and shown in

Table 4-25: Communications infrastructure located within 100 km of the Operational Area

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Communications infrastructure (submarine cables)	Distance and direction from Operational Areas to Submarine Cables
Woodside Fibre Optic Cable Route	Overlaps
Scarborough Fibre Optic Cable	~15 km north from the Operational Area
Chevron Fibre Optic Cable Route	~48.5 km south west from the Operational Area

Source: Submarine cable locations sourced from Vocus and Telstra.

4.9.8 Defence

Defence areas overlapping the Operational Area are presented in Figure 4-20.

One defence restricted and prohibited area overlaps the Operational Area.

There are also designated defence practice areas in the offshore marine waters off Ningaloo and the North West Cape. The closest defence practice area is 115 km southwest of the Operational Area.

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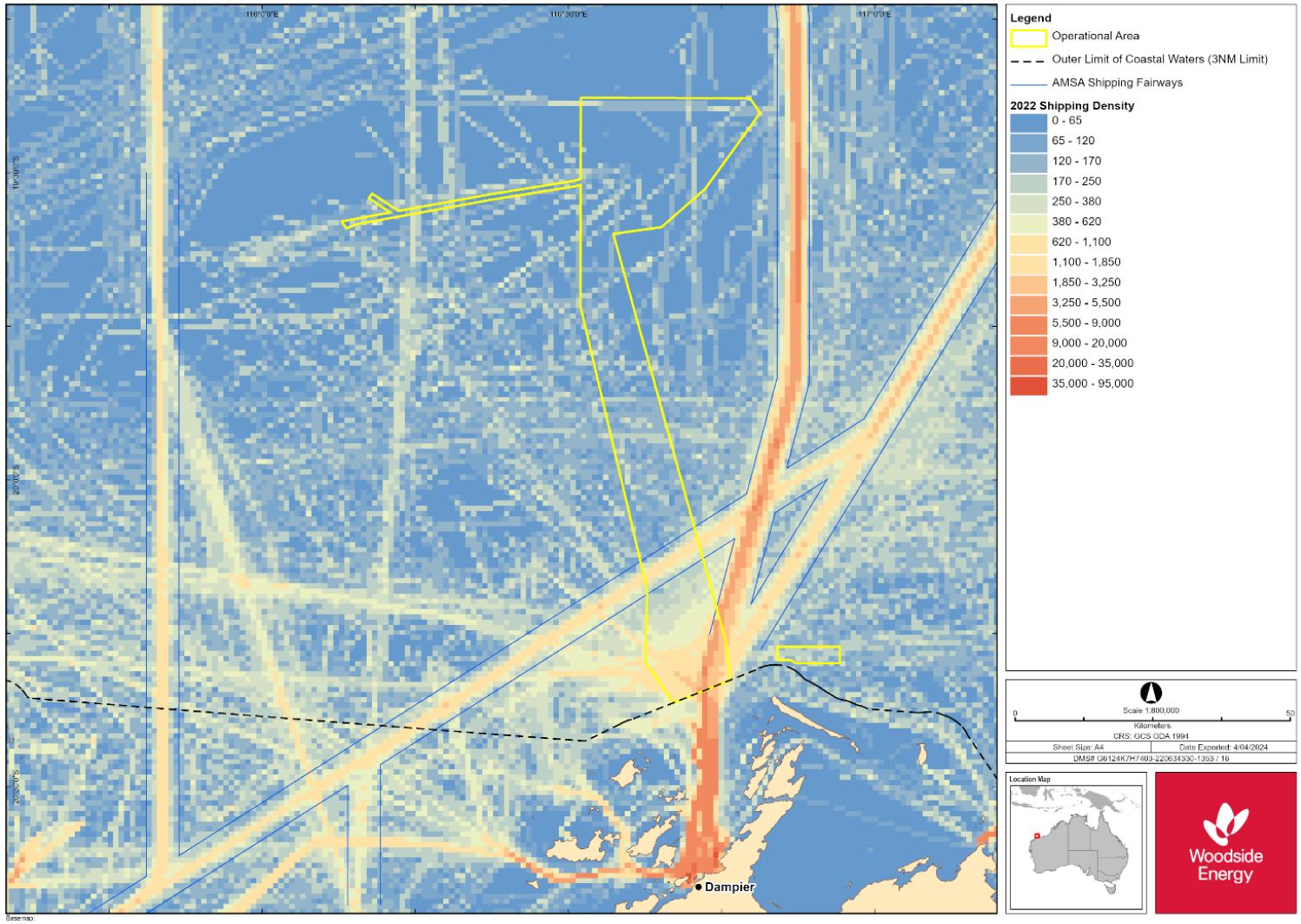


Figure 4-17: Vessel density map for the Operational Area and EMBA

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

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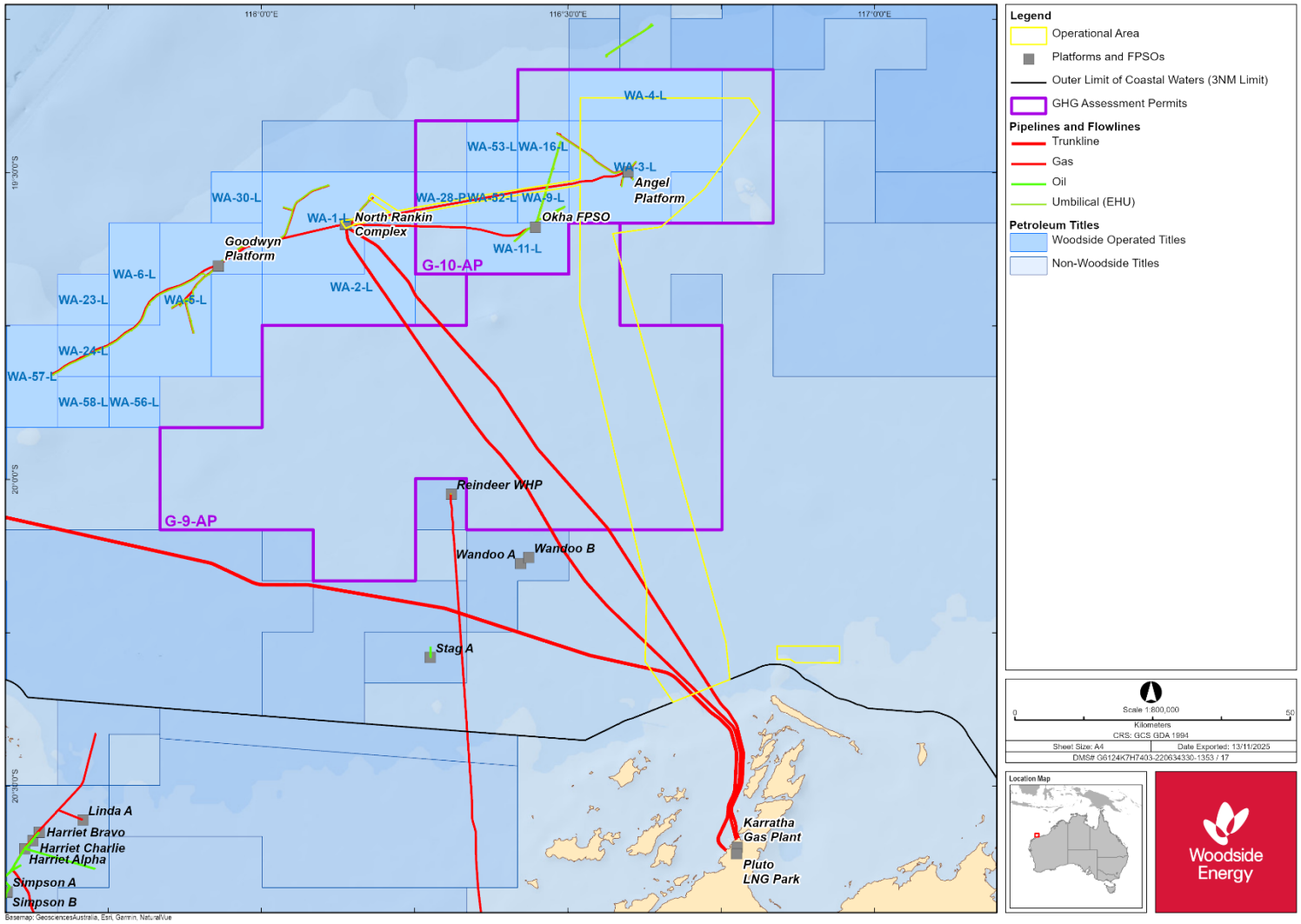


Figure 4-18: Oil and gas infrastructure within the Operational Area and EMBA

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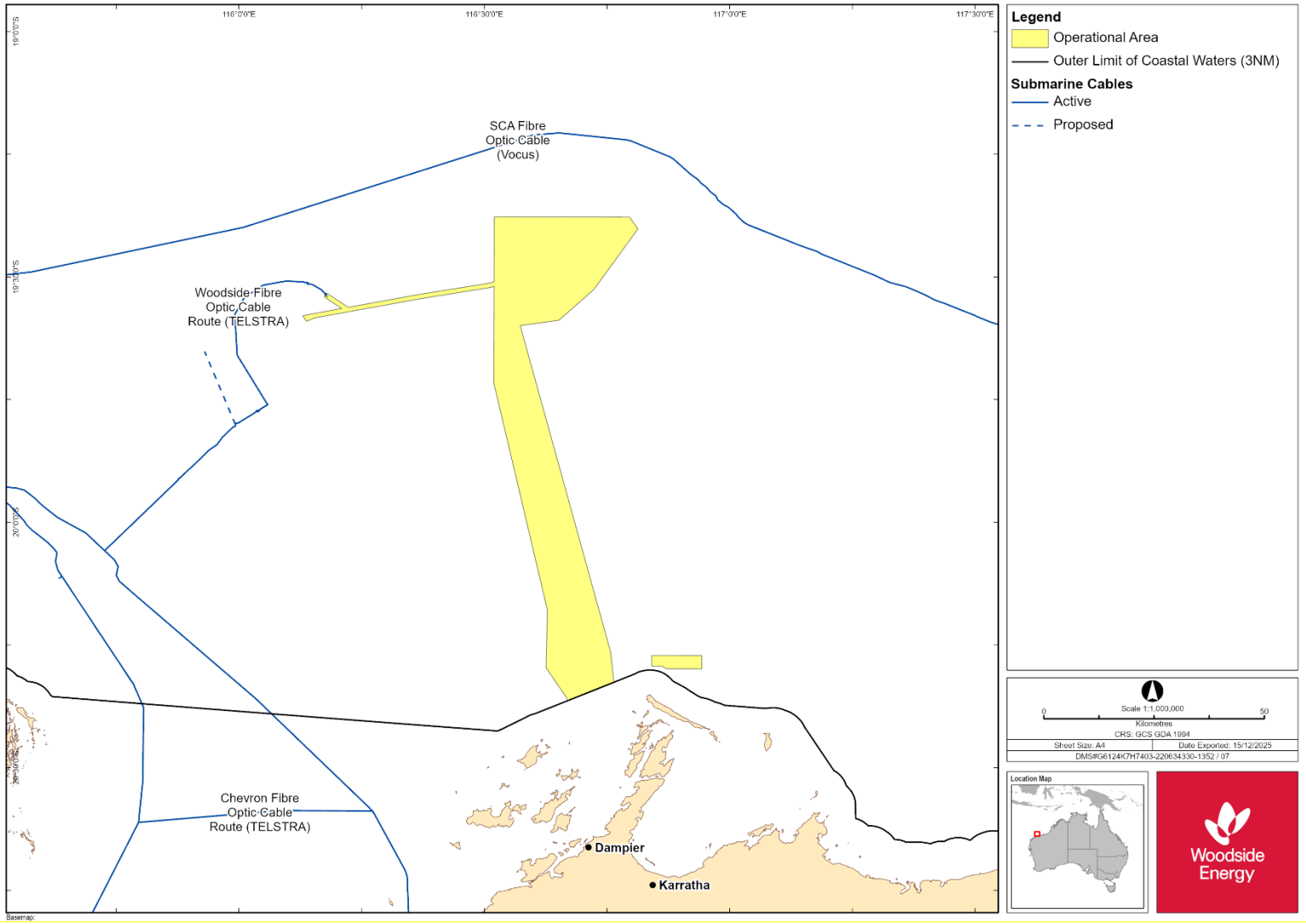


Figure 4-19 Communications infrastructure located on the EMBA and Operational Area

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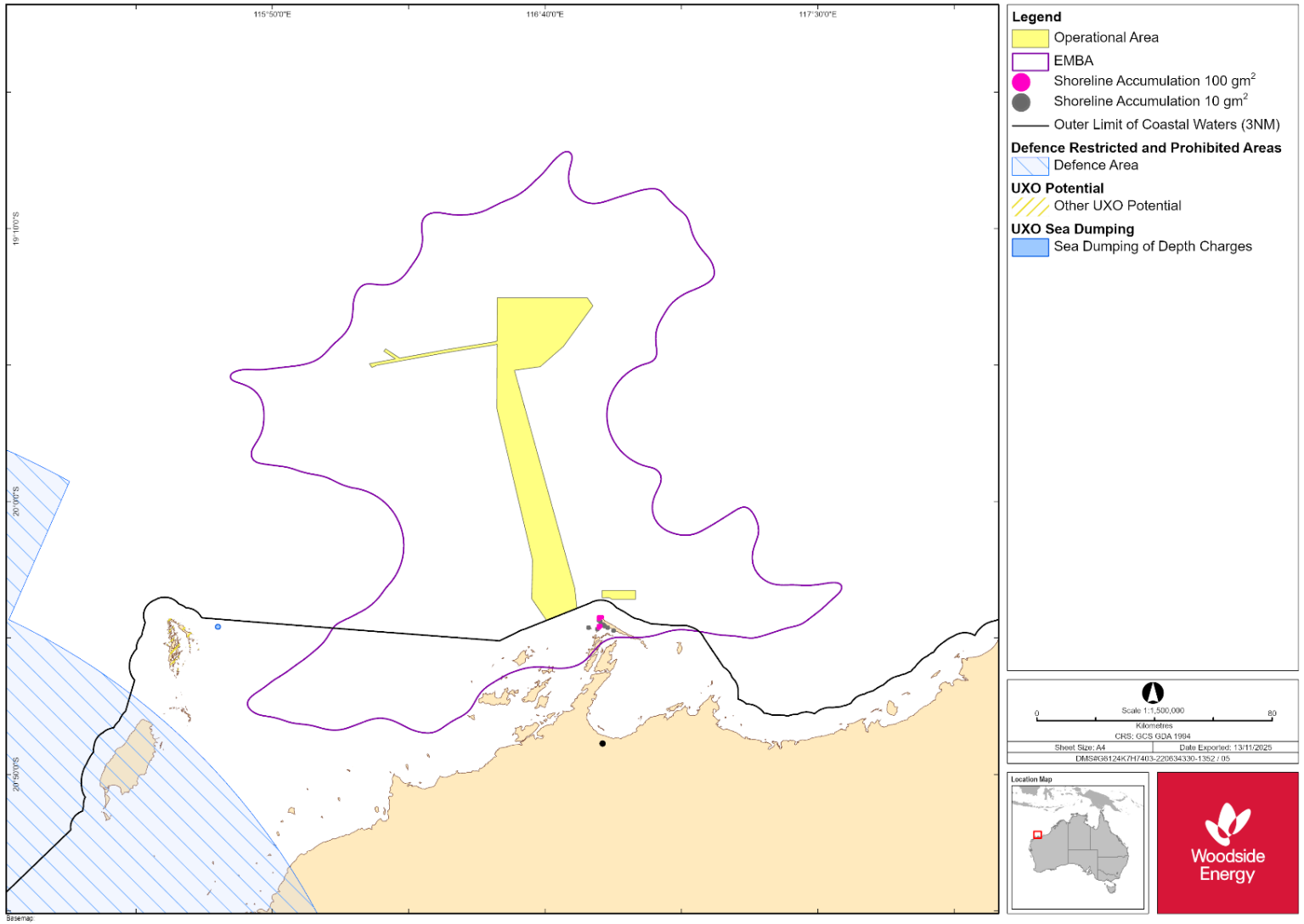


Figure 4-20: Defence areas within the Operational Area and EMBA

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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 Sections 5.2 and 5.5.1) and *Munkara v Santos NA Barossa Pty Ltd (No 3) [2024] FCA 9 (Munkara Case)*.

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

Woodside's consultation methodology is divided into two parts:

- The first part (Sections 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 part (Sections 5.6 and 5.7) details Woodside's approach to accepting feedback and assessment of the merit of each objection or claim, and engaging in ongoing consultation for this EP.

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

- 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 7)
- opportunities provided to persons or organisations to participate in consultation.

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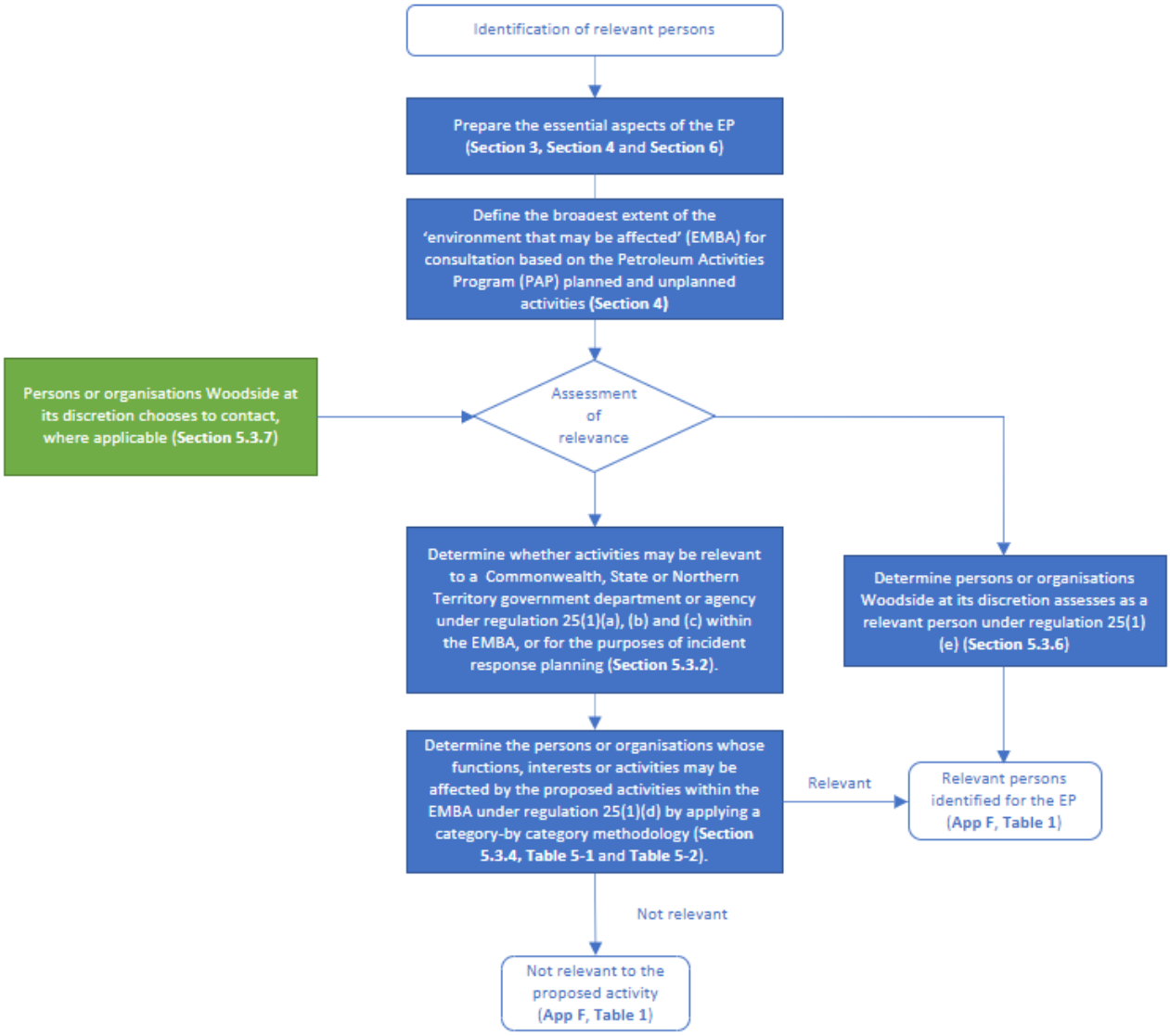


Figure 5-1: Overview of Woodside's methodology to identify relevant persons

5.2 Consultation – General context

Woodside has a portfolio of quality oil and gas assets and more than 40 years of operating experience. We have a strong history of working with local communities, the relevant regulators and a broad range of persons and organisations, to better understand the potential 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 the Greenhouse Gas Activity. The information in the consultation list has been captured from years of experience: it contains insights relating to the type of information particular persons or organisations want to receive during consultation, the appropriate method of consultation for relevant persons and includes appropriate contact details, which are reviewed and updated periodically.

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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 Area, 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 Sections 6.8 and 6.9).

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

- consult with each 'relevant person' in the course of preparing an EP, being:
  - 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

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- 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 or greenhouse gas activities and to enable Woodside to consider measures that may be taken to mitigate the potential adverse environmental impacts from the greenhouse gas 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 Sections 5.7 and 7.10).

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

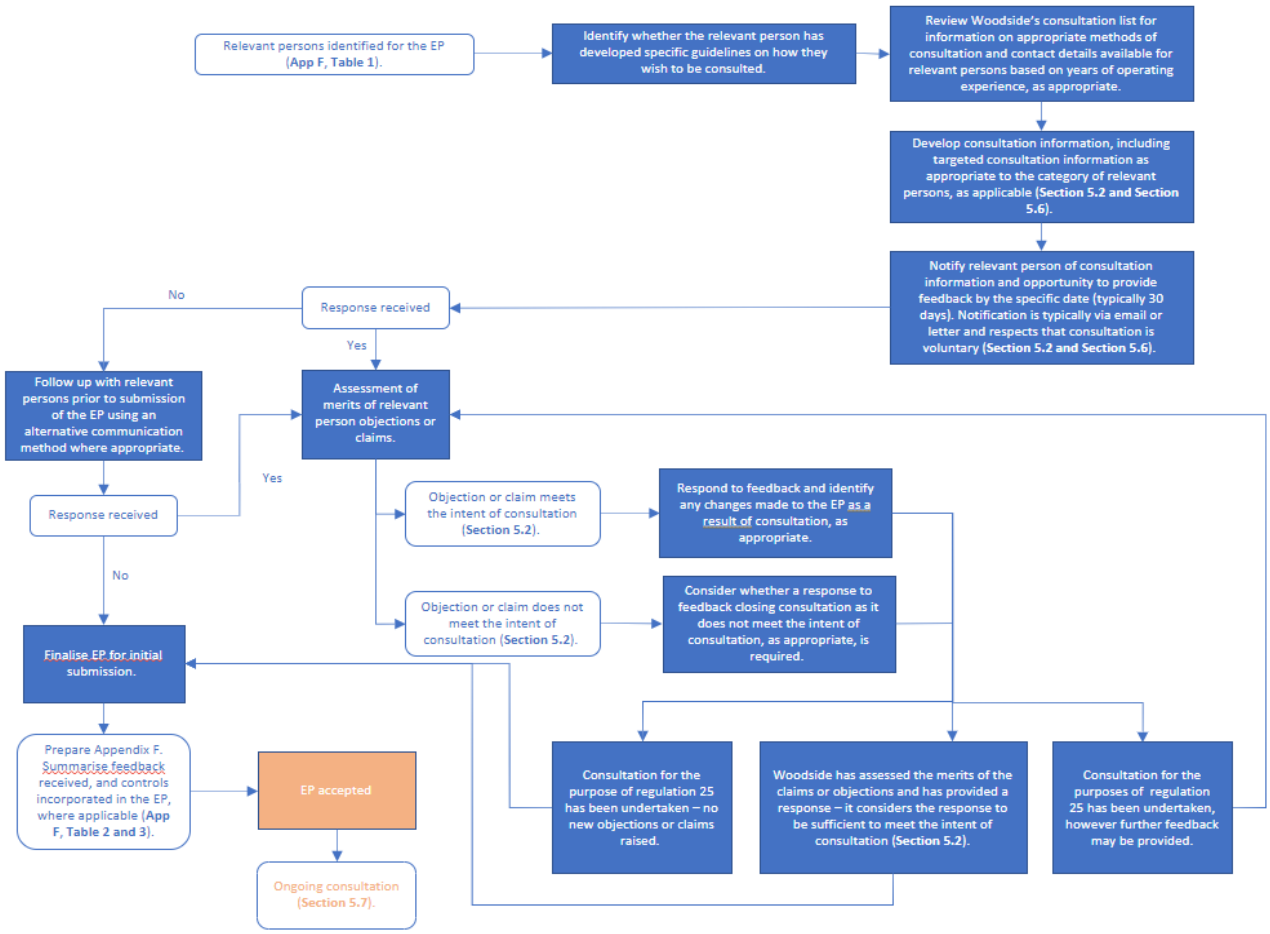


Figure 5-2: Overview of Woodside's consultation approach

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

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- 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 – January 2024
- PL9028 Managing gender-restricted information – December 2023
- Consultation on offshore petroleum environment plans – Information for the community

Department of Mines, Petroleum and Exploration (DMPE):

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

Department of Climate Change, Energy, the Environment and Water:

- 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 Petroleum Industry Guidance Note

WA Department of Primary Industries and Regional Development:

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

WA Department of Transport and Major Infrastructure (DTMI):

- Offshore Petroleum Industry Guidance Note

WA Australian Fishing Industry Council (WAFIC):

- Oil and Gas Consultation Framework

Good practice consultation:

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

5.3 Identification of relevant persons for consultation

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

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

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

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

- Woodside considers the defined responsibilities of each of the departments and agencies to which the activities to be carried out in the EMBA under the EP may be relevant. This list of relevant departments and agencies is formulated by reference to the responsibilities of the government departments, as set out on their websites, in *NOPSEMA's GL1887 – Consultation with Commonwealth agencies with responsibilities in the marine area guideline* (January 2024), which describes where the Department is a relevant agency under the Environment Regulations, as well as experience and knowledge that Woodside has gained from years of operating. This list is revised from time to time, for example, for the purposes of accommodating government restructures, renaming of departments, shifting portfolios and/or to account for new agencies that might arise.
- Woodside has categorised government department or agency groups as 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 marine 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 Priority Protection Area (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 the GPGT Surveys Program in a manner that prevents a substantially adverse effect on the potential displacement of marine users, Woodside therefore consults AMSA – Marine Safety and AHO on its proposed activities. Woodside considers each of the responsibilities of the departments and agencies and determines those that would either be involved in the incident response itself or in relation to the regulatory or decision-making capacity with respect to planning for the unlikely event of a worst-case hydrocarbon release incident response specific to the Operational Area. 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 in 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 GPGT Surveys Program 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).

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

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

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

- the planned activities to be carried out under the EP (described in Section 3)
- the EMBA by unplanned 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 Area 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 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 in 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 in Appendix F, Table 3.

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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.
Local government and elected Parliamentary representatives and recognised local community reference/liaison groups or organisations	Local government body formed under the *Local Government Act 1995* (WA) and elected Parliamentary representatives which are responsible for representing the local community. Recognised local community reference or liaison group or organisation in relation to oil and gas matters.
Other non-government groups, organisations or individuals	Non-government organisation with public website material targeting the proposed activity. Individual who demonstrates the proposed activity could potentially impact their interests, functions or activities.
Research institutes and local conservation groups or organisations	Research institutes are government or private institutions that conduct marine or terrestrial research. Local conservation groups are local non-government organisation that regularly conduct conservation activities focused on the local environment or wildlife.

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Table 5-2: Methodology for identifying relevant persons within the EMBA undertaken under Regulation 25(1)(d) – by category

Component	Operator
Commercial fisheries (Commonwealth and State) and peak representative bodies	Woodside assesses relevance for commercial fisheries (Commonwealth and State) and their representative bodies using the next steps in its methodology: • Woodside defines the parameters having regard to timing, location and duration of the proposed GPGT Surveys Program. • Woodside confirms whether the EMBA overlaps with the fisheries management area (i.e. the spatial area the fishery is legally permitted to fish in) (see Section 4.9.1.8.1). • Woodside acknowledges WAFIC's consultation guidance, 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 H). • 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 4.9.1.8.1). Assessment of relevance: • State commercial fisheries that have been assessed as having a potential for interaction within the Operational Area or EMBA (see Section 4.9.1.8.1) 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 4.9.1.8.1) 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. 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, apply knowledge of recreational marine users in the area. This assessment is both activity and location based. • Define the parameters having regard to timing, location and duration of the proposed GPGT Surveys Program. • Assess 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.

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Component	Operator
Titleholders and Operators	Woodside assesses relevance for other Titleholders and operators using the following steps in its methodology: • Using NEATS and GPInfo to determine overlap with other Titleholders' or Operators' permit areas within the EMBA. • Using Woodside knowledge and operating experience, apply knowledge of other operators in the area. • Produce 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 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 Woodside's existing consultation list. • Search websites to identify whether any additional peak industry representative bodies have been created whose responsibilities may overlap with Woodside's proposed activities within the EMBA. Assessment of relevance: • Peak industry representative bodies whose responsibilities are identified as having an overlap with Woodside's proposed activities within the EMBA are assessed as relevant.
Traditional Custodians (individuals and/or groups/entity) and Nominated Representative Corporations	Consistent with its understanding of the matters discussed in Section 4.9.1, 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 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, Woodside contacts 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.

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Component	Operator
	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 are identified by a Traditional Custodian, nominated representative corporation, Native Title Representative Body. Request to the PBC to distribute 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-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*, 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. • Woodside reviews 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* overlaps with the EMBA or is coastally adjacent to the EMBA, Woodside assesses the Native Title Representative Body as relevant.

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Component	Operator
Local government and recognised local community reference/liaison groups or organisations	Woodside assesses relevance for local government and recognised local community reference/liaison groups or organisations using the following steps in its methodology: • Review of Woodside maps (developed based on data from the WA Local Government, Sport and Cultural Industries 'My Council' database and WA Local Government Association (WALGA) Local Government Directory maps) to assess overlap between the local government's defined area of responsibility and the EMBA. • Woodside hosts regular community reference/liaison group meetings. Members represent a cross-section of the community and local towns interests. Representatives are from community and industry and generally include, Woodside, State Government (for instance relevant Regional Development Commissions), Local Government, Indigenous Groups, Industry representative bodies, community and industry organisations. Woodside considers these reference/liaison groups to be the appropriate recognised representatives of the local community for the oil and gas sector. • Woodside reviews the community reference/liaison group's terms of reference to determine its area of responsibility and overlap with the EMBA. For example, the Exmouth Community Liaison Group's area of responsibility in relation to Woodside's operational, development and planning activities, is defined in the terms of reference as the Exmouth sub-basin. Comparatively, the Karratha Community Liaison Group's area of responsibility is the Pilbara region (i.e. onshore). Assessment of relevance: • The local government whose defined area of responsibility overlaps the EMBA is assessed as relevant. • 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 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 current website and/or social media material to identify targeted information that demonstrates functions, interests or activities relevant to the potential risks and impacts associated with planned activities associated with the EMBA. • Review an organisation's/individual's feedback to consider whether their functions, interests or activities may be impacted. 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.

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Component	Operator
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 Woodside's existing consultation list. • Website search for research institutes that may operate within the EMBA. This assessment is both activity and location based. • Website search for local conservation groups or organisations that regularly conduct conservation activities within the EMBA. Assessment of relevance: • Where there is known research being undertaken by a research institute within the EMBA, the research institute that is conducting the research will be assessed as relevant. • Local environmental conservation groups who regularly conduct conservation activities or have demonstrated conservation functions, interests or activities within the EMBA are assessed as relevant. This assessment is both activity and location based.

5.3.5 Regulation 25(1)(e)

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

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 organisations 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 in 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 in Appendix F, Table 1 and 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 in Appendix F, Table 1 and 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.

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As set out in Section 5.2, Woodside notifies relevant persons of the proposed activities, respecting that consultation is voluntary, and collaborates on a consultation approach where further engagement is sought by the relevant person. The consultation process aims to be appropriate for the category of relevant persons and not all persons or organisations will require the same level of engagement. Woodside recognises that the level of engagement is dependent on the nature and scale of the Operational Area. 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 GPGT Surveys Program
- the Operational Area
- where the activity will take place
- the timing and duration of the activity
- a location map of the Operational Area and EMBA
- a description of the EMBA
- relevant exclusion zones
- a summary of relevant risks and mitigation and management control measures relevant to the proposed GPGT Surveys Program.

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

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

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

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

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

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

- 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

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- 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 communication for categories of relevant persons are set out in Table 5-3.

Table 5-3: Forms of communication with relevant persons

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 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	
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.

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Category of relevant person	Typically accepted form of communication
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 in 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.

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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.
- Department of Mines, Petroleum and Energy (DMPE) "Guidelines for Consultation with Indigenous People by Mineral Explorers" directs a period of 21 to 30 days of consultation with traditional owners.
- While repealed, guidance taken from the *Aboriginal Cultural Heritage Act 2021* – Consultation Guidelines (Government of WA 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..."*[8]

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:

- Advertise 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.
- Provide consultation materials directly to identified relevant persons as well as persons who are not relevant but Woodside chose to contact and provide a target date for feedback. Woodside acknowledges feedback may be received from relevant persons after the target date.
- Acknowledge 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.
- Follow up with relevant persons prior to EP submission. Where possible, Woodside endeavours to use an alternative method of communication to contact the relevant person.
- Engage in two-way dialogue with relevant persons or organisations where feedback is received.

Appendix F, Table 2 and Table 3 sets out a history of ongoing consultation and demonstrates that a reasonable period of consultation has been provided.

Woodside considers that consultation for this EP has closed.

As detailed in Section 5.6, if comments and feedback are received after the EP has been submitted, Woodside will consider those comments and update controls as appropriate and at all stages of the life of the EP as per Woodside's ongoing consultation approach described in Section 5.7.

5.4.3 Discharge of Regulation 25

The Full Federal Court made clear in the *Tipakalippa Appeal* that consultation should be approached in a '*reasonable', 'pragmatic' and 'not so literal'* way, so that consultation obligations were capable of being met by Titleholders (Section 5.5.1).[9] Consultation is a '*real world activity*' and must be capable of reasonable

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

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

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discharge.[10] 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.[11]

When the Titleholder demonstrates that it has provided sufficient information and a reasonable period for consultation, then Regulation 25 consultation requirements are met.[12] Meeting these obligations requires evaluative judgement to determine reasonable satisfaction of the consultation obligation and, as such, the Regulator uses its discretion to determine if these criteria are met. The nature of the person being consulted and their function, interest and activity that may be affected, will inform the manner of consultation and the reasonable period to be afforded.[13]

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.[14] A reasonable opportunity may not be every opportunity requested and is limited to reasonable opportunities to consult.

Woodside has completed steps required to discharge its consultation obligations. Woodside has provided sufficient information and a reasonable period of time to enable relevant persons to make an informed assessment of the possible consequences of the activity on their functions, interests or activities; and sufficient time to provide relevant feedback for Woodside to assess relevant persons' objections or claims. Woodside has also provided a reasonable opportunity for there to be genuine two-way dialogue on a person's claims or objections.

Woodside has discharged its duty under Regulation 25 and considers that it is complete.

Appendix F, Table 2 and Table 3 of this EP set out the history of consultation under Regulation 25. To the extent a relevant person says that they have further information to share or claims that consultation under Regulation 25 has not been completed, Appendix F, Table 2 and Table 3 provide reasons why Woodside considers consultation under Regulation 25 has been met, in relation to that relevant person.

5.5 Context of consultation approach with Traditional Custodians

To comply with Regulation 25, Woodside identifies and consults Traditional Custodians whose functions, interests or activities may be affected by the activities under an EP.

5.5.1 Approach to methodology − Woodside's interpretation of Tipakalippa Appeal

Woodside has implemented a consultation methodology consistent with Regulation 25 and guidance provided in the *Tipakalippa Appeal* (Section 5.2). Woodside's consultation methodology allows for a sufficiently broad capture of Traditional Custodian relevant persons, provides for informed consultation, follows cultural protocols and allows a reasonable opportunity for consultation with Traditional Custodians whose functions, interests or activities may be affected by the activity described in this EP (Sections 5.5.2 to 5.5.7).

Woodside notes the Full Federal Court discussed several *Native Title Act 1993* (Cth) cases in response to a submission made in that case that a requirement under Regulation 25 to consult *'each and every*' relevant person would be '*unworkable*'. The reference to Native Title cases dealt with how decision-making processes under the NTA requiring 'all' members of a group to be contacted for communal approval are interpreted by courts in a '*reasonable*', *'pragmatic'* and '*not so literal'* way,[15] and how obligations to consult

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

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

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

[13] *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].*

[14] *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].*

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

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'*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."* [16]
>
> *"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"*[17] *(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"*[18] *(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.[19] Consultation is not fixed to a rigid process and will be adapted so that it is informed by the relevant person or group. Woodside has met its Regulation 25 requirements through its consultation methodology (Section 5.2).

Consistent with the *Tipakalippa Appeal*, Woodside considers NTA-style *'full group'* meetings are not required for there to be compliance with Regulation 25. Nominated representative corporations (such as PBCs established under the NTA) have a designated role of representing the views of their member Traditional Custodians. They have established methods for engaging with their own members. Woodside will not undermine the purpose and authority of nominated representative corporations by requiring full group meetings where the nominated representative corporations have not requested engagement of members via full group meetings. It is not appropriate for Titleholders to direct or challenge the nominated representative corporations on how to engage with their members.

Woodside's approach described below demonstrates that sufficient information and a reasonable opportunity is provided to individual Traditional Custodians to provide feedback on Woodside activities beyond the opportunity provided to nominated representative corporations.

5.5.2 Consultation method

Woodside's 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. The 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 (not relevant for this EP) tends to centre around engagement through Aboriginal land councils (under the *Aboriginal Land Rights (Northern Territory) Act 1976* (Cth)) as well as community meetings that target clan groups where they do not have PBCs or other nominated representative corporations to represent them.

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

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

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

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

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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.[20] 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 5.5.2), and to provide feedback to inform the management of environmental impacts and risks.

Using these processes, Woodside communicates information about EPs in various ways:

- Woodside advertises in relevant 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.Woodside creates carefully considered Consultation Summary Sheets with information developed by an Indigenous member of the First Nations Team to remove jargon and provide relevant information for people to have informed understandings about the activities.Woodside directs contact through nominated representative corporations.
- Woodside uses social media (i.e. Facebook/Instagram), texts 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)).
- For ongoing consultation post Regulation 25 consultation, Woodside supports ongoing engagement with Traditional Custodians. Woodside is committed to ongoing engagement and support to care for and manage country, including Sea Country.
- Woodside has members of its First Nations Team who are based 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 First Nations attendance and involvement at Woodside's information sessions and Community roadshows. Team members on the ground engage in a great deal of preparatory work including by distributing information and providing notice to the community to support First Nations attendance at information sessions and Community roadshows.
- 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).
- Woodside holds meetings on Country at a place and time agreed with Traditional Custodians and offers and provides financial assistance for meeting expenses (as appropriate).

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

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- Woodside provides 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"*[21]. 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[22]. 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) (Sections 5.2 and 5.3).

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 5.5.7). Where there is a nominated representative corporation for an area, unless directed by the nominated representative corporation, Woodside does not directly approach individuals for consultation, because this has the potential to undermine the role of the nominated representative corporation. Approaching individuals directly is a practice that is no longer considered acceptable because of divisions it has been shown to cause in communities. In addition to asking for the identification of individuals, Woodside also asks nominated representative corporations to distribute consultation information to whomever the nominated representative corporations deem appropriate, including members of the nominated representative corporations who are communal rights holders.

Having said this, as set out in further detail in Section 5.5.7, 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)[23].

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.

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

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

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

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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 Owners authorised representative entities.
- Recognising the function of nominated representative corporations (such as PBCs) and Native Title Representative Bodies to represent communal interests and manage cultural values, Woodside requests that the information provided to representative entities is provided to their members but Woodside recognises the process is voluntary and Woodside cannot compel them to do so, nor seek to audit the representative entities for compliance with any request.
- Representative entities cannot provide membership details to Woodside due to individual confidentiality requirements.
- Woodside requests advice as to who else Woodside should be consulting but recognises the process is voluntary and cannot compel nominated representative corporations to provide this information.
- Modern Indigenous engagement practises rely on the building and maintaining of respectful relationships. To date, most nominated representative corporations have requested the building of that relationship, where one is not already in place.
- While Woodside has, in some cases, approached individual directors and Elders outside of this process due to requirements imposed in EP consultation, this approach is considered inappropriate by modern Indigenous engagement standards, fundamentally undermining the authority of the authorised representative entity and can be detrimental to the relationship.

For this proposed activity, Woodside requested nominated representative corporations (including PBCs) and Native Title Representative Bodies to identify any potential individual relevant persons for consultation, and to distribute consultation materials to their member base. However, Woodside recognises the process is voluntary and it cannot compel them to do so nor seek to audit the representative entities for compliance with any request. Woodside has not been directed to engage individual Traditional Custodians by nominated representative corporations for this proposed activity. Woodside has nevertheless provided reasonable opportunity for individual Traditional Custodians to engage in consultation through appropriate and adapted consultation methods.

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' feedback on information provisions, Woodside has tailored effective consultation methods for its activities, specifically designed for Traditional Custodians, so that information is provided in a form that is readily accessible and appropriate. The targeted Summary Information Sheet developed and reviewed by Woodside's First Nations Engagement Team and First Nations staff 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. Key project

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personnel, environmental and First Nations relations 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 consultation 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. While Woodside assesses the merits of objections or claims received, it acknowledges NOPSEMA's guidance in its brochure entitled *'Consultation on offshore petroleum environment plans information for the community'*, which states that relevant persons are free to respond on any matter and raise any concern, however this may not be able to be considered if it is outside the scope or purpose of the EP and approval process, for example, statements of fundamental objection to offshore petroleum activities or information containing personal threats or profanities. Under Regulation 34(g), there is no requirement for a relevant person to agree or confirm that they have been adequately consulted.

During consultation, relevant persons may seek to introduce other issues (such as agreements) that are not specific to EP consultation. While concepts of agreements may be associated with broader consultation processes, consultation for specific EPs can occur in parallel.

Feedback from relevant persons is reviewed and an assessment of the merits is made of information provided as well as objections or claims about the adverse impact of each activity to which the EP relates. This might, for instance, be done through a review of data and literature and for relevance to the nature and scale of the activity outlined in the EP. Consistent with the aim of consultation in Section 5.2, Woodside will

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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 an acceptable level.

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 7.10), feedback and comments received from relevant persons continue to be assessed and responded to, as required, throughout the life of an EP, including during its assessment and once accepted, in accordance with the intended outcome of consultation.

Should consultation feedback be received following the acceptance of an EP that identifies a measure or control that Woodside considers requires implementation or updates to meet the intended outcome of consultation, Woodside will apply its Management of Change and Revision process as appropriate (see Section 7.8).

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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 GPGT Surveys Program, using the methodology described in Section 2 of this EP. Impacts and risks associated with the GPGT Surveys Program are summarised in Table 6-1 and evaluated throughout this chapter.

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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	6.8.1	F	Social – No lasting effect (less than one month); localised impact not significant to areas	-	-	Broadly acceptable
Physical presence: disturbance to the seabed from geotechnical surveys	6.8.2	E	Environment and Cultural – Slight, short-term local impact (less than one year) on species and habitat (but not affecting ecosystems function)	-	-	Broadly acceptable
Routine acoustic emissions: generation of noise from survey vessels	6.8.3	E	Environment – Slight, short-term local impact (less than one year) on species and habitat (but not affecting ecosystems function)	-	-	Broadly acceptable
Routine acoustic emissions: generation of noise from geophysical and geotechnical survey equipment	6.8.4	E	Environment – Slight, short-term local impact (less than one year) on species and habitat (but not affecting ecosystems function)	-	-	Broadly acceptable
Routine light emissions: external lighting on survey vessels	6.8.5	E	Environment – Slight, short-term local impact (less than one year) on species and habitat (but not affecting ecosystems function)	-	-	Broadly acceptable
Routine atmospheric and greenhouse gas emissions associated with fuel use	6.8.6	F	Environment – No lasting effect (less than one month); localised impact not significant to environmental receptors (e.g. air quality).	-	-	Broadly acceptable
Routine and non-routine discharges to the marine environment from survey vessels	6.8.7	F	Environment – No lasting effect (less than one month); localised impact not significant to environmental receptors.	-	-	Broadly acceptable
Unplanned activities (accidents, incidents, emergency situations)						
Unplanned hydrocarbon release: vessel collision	6.9.2	D	Environment – Minor short-term impact (1–2 years) on species, habitat (but not affecting ecosystem function), physical or biological attributes.	1	M	Broadly acceptable
Physical presence: vessel interaction with marine fauna	6.9.3	E	Environment – Slight, short-term local impact (less than one year) on species, habitat (but not affecting ecosystems function), physical or biological attributes.	1	L	Broadly acceptable

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Aspect	EP section	Risk rating				Acceptability of impact/risk
		Impact/ consequence	Potential impact/consequence level	Likelihood	Current risk rating	
Physical presence: disturbance to seabed from dropped objects	6.9.4	F	Environment – No lasting effect (less than one month); localised impact not significant to environmental receptors (e.g. benthic habitats).	1	L	Broadly acceptable
Physical presence: interaction with live infrastructure	6.9.5	E	Environment – Slight, short-term local impact (less than on year) on species, habitat (but not affecting ecosystems function), physical or biological attributes.	1	L	Broadly acceptable
Unplanned discharges: loss of solid hazardous and non-hazardous wastes	6.9.6	E	Environment – Slight, short-term local impact (less than one year) on species, habitat (but not affecting ecosystems function), physical or biological attributes.	1	L	Broadly acceptable
Unplanned discharges: deck, subsea spills from geotechnical and geophysical equipment	6.9.7	E	Environment – Slight, short-term local impact (less than one year) on species, habitat (but not affecting ecosystems function), physical or biological attributes.	1	L	Broadly acceptable
Physical presence: introduction of invasive marine species	6.9.8	E	Environment – Slight, short-term local impact (less than one year) on species, habitat (but not affecting ecosystems function), physical or biological attributes. Reputation and Brand – Minor, short-term impact (one to two years) to reputation and brand. Close scrutiny of asset level operations or future proposals.	0	L	Broadly acceptable

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6.2 Impact and risk analysis evaluation

As required by Regulations 21(5) and 21(6) of the Environment Regulations, the following analysis and evaluation demonstrates that the identified impacts and risks associated with the GPGT Surveys Program are reduced to ALARP and are of an acceptable level, and considers all operations of the activity, including potential emergency conditions.

Impacts and risks identified during the ENVID workshops (including decision type, current risk level, acceptability of impacts and risks, and tools used to demonstrate acceptability and ALARP) have been divided into two broad categories:

- planned (routine and non-routine) activities
- unplanned events (accidents, incidents or emergency situations).

Within these categories, impact and risk assessment groupings are based on environmental aspect (e.g. emissions, physical presence etc). For all hazardous events considered, the worst-case risk was assumed.

The ENVID identified 9 impacts and 7 risks associated with the GPGT Surveys Program. Planned activities and unplanned events are summarised in Section 6.8 and Section 6.9. The assigned risk ratings were determined with controls in place as described in Section 2.3.6.

The analysis and evaluation for the GPGT Surveys Program indicates that current environmental risks and impacts associated with the activity are reduced to ALARP and are of an acceptable level, as discussed further in Section 6.8 and Section 6.9.

The environmental impacts and risks for all aspects are summarised in Table 6-1.

6.3 Impacts and risks not deemed credible or outside the scope of this EP

During the ENVID, several risks were identified as either being outside the scope of this EP, or not relevant to the GPGT Surveys Program, these are described below:

6.3.1 Bunkering

No bunkering at sea will be performed. Any bunkering will be performed during a port call, out of the scope of this EP. Consequently, risks associated with this activity are not considered applicable to this EP.

6.3.2 Underwater noise emissions from helicopters and remotely operated vehicles

It is not credible that airborne noise helicopter transfers would add to levels of underwater noise emanating from the survey vessels and the geophysical/geotechnical survey equipment. Similarly, it is not credible that noise from ROV operations at the seabed would add to levels of noise emanating from survey vessels just below the sea surface, or noise emissions from equipment. Noise emissions from these other sources would not add to cumulative sound fields from survey vessels and equipment to any discernible extent. As such, noise emission from these sources has not been considered in Section 6.8.3 and 6.8.4.

6.4 Cumulative impacts

Woodside has assessed the potential cumulative impacts of the GPGT Surveys Program in relation to other relevant petroleum and GHG activities that could realistically result in overlapping temporal and spatial extents. In particular, planned activities at the Woodside Angel, GWA, North Rankin, Okha Facilities and the MODEC FPSO, which either overlap or are near the Operational Area. Surveys associated with the GPGT Surveys Program may be within 500 m of the Angel and North Rankin facilities and therefore simultaneous operations (SIMOPS) and emergency response bridging documents (where required) will be in place.

Additionally, where relevant the cumulative impacts of activities associated with undertaking multiple concurrent or parallel activities associated with this GPGT Surveys Program have been assessed for cumulative impacts as relevant in Sections 6.8 and 6.9.

6.5 Indirect impacts from activities outside the Operational Area

For the GPGT Surveys Program, the potential ‘indirect’ environmental impacts and risks evaluated are those associated with mobilisation/demobilisation of the vessels to the Operational Area, which have been

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considered in the environmental impact assessment in Sections 6.8 and 6.9. Due to the nature and scale of these potential indirect environmental impacts and risks (such as fuel usage, interaction with other marine users and usual vessel discharges), and the regulatory frameworks and applicable maritime regulations in place to manage them, Woodside considers the potential impacts and risks from mobilisation and demobilisation of the survey vessels to be inherently ALARP in their current state. Therefore, Woodside considers that standard vessel operations are appropriate to manage the potential impacts and risks from mobilisation and demobilisation of the vessels to a level that is acceptable.

6.6 Environmental performance outcomes, standards and measurement criteria

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

As defined in Regulation 5 of the Environment Regulations, an EPO “for an activity, means a measurable level of performance required for the management of environmental aspects of the activity to ensure that environmental impacts and risks of the activity will be of an acceptable level.”

The EPOs, EPSs and MC specified in this EP are consistent with legislative requirements and Woodside’s standards and procedures. They have been developed based on the Codes and Standards, Good Industry Practice and Professional Judgement outlined in Section 2.4 as part of the acceptability and ALARP justification process.

For the physical and biological receptors within the EMBA, Woodside has set EPOs that are consistent with the Matters of National Environmental Significance – Significant impact guidelines 1.1 (Department of the Environment, Water, Heritage and the Arts, 2013). EPOs are set so that they are consistent with the principles of ESD as defined in section 3A of the EPBC Act and demonstrated through the acceptability process (described in Section 2.4.2), which is applied to the aspects / receptors in Section 6. The EPOs for planned activities have been set at a level of environmental performance that considers the planned activities and associated level of environmental impact.

For social receptors, including fishing and other commercial activities, the EPOs that have been set reflect the requirements in the section 280(2) of the OPGGS Act, in that the activities undertaken as a part of the development of the petroleum activity should not interfere with other marine users, to a greater extent than is necessary for the exercise of right conferred by the titles granted.

6.7 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.

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Context *Description of the context for the impact/risk. Regulation 21(1), 21(2) and 21(3)*		
Description of the Activity – Regulation 21(1)	*Description of the Environment – Regulations 21(2)(3)*	*Consultation – Regulations 25 and 24(b)*

Impact and risk evaluation summary Summary of ENVID outcomes													
Source of impact/risk Regulation 21(1)	***Environmental value potentially impacted*** Regulations 21(2)(3)						***Evaluation*** Regulations 21(5)(6)						
	Marine sediment	Water quality	Air quality (incl odour)	Ecosystems/ habitat	Species	Socio-economic	Decision type	Consequence/ impact	Likelihood	Risk rating	ALARP tools	Acceptability	Outcome
Summary of source of risk/ impact													

Description of source of impact or risk
Description of the identified risk/impact including sources or threats that may lead to the impact/risk or identified event. Regulation 21(1).
Impact or consequence assessment
Environmental value(s) potentially impacted
Discussion and assessment of the potential impacts to the identified environment value/s in accordance with Regulations 21(5) and 21(6). *Description of potential impacts to environmental values aligned to Woodside impacts and risk classifications (Section 2.3.6).*

Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[24]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
ALARP/hierarchy of control tools used – Section 2.3.5				
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.*

[24] *Qualitative measure.*

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[24]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
ALARP statement: *Made on the basis of the environmental impact/risk assessment outcomes, use of the relevant tools appropriate to the decision type (Section 2.3.4.2) 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 2.4 in accordance with Regulation 34(c).*

EPOs, EPS and MC			
Environmental performance outcomes	***Controls***	***Performance standards***	***Measurement criteria***
EPO No. *S: Specific performance that addresses the legislative and other controls that manage the activity, and against which performance by Woodside in protecting the environment will be measured.* *M: Performance against the outcome will be measured through implementation of the controls via the MC.* *A: Achievability/feasibility of the outcome demonstrated via discussion of feasibility of controls in ALARP demonstration. Controls are directly linked to the outcome.* *R: The outcome will be relevant to the source of risk/impact and the potentially impacted environmental value.[25]* *T: The outcome will state the timeframe during which the outcome will apply or by which it will be achieved.*	*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).*

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

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6.8 Planned activities (routine and non-routine)

6.8.1 Physical presence: interaction with third party vessels

Context		
Vessels – Section 3.9	Socio-economic environment – Section 4.9	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
Physical presence of vessels excluding and/or displacing third party vessels						X	A	F	-	-	LCS GP PJ	Broadly Acceptable	EPO 1

Description of source of impact

To conduct the GPGT Surveys Program, up to two survey vessels may be present in the Operational Area at any one time. The surveys are expected to take approximately 100 days to complete, which will be split over a number of campaigns within the five-year period of this EP (as defined in Section 3.5).

Vessel anchoring is not planned within the Operational Area during activities and instead vessels maintain positioning using DP. The physical presence and movement of survey vessels within the Operational Area has the potential to displace other marine users. All vessels will display navigational lighting and external lighting on a 24-hour basis, as required for safe operations.

No support vessels are required for survey activities and no permanent survey equipment is planned to be left on the seabed following completion of the GPGT Surveys Program. Geophysical survey equipment is towed at a distance of approximately three times the water depth from the stern and within the 500 m safety exclusion zone of the vessel. Geotechnical equipment is deployed near vertical and is therefore, in close proximity to the working vessel.

There is the potential for the vessels and associated survey equipment to temporarily displace third party vessels i.e. commercial fishing and shipping vessels, including vessels associated with oil and gas activities and recreational fishing vessels, from within the area where the vessel is directly operating.

Impact assessment

Environmental value(s) potentially impacted

Displacement to commercial fishing

A number of Commonwealth and State managed fisheries occur in the region (Section 4.9.1.8.1). The GPGT Surveys Operational Area may overlap with the activities of the following WA State managed fisheries: Specimen Shell Managed Fishery, Onslow Prawn Managed Fishery, Marine Aquarium Managed Fishery, Mackerel Managed Fishery, Nickol Bay Managed Prawn Fishery, Pilbara Trap Managed Fishery, Pilbara Line Fishery, Pilbara Fish Trawl (Interim) Managed Fishery and Pilbara Crab Fishery. Potential impacts to commercial fishers depend on the use of the area by fishers, in addition to the temporal and spatial extent of the presence of vessels and facilities/infrastructure.

The presence of vessels in the Operational Area would likely be of short duration, potentially resulting in temporary and highly localised interference (i.e. navigational hazard) and displacement/avoidance by commercial fishing vessels within the immediate vicinity of the survey vessels. It is also noted that there was no direct response from commercial fisheries during the consultation period, so the potential impacts of survey activities on commercial fisheries is considered to be localised and of no lasting effect.

No permanent infrastructure is intended to be installed or remain in situ as part of the GPGT Surveys Program. Therefore, there is no ongoing entanglement or equipment damage risk to bottom trawl fisheries.

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Displacement of recreational fishing and tourism

Charter fishing, cruising, diving, snorkelling, whale watching, and marine turtle and dolphin watching are the main commercial tourism activities in the region (Section 4.9.4). Except for offshore charter fishing, most marine tourism activities occur in nearshore waters, including in the Dampier Archipelago (DEWHA 2008). Tourism and recreation activity in the Operational Area is expected to be infrequent, with recreational and charter fishing from vessels visiting the Montebello Islands Marine Park the only tourism and recreation activities identified as potentially occurring in the vicinity of the Operational Area. It is noted that some recreational fishing may occur within the Glomar Shoals KEF, which overlaps the north east of the Operational Area.

As most marine nature-based activities take place generally in nearshore waters and away from the working port areas between the Dampier Cargo Wharf and NWS LNG jetties, it is expected that there is little potential for interacting with tourism and recreational fishing within the Operational Area.

Consultation outcomes did not indicate any recreational fishing occurs within the Operational Area (Section 5). Additionally, no concerns were raised by tourism operators during consultation. As such, impacts to recreational and charter fishing are expected to be localised and of no lasting effect.

Displacement to commercial shipping

Significant commercial shipping occurs in the region, with commercial shipping traffic comprising vessels such as:

- bulk carriers (e.g. mineral ore, salt) from Port Hedland, Cape Preston and Dampier
- offtake tankers
- support vessels for offshore oil and gas activities
- LNG carriers from Dampier, Barrow Island and Ashburton North.

The presence of survey vessels could potentially cause temporary disruption to commercial shipping. To reduce the likelihood of interactions between commercial shipping vessels and other vessels, AMSA has 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.

The fairway intended to direct north-east/south-west-bound vessel traffic from Barrow Island and the southern Montebello Islands towards Dampier overlaps the Operational Area (Figure 4-16). The fairway intended to direct traffic northbound from Dampier Archipelago also overlaps the southern part of the Operational Area. Therefore, there is a slightly higher chance of interference between the GPGT Surveys Program and commercial shipping in this area. However, any impact would be limited to the duration of the survey activities and temporary in nature.

AMSA highlighted during the consultation perios that significant vessel movements, including heavy traffic and support craft, are expected within the activity area. In addition, charted shipping fairways will need to be crossed during operations. The Environment that May Be Affected (EMBA) extends well beyond the defined Operations Area (OA), meaning it will intersect with a broader range of maritime traffic, support vessels, and local activities.

Oil and gas

A number of oil and gas platforms occur in the region (see Table 4-24). The Operational Area overlaps with the Woodside-operated North Rankin Complex and the Angel Platform. The nearest facility not operated by Woodside, is the Modec Venture 11 FPSO, which lies approximately 10 km north of the Operational Area. Given the distance between the Operational Area and activities undertaken by other operators, no impacts to other operators will occur as a result of the physical presence of the vessels.

Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[26]***	***Benefit in impact reduction***	***Proportionality***	***Control adopted***
Legislation, codes and standards				
Vessels to adhere to the navigation safety requirements including the *Navigation Act 2012* (Cth) and any	F. Yes. CS: Minimal cost. Standard practice.	The *Navigation Act 2012* (Cth) regulates ship related activities and invokes certain requirements of MARPOL. Vessels	Benefits outweigh cost/sacrifice. Control is standard practice.	C 1.1

[26] *Qualitative measure.*

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[26]***	***Benefit in impact reduction***	***Proportionality***	***Control adopted***
subsequent Marine Orders.		(relevant to class) will adhere to requirements.		
Good practice				
Australian Hydrographic Office (AHO) will be notified of activities and movements no less than four working weeks prior to commencement of the GPGT Surveys Program.	F: Yes. CS: Minimal cost. Standard practice.	Notifying AHO will enable them to issue notice to mariners, thereby reducing the likelihood of interacting with other marine users.	Benefits outweigh cost/sacrifice.	C 1.2
Notify AMSA's Response Centre (ARC) Joint Rescue) of activities and movements.	F: Yes. CS: Minimal cost. Standard practice.	Communicating the GPGT Surveys Program to other marine users ensures they are informed and aware should emergency response be required.	Benefits outweigh cost/sacrifice.	C 1.3
Notify government departments, fishing industry representative bodies, titleholders and other relevant persons as requested at least 10 days prior to commencement and following completion of activities.	F: Yes. CS: Minimal cost. Standard practice.	Communicating the GPGT Surveys Program 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.	C 1.4
Where activities overlap a defence area, the Department of Defence (DoD) will be notified of activities and movements no less than five working weeks prior to commencement of the GPGT Surveys Program.	F: Yes. CS: Minimal cost. Standard practice.	Communication of the GPGT Surveys Program to the DoD ensures they are informed and aware, thereby reducing the likelihood of interference with the DoD.	Benefits outweigh cost/sacrifice.	C 1.5
A support vessel to be on standby during survey activities to communicate with third party vessels.	F: Yes. CS: Additional costs associated with hiring another vessel and increased risk of vessel collision with more vessels in the Operational Area.	Given the legislative controls in place and the duration of the activity, using a support vessel will provide only a small reduction in likelihood of a collision with a third party vessel.	Disproportionate – cost/sacrifice outweighs benefit to be gained.	No

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[26]***	***Benefit in impact reduction***	***Proportionality***	***Control adopted***
Professional judgement – Eliminate				
Exclude the survey from major shipping routes.	F: No. Surveys within shipping routes are required to support placement of Angel CCS Pipeline. CS: Not considered – control not feasible	Not considered – control not feasible.	Not considered – control not feasible.	No
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 2.3.4.2) and Woodside's criteria for demonstrating ALARP (Section 2.4.1), Woodside considers the adopted controls appropriate to manage potential impacts associated with the physical presence of survey vessels on other users such as commercial fisheries, recreational fishing and shipping. 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, given the adopted controls, the presence of the survey vessels and their associated temporary safety exclusion zones may result in a minor interference and temporary localised displacement/avoidance by other marine users with no lasting effect. On the basis of the assessment outcomes, use of the relevant tools appropriate to the decision type (i.e. Decision Type A; Section 2.3.4.2) and Woodside's criteria for demonstrating acceptability (Section 2.4.2), 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 GPGT Surveys Program planned activities will be limited through the provision of appropriate information / notification.	C 1.1 Vessels to adhere to the navigation safety requirements and any subsequent Marine Orders: • Marine Order 21 (Safety and emergency arrangements) • Marine Order 27 (Safety of navigation and radio equipment) • Marine Order 30 (Prevention of collisions).	PS 1.1 Survey vessels compliant with *Navigation Act 2012* (Cth), Marine Order 21 (Safety and emergency arrangements), Marine Order 27 (Safety of navigation and radio equipment) and Marine Order 30 (Prevention of collisions).	MC 1.1.1 Marine assurance inspection records demonstrate compliance with standard maritime safety procedures (Marine Orders 21, 27 and 30).

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EPOs, EPS and MC			
EPO	***Controls***	***PS***	***MC***
	C 1.2 Australian Hydrographic Office (AHO) will be notified of activities and movements no less than four working weeks prior to commencement of the GPGT Surveys Program.	PS 1.2 Notification to AHO of activities and movements to allow generation of navigation warnings (i.e. Maritime Safety Information Notifications (MSIN) and Notice to Mariners (NTM) [including AUSCOAST warnings]) where relevant.	MC 1.2.1 Consultation records demonstrate AHO have been notified within required timeframes, before the activity commences.
	C 1.3 Notify AMSA's Response Centre (ARC)of activities and movements.	PS 1.3 ARC is notified of the activity 24 to 48 hours before operations start for awareness should emergency response be required. ARC will require the survey vessel's details (including name, callsign and Maritime Mobile Service Identity (MMSI)), satellite communications details (including INMARSAT-C and satellite telephone), area of operation, and needs to be advised when operations start and end.	MC 1.3.1 Consultation records demonstrate ARC has been notified within required timeframes before the activity starts.
	C 1.4 Notify government departments, fishing industry representative bodies, titleholders and other relevant persons as requested at least 10 days prior to commencement and following completion of activities.	PS 1.4 Notification to AFMA, DPIRD, WAFIC, Recfishwest, Tuna Australia, Santos, Chevron and Telstra 10 days before activity commences, and following completion of activities.	MC 1.4.1 Consultation records demonstrate that relevant persons have been notified prior to commencement and following completion of activities.
	C 1.5 Where activities overlap a defence area, the Department of Defence (DoD) will be notified of activities and movements no less than five working weeks prior to commencement of the GPGT Surveys Program.	PS 1.5 Notification to DoD of activities and movements to five weeks prior to schedule commencement date.	MC 1.5.1 Consultation records demonstrate DoD have been notified within required timeframes, before the activity commences.

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6.8.2 Physical presence: disturbance to the seabed from geophysical and geotechnical surveys

Context		
Geotechnical surveys – Section 3.7 Vessels – Section 3.9	Physical environment – Section 4.4 Habitats and biological communities – Section 4.5	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 benthic habitat as a result of geotechnical surveys	X			X		X	A	E	-	-	GP PJ	Broadly Acceptable	EPO 2
Disturbance to seabed from refraction wire stopper / sled	X			X			A	F	-	-			

Description of source of impact

Geotechnical surveys

The geotechnical surveys will be performed using standard industry equipment (Section 3.7) and will consist of in situ testing and the recovery of soil and rock samples by deploying the geotechnical equipment from the survey vessels to the seabed at locations within the Operational Area to ground truth the geophysical data and provide geotechnical data for engineering design.

The geotechnical investigation may involve the following seabed-disturbing activities:

- Penetration testing: The GPGT Surveys Program includes piezocone penetrometer tests (PCPTs) across the Operational Area. Each PCPT will create a hole on the seabed between 3 and 50 m deep with a diameter of up to 250 mm. The number of PCPTs that will be carried out during the GPGT Surveys Program will depend on conditions during the GPGT Surveys Program and results of PCPT as they occur. However, for the purpose of this EP the impact assessment assumes approximately 150 PCPTs could occur. Once PCPTs are complete all equipment is removed from the seabed and the resulting hole will infill naturally overtime.
- Cored boreholes: Cored boreholes of up to 50 m deep are planned to be taken across the Operational Area. Boreholes will be advanced by either push sampling at intervals or PCPT testings at intervals, followed by drilling using a bit approximately 125 mm in diameter. The remaining hole in the seabed would infill naturally with sediment over time. The number of boreholes made during the GPGT Surveys Program may change depending on conditions during the GPGT Surveys Program. For the purpose of this EP the impact assessment assumes approximately 40 boreholes. Boreholes will either be drilled from the surface on a vessel or drilling/testing equipment involving a remotely operated subsea rig lowered to the seabed from the vessel. Typical seafloor drilling systems have either three or four legs, each with a footprint of around 2.5 × 1 m impacting a total radius around the sample location of approximately 6 m.
- Piston and vibrocore sampling: Piston core/gravity core or vibrocore sampling may occur during the GPGT Surveys Program, creating holes with depths of between 1 m and 6 m below the mudline. When the depth of sample refusal is reached, all equipment will be withdrawn from the seabed. A small hole will remain in the seabed, approximately 105 mm in diameter, which will infill naturally with sediment over time. The number of piston cores taken during the GPGT Surveys Program may change depending on conditions during the GPGT Surveys Program. For the purpose of this EP, the impact assessment assumes approximately 120 piston cores will be executed across all Operational Area.
- Box core sampling: Box core sampling will occur during the GPGT Surveys Program across the Operational Area. All box core samples will result in a cube of sediment being removed from the seabed. The possible box core sample equipment is capable of recovering is approximately 0.125 m³ (0.5 m × 0.5 m × 0.5 m). A self-releasing trigger mechanism, initiated once the frame reaches the seabed, allows the box corer to penetrate into the seabed.

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Penetration is limited by a stopper to 0.5 m depth. The number of box cores taken may change depending on conditions during the GPGT Surveys Program. For the purpose of this EP, the impact assessment assumes approximately 60 box cores will be executed in total across all the Operational Area.

- The use of an ROV during geotechnical and geophysical survey activities as described in Section 3.9.3 may result in temporary seabed disturbance and suspension of sediment 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 ROV is about 2.5 m × 1.7 m (4.25 m²).

Section 3.7 provides further details on the geotechnical equipment associated with the survey and the potential seabed disturbance associated with it. At the end of the surveys all equipment will be removed from the seabed and no infrastructure or equipment will remain in the Operational Area.

Geophysical surveys

During refraction surveys, a wire strop or skid (depending on method used, see Section 3.6.5) is required to contact the seafloor to maintain the offset of the acoustic source from the seabed. This will also result in localised physical disturbance along the survey line up to ~0.5 m in width as it is towed along the seabed.

Drill cuttings

The geotechnical seabed coring may result in the indirect discharge of a small quantity of drill cuttings and fluid at the seafloor. Sampling boreholes drilled to recover soil and rock samples generate minimal drill cuttings as the objective is to recover a continuous sample profile of the depth of the borehole. Any drill cuttings will remain on the seabed immediately adjacent to the borehole site. The cuttings are pieces of material being drilled and likely to be benign calcareous sediment. Some of the discharged cuttings (lighter particles) will be temporarily suspended in the water column (close to seafloor) before settling to the seafloor within the immediate vicinity of the drilling location. The environmental impact associated with the indirect discharge of cuttings from the geotechnical seabed coring activities would be negligible and temporary, lasting only minutes after the seabed coring operations are complete. Drilling fluid will consist primarily of seawater, and may have small quantities of additives. These additives are considered to be very low toxicity (as assessed through Woodside's Chemical Selection and Assessment Environment Guideline) and are expected to dilute rapidly upon discharge; as such no toxic effect to biota are expected to occur.

Discharge of drilling fluids is discussed further in Section 6.8.7.

Placement of equipment on the seafloor

Placing the GPGT equipment on the seafloor will result in minor localised physical disturbance to the seafloor beneath the equipment. These temporary footprints will return to natural state from natural sediment movements.

Station keeping

No anchoring is planned within the Operational Area. Geotechnical drilling vessels will hold station in the Operational Area using dynamic positioning with DP Class 2 capability.

Impact assessment

Environmental value(s) potentially impacted

GPGT Surveys Program activities are likely to result in localised and temporary physical modification and disturbance to a small area of the seabed.

Benthic habitat

The benthic habitat within the Operational Area is predominantly soft sediment with sparsely associated epifauna which is broadly represented throughout the NWS Province and wider NWS (Section 4.5). Benthic habitats of the soft sediment seabed are characterised by burrowing infauna such as polychaetes and worms, with biota such as sessile filter feeders occurring on areas of hard substrate. Surveys within the Operational Area have observed predominantly coarse silt and some shell fragments with burrows, mounds, polychaetes and occasional hydroids, interspersed with areas of muddy sand (BMT 2021). The infauna communities are likely to be representative of the NWS province which is described as being of low abundance and dominated by polychaetes and crustaceans (RPS 2012).

The Operational Area overlaps an area of the Glomar Shoals KEF. The shoals range from ~26 m to ~77 m below the sea surface and the upper reaches of the shoal support a high cover of benthic organisms comprising mixed hard and soft corals (30 to 40 m depth range), transitioning to a deeper water benthic community comprising soft corals and mixed biota (sponges, other sessile invertebrate biota). The Operational Area does not directly overlap the shoals feature and overlaps the broader KEF in water depths between approximately 55 and 75 m. There will be no direct impact to the shallower waters of the shoal that support high cover of benthic communities; however, there will be some interaction with the deeper water benthic communities comprising soft corals and mixed biota. Survey activities overlapping the Glomar Shoals KEF are expected to create very localised impacts within the KEF. In addition, the area of overlap is considered to consist of soft sediment seabed without areas of higher, phototrophic benthic biota (Jacobs 2014).

Subtidal soft sediments support a patchy abundance of various infauna (including polychaete worms, molluscs, and crustaceans) and epifauna (including crabs, sea urchins, snails, sea stars, demersal fish, sponges, sea whips and sea squirts) which are widespread and well represented and in the context of the contiguous extent of habitats across the region. They are considered to be of relatively low environmental sensitivity (Section 4.4).

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Direct impacts from GPGT Surveys Program activities will be localised to the footprint of equipment and activities described above. Impacts are expected to be confined to soft sediment benthic communities, including burrowing infauna and epifauna, and sparsely occurring sessile filter feeders associated with areas of hard substrate (Gates and Jones 2012, Hughes *et al.* 2010). Equipment interaction with the seafloor may relocate small amounts of sediment, with slight and short-term impacts to biota, detailed above, due to elevated turbidity and the clogging of respiratory and feeding parts of filter feeding organisms. However, elevated turbidity would only be expected to be temporary, and is therefore not expected to have a lasting effect on environment receptors.

Key ecological features

As described above, a portion of the Operational Area overlaps the Glomar Shoals KEF (18.34%) in water depths between approximately 55 and 75 m. Glomar Shoals is a shallow sedimentary bank comprised of coarser biogenic material than the surrounding seabed. The feature is ~26 to ~77 m below the sea surface (BMT Oceanica 2015). The KEF encompasses a much wider area than the shoal feature itself. Impacts to benthic marine fauna that may be present on this feature as a result of GPGT surveying are expected to be highly localised to the surface area of the boreholes, drill cuttings and the footprint of the GPGT equipment, which is a relatively small area.

The Operational Area also overlaps a small portion (1.28%) of the Ancient Coastline at 125 m depth contour KEF. Impacts to benthic marine fauna as a result of GPGT surveying are expected to be highly localised to the surface area of the boreholes, drill cuttings and the footprint of the GPGT equipment, which is a very small area compared to the regional extent of the ancient coastline KEF, extending from Exmouth to the Dampier Peninsula. As such, this habitat is well represented on a regional scale.

Benthic habitat surveys in the region (including within the Ancient Coastline at 125 m depth contour KEF) indicate that benthic habitats within the KEF are characterised by sand interspersed with areas of rubble and outcroppings of limestone pavement (Jacobs 2014, RPS 2011). Such habitats are widely distributed in the NWS Province. Therefore, potential impacts to this regional-scale KEF are expected to be short-term and localised.

Cumulative impacts

Given the small area of seabed potentially impacted by the survey activities, the cumulative area potentially disturbed is considered negligible in the context of the wider distribution of the habitats present.

Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[27]***	***Benefit in impact reduction***	***Proportionality***	***Control adopted***
Legislation, codes and standards				
No additional controls were identified.				
Good practice				
No routine anchoring will occur during the GPGT Surveys Program.	F: Yes. CS: Minimal cost. Survey vessels undertaking these activities typically do not anchor.	By minimising anchoring, the potential impacts to seabed are reduced.	Benefits outweigh cost/sacrifice.	C 2.1
Implement Woodside's Chemical Selection and Assessment Environment Guideline, or equivalent.	F: Yes. CS: Minimal cost. Standard practice. Where Gold/Silver/E/D OCNS rating (and no OCNS substitution or product warning), chemicals are selected, no further control required. If chemicals with a different OCNS rating, sub warning or	Selection and assessment of chemicals in accordance with the Woodside process, reduces environmental impacts associated with planned chemical discharge.	Benefits outweigh cost/sacrifice.	C 2.2

[27] *Qualitative measure.*

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[27]***	***Benefit in impact reduction***	***Proportionality***	***Control adopted***
	non-OCNS rated chemicals are required chemicals will be assessed in accordance with the guideline prior to use.			
Do not use geotechnical survey equipment or geophysical survey equipment close to or on the seabed.	F: No. The deployment of equipment to the seabed is required to meet the objectives of the surveys. CS: Not considered – control not feasible.	Not considered – control not feasible.	Not considered – control not feasible.	No
Monitor inventory deployed to the field and track removal of equipment during activity.	F: Yes. CS: Minimal cost. Standard practice.	Removing equipment from seabed reduces duration of impact.	Benefits outweigh cost/sacrifice.	C 2.3
No seabed disturbance on shoals (water depth <55 m) within the Operational Area.	F: Yes. CS: Minimal cost.	Ensures shallow shoal features are not impacted by the GPGT Surveys Program.	Benefits outweigh cost/sacrifice.	C 2.4
Geotechnical survey activities will not be undertaken outside of the Operational Area.	F: Yes. CS: None.	The impact will be limited to that assessed and appropriately managed in this EP.	N/A.	C 2.5
Survey vessels will not enter the Dampier AMP at any time unless there is an emergency that requires it.	F: Yes CS: Minimal cost. Standard practice.	Not entering the Dampier AMP would not change how the activity is conducted; therefore, no change in consequence would occur.	N/A	C 2.6
Notify Telstra at least 4 weeks prior to the commencement of any activities that may result in seabed contact within 500 metres of any Telstra seabed cables.	F: Yes CS: None.	Providing advanced information on the GPGT Survey Program to Telstra ensures they are informed and aware, thereby reducing the likelihood of interference with submarine seabed cables.	Benefits outweigh cost/sacrifice.	C.2.7
Monitor the seabed environment before and after the GPGT Surveys Program to assess any impacts to the seabed.	F: Yes. CS: Significant. Monitoring of the seabed would have significant additional costs to obtain and analyse data with the spatial resolution to	Environmental monitoring would not change how the activity is conducted; therefore, no change in consequence would occur.	Based on the nature of the activity (i.e. predictable impacts over a small area) and relatively low sensitivity of the area, application of an environmental	No

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[27]***	***Benefit in impact reduction***	***Proportionality***	***Control adopted***
	accurately assess changes to the seabed habitat.		monitoring control is considered grossly disproportionate. Monitoring will not reduce the consequence or impacts to the seabed, and the cost associated with the level of monitoring required to accurately assess any impacts greatly outweighs the benefits gained. In addition, the presence of additional vessels incurs additional impacts and risks to the marine environment as described in other sections.	
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 2.3.4.2) and Woodside's criteria for demonstrating ALARP (Section 2.4.1), Woodside considers the adopted controls appropriate to manage potential impacts associated with seabed disturbance from geophysical and geotechnical survey activities. 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 from operations and subsea activities may result in slight, short-term impacts (<1 year) to benthic habitats, sediment and water quality. On the basis of the assessment outcomes, use of the relevant tools appropriate to the decision type (i.e. Decision Type A; Section 2.3.4.2) and Woodside's criteria for demonstrating acceptability (Section 2.4.2), 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.

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EPOs, EPS and MC			
EPO	***Controls***	***PS***	***MC***
EPO 2 Seabed disturbance to be limited to planned activities and impact described as part of the GPGT Surveys Program and will not occur outside the Operational Area.	C 2.1 No routine anchoring will occur during the GPGT Surveys Program.	PS 2.1 No anchoring in the Operational Area.	MC 2.1.1 Scope of Work specifically states that anchoring is not allowed in the Operational Area (apart from emergency situations). Vessel bridge daily records show no anchoring occurred in the Operational Area.
	C 2.2 Implement Woodside's Chemical Selection and Assessment Environment Guideline, or equivalent.	PS 2.2 Compliance with Woodside's Chemical Selection and Assessment Environment Guideline, or equivalent.	MC 2.2.1 Documentation of chemical selection process indicates conformance to Woodside's Chemical Selection and Assessment Environment Guideline, or equivalent.
	C 2.3 Monitor inventory deployed to the field and track removal of equipment during activity.	PS 2.3 Location of equipment deployed to seabed will be tracked and removed from the seabed.	MC 2.3.1 Field reports for activities that include equipment deployed to seabed will specify the deployment location and the complete removal of the equipment.
	C 2.4 No seabed disturbance will occur on shoals (water depth <55 m) within the Operational Area.	PS 2.4 No seabed disturbance on shoals (water depth <55 m) within the Operational Area.	MC 2.4.1 Survey reports provide all sample and investigation locations and depths demonstrating no activities occurred at the shoals (water depth <55 m) within the Operational Area.
	C 2.5 Geotechnical survey activities will not be undertaken outside of the Operational Area.	PS 2.5 Activities limited to the Operational Area.	MC 2.5.1 Records confirm location of geotechnical survey.
	C 2.6 Survey vessels will not enter the Dampier AMP at any time (unless there is an emergency that requires it).	PS 2.6 Survey vessels will not enter the Dampier AMP at any time, except in an emergency.	MC 2.6.1 Daily vessel bridge records confirm no entry into the Dampier AMP, except in an emergency.
	C 2.7 Notify Telstra at least 4 weeks prior to the commencement of any activities that may result in seabed contact within 500 metres of any Telstra seabed cables.	PS 2.7 Notify Telstra at least 4 weeks prior to the commencement of any activities that may result in seabed contact within 500 metres of any Telstra seabed cables.	MC 2.7 Records confirm notifications given 4 weeks prior to the commencement of the activity

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6.8.3 Routine acoustic emissions: generation of noise from survey vessels

Context		
Vessels – Section 3.9	Protected species – Section 4.6	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 vessels during normal operations					X		A	E	-	-	LCS GP PJ	Broadly Acceptable	EPO 3, 4
Generation of acoustic signals from dynamic positioning systems					X		A	E	-	-			

Description of source of impact

Vessels and operation of dynamic positioning systems

Survey vessels will generate noise both in the air and underwater, due to operating thrusters, engines and moving propellers. These noises will contribute to and can exceed ambient noise levels, which range from around 90 dB re 1 µPa (root mean square sound pressure level (rms SPL)) under very calm, low wind conditions, to 120 dB re 1 µPa (rms SPL) under windy conditions (McCauley 2005).

Thruster noise (from cavitation caused by propellers) is typically the most significant noise source for vessels holding station, with other noise sources typically relatively minor (McCauley 1998).

Thruster noise is typically high intensity and broadband in nature. Survey vessels will maintain position using main engines and/or thrusters (including use dynamic positioning systems) for short durations while the vessel is maintaining station prior to and during geotechnical surveying. There is no applicable sound data available for a typical DP vessel; however, based upon past research, frequencies and sound levels are expected to be less than those from DP drill ships. Near and far field underwater noise measurements were taken in 2011 for the MAERSK Discoverer DP drill rig used on the NWS. The rig DP system (similar to the system proposed for the survey vessels) emitted tonal signals between 200 Hz and 1.2 kHz, which is within the auditory band width of whales. The measured source level was between 176 and 186 dB re 1 µPa @ 1 m.

Vessels may use DP while the vessel is maintaining position. McCauley (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 vessels used for this GPGT Surveys Program.

Impact assessment

Environmental value(s) potentially impacted

The Operational Area is located in water depths between 35 and 135 m. The fauna associated with this area are predominantly pelagic species of fish, with migratory species such as turtles, whale sharks and cetaceans potentially present in the area seasonally. Noise interference is a key potential threat to a number of migratory and threatened cetaceans and marine turtles identified as occurring within the Operational Area.

Key BIAs that overlap the Operational Area include:

- humpback whale migration BIA (Section 4.6.3)
- pygmy blue whale distribution BIA (Section 4.6.3
- marine turtle internesting BIAs and Habitat Critical areas toward the Commonwealth/State waters boundary (Section 4.6.2).

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Elevated underwater noise has the potential to affect marine fauna, including cetaceans, fish, 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.

Koessler and McPherson (Koessler and McPherson 2020) undertook sound transmission loss modelling for an offshore support vessel under DP (source level of 183 dB re 1 µPa) approximately 350 km east of the Operational Area in water depths of 90 m. The noise source levels applied in the modelling are similar to those of the survey vessels and were modelled in similar water depths. Therefore, the outputs (Table 6-2) of the modelling have been applied in this assessment.

Table 6-2: Maximum (Rmax) horizontal distances (in km) for an offshore support vessel

SPL (dB re 1 µPa)	Rmax (km)
180	-
170	-
160	-
150	0.06
140	0.34
130	1.25
120	4.57
110	11.9

Based on the modelling outputs of Koessler and McPherson (Koessler and McPherson 2020) (Table 6-2), potential impacts may include:

- cetaceans: potential behavioural disturbance out to about 5 km
- turtles: potential masking and behavioural disturbance at intermediate and far ranges
- fish: potential masking and behavioural disturbance at near and intermediate ranges; likelihood of TTS is considered not credible, given fish would move away from the source – demersal fish are not expected to be exposed to underwater noise above impact thresholds.

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) will depend 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 (NASEM 2003, Erbe 2012, Rolland *et al.* 2012).

The thresholds that could result in behavioural response, TTS and PTS for cetaceans as a result of continuous noise sources are presented in Table 6-3. These thresholds have been adopted by the United States National Oceanic and Atmospheric Administration (NOAA) (NMFS 2014, NMFS 2018, Southall *et al.* 2019, NOAA 2019). Updates to the recommended thresholds in October 2024 (NMFS 2024) are shown in Table 6-3, with slightly lower PTS and TTS thresholds for low-frequency cetaceans and higher thresholds for high-frequency and very-high frequency cetaceans. The adopted thresholds are based on best data available, published in peer-reviewed literature, and represent conservative internationally accepted and applied impact evaluation thresholds for continuous (non-impulsive sound sources). The maximum (Rmax) horizontal distances (km) from vessels to modelled marine mammal thresholds is detailed in (Table 6-4; Koessler and McPherson 2020).

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Table 6-3: Thresholds for permanent and temporary threshold shift and behavioural response onset for low-frequency, high-frequency and very high frequency cetaceans for continuous noise

Hearing group and generalised hearing range	*Southall et al. (2019), Updates from NMFS (2024) shown in parentheses.*		*NOAA (2019)*
	PTS onset thresholds: SEL_{24h} (dB re 1 µPa².s)	*TTS onset thresholds: SEL_{24h} (dB re 1 µPa².s)*	*Behavioural response (dB re 1 µPa)*
Low-frequency (LF) cetaceans	199 (197)	179 (177)	120
High-frequency (HF) cetaceans	198 (201)	178 (181)	120
Very-high-frequency (VHF) cetaceans	173 (181)	153 (161)	120

Sources: NMFS 2014, NMFS 2018, Southall et al. 2019, NOAA 2019, NMFS 2024.

Table 6-4: Maximum (Rmax) horizontal distances (km) from vessels to modelled marine mammal thresholds*

Hearing Group	*Distance Rmax (km)*	
	Threshold for PTS, SEL_{24h} (dB re 1 µPa² s)	*Threshold for TTS, SEL_{24h} (dB re 1 µPa² s)*
LF cetaceans	0.03	0.79
HF cetaceans	-	0.03
VHF cetaceans	0.05	0.93

*Source: Koessler and McPherson 2020. *: Modelling based on Southall et al (2019) PTS and TTS thresholds and frequency-weighting functions. Distances for HF and VHF cetaceans are therefore expected to be conservative compared to updated recommended thresholds in NMFS (NMFS 2024), while those for LF cetaceans are expected to be slight underestimates but sufficient for risk assessment purposes.*

Survey vessels will contribute noise into the marine environment; however, they will only use DP for short periods when undertaking actual geotechnical investigations. Survey vessels transiting on main engines will produce lower levels of underwater noise that is below the injury threshold for sensitive marine fauna (e.g. cetaceans), thereby limiting the potential for any impacts.

It is not expected that individual LF and HF cetaceans passing through the Operational Area during the activity would experience PTS or TTS, given individuals would need to remain in close proximity (<1 km) of the activity for a period of 24 hours (Table 6-4). Based on the swimming speeds of tagged pygmy blue whales during migration, the slowest individual tracked by Thums *et al.* (2022a) travelled at approximately 0.5 m/s or ~2 km/hour. Similarly, it is considered highly unlikely that any VHF cetaceans would experience PTS or TTS.

There are no known critical habitats (i.e. feeding, breeding, calving or constricted migratory pathways) for EPBC listed cetaceans present within the Operational Area. It is possible that the activity will overlap with the migration seasons for humpback and pygmy blue whales. The Operational Area overlaps the pygmy blue whale distribution zone but not migration or feeding BIAs, while the humpback whale migration BIA overlaps the inshore section of the Operational Area. There is potential for these species to be exposed to underwater noise levels that may alter their behaviour when they are in the region during seasonal migrations. It is reasonable to expect that cetaceans may demonstrate avoidance or attraction behaviour to the noise generated by the vessels, however predicted noise levels are not considered to be ecologically significant at a population level.

The Blue Whale Conservation Management Plan (Action Area 2) states that anthropogenic noise in BIAs should be managed such that any blue whale continues to utilise the area without injury (Commonwealth of Australia 2015b). Although TTS in cetaceans has previously been regarded as hearing impairment, not injury, advice from DCCEEW (DAWE 2021b) is that TTS should be considered a form of injury to pygmy blue whales and this should be prevented within the BIAs.

With respect to the western extent of the pygmy blue whale distribution range that overlaps the Operational Area, the likelihood of encountering migrating or foraging pygmy blue whales is considered low. The distribution range acknowledges the migratory movement of pygmy blue whales to the west of the Migratory BIA, though the majority of the important migration areas for north-west Australia are within the migratory BIA (Thums *et al.* 2022a) and telemetry data also indicates north of the North West Cape pygmy blue whales transit through deeper and further offshore waters (Thums *et al.* 2022b, Double *et al.* 2014). There is likely to be occasional individual or small groups transiting through the distribution range during the northbound or southbound migration seasons. There is no potential for PTS or TTS impacts from survey vessel noise on the pygmy blue whale migration BIA based on the location of the Operational Area and the acoustic modelling presented above. The Operational Area is surrounded by open water,

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with no restrictions (e.g. shallow waters, embayments) to an animal's ability to avoid the activities. Consequently, any pygmy blue whales transiting through the area, may deviate slightly from their migration route, but can continue on their migration pathway without any likely biologically significant impacts.

Humpback whales are expected to be encountered during survey activities, particularly should these activities occur during annual migrations (July [northbound] and late August/September [southbound]). PTS and TTS impacts are not considered credible, as discussed above for pygmy blue whales. Behavioural response may result in a deviation in course during migration, which is expected to be insignificant in the context of the long distances over which individuals migrate (thousands of kilometres). Marine mammals that are frequently exposed to sounds such as vessel noise may also habituate and adapt to this noise (Richardson *et al.* 1995, NASEM 2023). This may be the case for the humpback whale population that regularly passes through areas of significant shipping traffic during their migrations.

Other cetacean species, including high frequency odontocetes, may also occur in the Operational Area, although there are no known important habitats for these species in the area. Given the short duration of the survey activities and low level of behavioural response expected, impacts to individuals or populations are not expected.

Turtles

There is a paucity of data regarding responses of marine turtles to underwater noise. However, turtles have been shown to respond to low frequency sound, with indications that they have the highest hearing sensitivity in the frequency range 100 to 700 Hz (Bartol and Musick 2003). Lenhardt (1994) observed marine turtles avoiding low-frequency sound. Popper et al. (2014) assessed thresholds for marine turtles and found qualitative results that TTS was only moderate for near field exposure, and low for both intermediate and far field exposure. McCauley et al. (2000) noted that sea turtles exhibit increased swimming activity at 166 dB re 1 µPa. No numerical thresholds have been developed for impacts of continuous sources (e.g. vessel noise) on marine turtles. The thresholds listed in Table 6-5 are considered appropriate for the assessment of impacts from continuous acoustic discharges to marine turtles from the GPGT Surveys Program. No numerical thresholds have been developed for behavioural impacts of continuous sources (e.g. vessel noise) on marine turtles. A review (Popper *et al.* 2014) assessed thresholds for marine turtles and found qualitative results that the risk of behavioural disturbance was high for near field exposure, moderate for intermediate exposure and low for far field exposure (McCauley *et al.* 2000).

Table 6-5: Thresholds for permanent and temporary threshold shift and behavioural response onset in marine turtles for continuous noise

Receptor	*PTS onset thresholds: SEL_{24h} (dB re 1 µPa².s)*	*TTS onset thresholds: SEL_{24h} (dB re 1 µPa².s)*	*Masking*	*Behaviour*
Marine turtles	220	200	(N) High (I) High (F) Moderate	(N) High (I) Moderate (F) Low

Source: PTS and TTS thresholds (Finneran et al. 2017).

Note: The sound units provided in the table above 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).

The Recovery Plan for Marine Turtles (Commonwealth of Australia 2017) notes there is limited information available on the impact of noise on marine turtles and that the impact of noise on turtle stocks may vary depending on whether exposure is short (acute) or long-term (chronic). However, given the thresholds outlined in Table 6-5, it is reasonable to expect that marine turtles may demonstrate avoidance or attraction behaviour to the noise generated by the GPGT Surveys Program.

The islands of Dampier Archipelago provide nesting beaches for flatback, green, hawksbill and loggerhead turtles, with Rosemary Island being a major rookery for hawksbill turtles in WA. A study of internesting movements of individuals nesting on the Dampier Archipelago has not been conducted; however, tracking studies at other islands (Barrow and Thevenard) suggest internesting flatback turtles remain in shallow water, close (<3 km) to nesting beaches (Whittock *et al.* 2014). The Operational Area overlaps internesting habitat critical to the survival of flatback turtles, which is also designated a BIA. However, it is noted that the defined BIA and habitat critical are considered very conservative, as they are based on the maximum range of internesting females and many marine turtles are more likely to remain near their nesting beaches. There is no evidence to date to indicate flatback turtles swim out into deep offshore waters during the internesting period.

PTS and TTS impacts are not considered credible as a result of survey vessel activities in the Operational Area as turtles are expected to be transient and unlikely to remain in close proximity to a vessel for long periods. Behavioural impacts to marine turtles from continuous noise sources generated by the survey vessel are expected to be short-term and localised. Given the distance of the Operational Area to the nearest shoreline (and potential nesting beaches), impacts to nesting females are not expected. Disturbance to internesting behaviour may occur, but given the temporary nature of the disturbance, is unlikely to affect individual breeding success or impact marine turtles at the population level.

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Fish (including sharks and rays)

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. Such 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 (sharks and rays) 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 6-6 and are considered appropriate to assess continuous acoustic discharges to fish from the GPGT Surveys Program.

Table 6-6: Impact thresholds to fish, sharks and rays for continuous noise

Receptor	*Mortality and potential mortal injury*	*PTS*	*TTS*	*Masking*	*Behaviour*
Fish: no swim bladder	(N) Low (I) Low (F) Low	(N) Low (I) Low (F) Low	(N) Moderate (I) Low (F) Low	(N) High (I) High (F) Moderate	(N) Moderate (I) Moderate (F) Low
Fish: swim bladder not involved in hearing	(N) Low (I) Low (F) Low	(N) Low (I) Low (F) Low	(N) Moderate (I) Low (F) Low	(N) High (I) High (F) Moderate	(N) Moderate (I) Moderate (F) Low
Fish: swim bladder 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
Fish eggs and fish larvae	(N) Low (I) Low (F) Low	(N) Low (I) Low (F) Low	(N) Low (I) Low (F) Low	(N) High (I) Moderate (F) Low	(N) Moderate (I) Moderate (F) Low

Note: The sound units provided in the table above are based on relative risk (high, medium and low) given for fish (all types) at three distances from the source defined in relative terms as near (N – tens of metres), intermediate (I – hundreds of metres) and far (F – thousands of metres) (after Popper et al. 2014).

Cartilaginous fish (such as sharks and rays) lack a swim bladder and are considered less sensitive to sound than bony fish. Given the thresholds outlined in Table 6-6, it is reasonable to expect that fish, sharks and rays may demonstrate avoidance or attraction behaviour to the noise generated by the GPGT Surveys Program.

The Operational Area overlaps a small proportion of the foraging BIA for whale sharks and therefore they may be seasonally present between March and November (with the annual peak aggregation at Ningaloo Reef between April and May), as demonstrated by acoustic detections of tagged whale sharks at the North Rankin A and Goodwyn A platforms during two periods: June to July and October to January (Tomson *et al.* 2021). This overlap represents a very small proportion of the overall area of the BIA (0.22%), and the Operational Area is located approximately 319 km south-west from the whale shark foraging (high density prey) BIA adjacent to Ningaloo Reef. Behavioural disturbance to whale sharks as a result of survey vessel noise within the Operational Area may result in a temporary deviation on their migration route, which covers a wide area and is not spatially restricted. The hearing capabilities of the whale shark have not been studied, but it has been suggested that they are likely to be most responsive to low frequency sounds (Myberg 2001).

Potential impacts to fish (including whale sharks) are expected to be restricted to masking and behavioural disturbance. Fish may temporarily be displaced from the immediate vicinity of a noise source; however, they would be expected to behave normally once the noise emissions ceased.

It is expected that fish (including sharks and rays) may exhibit some behavioural responses to the noise generated by vessel activities of the GPGT Surveys Program. However, the behavioural responses are expected to be restricted to the immediate area of vessel activities. No permanent changes in behaviour that could impact on long-term biological or ecological functioning of fish populations are expected.

Commercial fish spawning

Depth ranges and key spawning periods for six key indicator commercial fish on the NWS are as follows:

- red emperor – depth range 10 to 180 m, spawns Sep to Jun (bimodal peaks Sep to Nov and Jan to Mar)
- rankin cod – depth range 10 to 150 m, spawns Jun to Dec and Mar (peak Aug to Oct)

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- goldband snapper – depth range 50 to 200 m, spawns Oct to May
- blue spotted emperor – depth range 5 to 110 m, spawns Jul to Mar
- ruby snapper – depth range 150 to 480 m, spawns Dec to Apr (peak Jan to Mar)
- Spanish mackerel – depth range 1 m to at least 50 m, spawns Sep to Jan.

It is understood that all of these species undergo group spawning throughout their range, rather than aggregating at specific locations. The Operational Area overlaps the depth ranges for these key indicator commercial fish species. However, as described above, the potential impact of continuous acoustic emissions on demersal and pelagic fishes is expected to be limited to a short-lived behavioural response confined to a few hundred metres from the vessels. As such, the potential for the GPGT Surveys Program to impact spawning of key indicator commercial fish species is assessed as being extremely low.

Potential impacts from acoustic emissions on fish, sharks and rays are likely to be restricted to localised and temporary avoidance behaviour while transiting through the Operational Area, and individuals impacted are unlikely to represent a significant proportion of the population with the Operational Area and the NWS region overall.

AMPs

The North-west Marine Parks Network Management Plan (DNP 2018) lists the natural values of the Dampier AMP as including a range of threatened, migratory, marine or cetacean species listed under the EPBC Act, as well as BIAs that include seasonal breeding and foraging habitat for seabirds, internesting habitat for marine turtles and a migratory pathway for humpback whales. For activities occurring adjacent to the Dampier Marine Park, the short-term and transient nature of activities associated with acoustic emissions will not be inconsistent with the objectives of the North-west Marine Parks Network Management Plan listed below for the relevant zones:

- Habitat Protection Zone (IV): to provide for the conservation of ecosystems, habitats and native species in as natural a state as possible, while allowing activities that do not harm or cause destruction to seafloor habitats
- National Park Zone (II): to provide for the protection and conservation of ecosystems, habitats and native species in as natural a state as possible
- Multiple Use Zone (VI) to provide for ecologically sustainable use and the conservation of ecosystems, habitats and native species.

The values identified for the Dampier Marine Park including BIAs for marine turtles will not be impacted given the distance from sensitive locations. Localised, short-term disturbance to internesting behaviour of individual turtles may occur, but given the temporary nature of the disturbance, is unlikely to affect individual breeding success or impact marine turtles at the population level. Impacts from acoustic emissions are therefore not inconsistent with the objectives of the North-west Marine Parks Network Management Plan or the zoning of the Dampier AMP (DNP 2018).

Cumulative impacts

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 around each vessel, the presence of multiple vessels in the Operational Area does not increase the consequence rating of this impact.

Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[28]***	***Benefit in impact reduction***	***Proportionality***	***Control adopted***
Legislation, codes and standards				
EPBC Regulations 2000 – Part 8 Division 8.1 Interacting with cetaceans, including the following measures: • Survey vessels will not travel greater than 6 knots within 300 m of a cetacean or turtle (caution zone) and	F: Yes. CS: Minimal cost. Standard practice.	Implementation of controls for reduced vessel speed around cetaceans can potentially reduce the underwater noise footprint of a vessel and lower the likelihood of interaction above.	Controls based on legislative requirements – must be adopted.	C 3.1

[28] *Qualitative measure.*

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[28]***	***Benefit in impact reduction***	***Proportionality***	***Control adopted***
not approach closer than 100 m from a whale. • Survey vessels will not 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, survey vessels will immediately withdraw from the caution zone at a constant speed of less than 6 knots. • Survey vessels will not travel greater than 8 knots within 250 m of a whale shark and not allow the vessel to approach closer than 30 m of a whale shark.				
Good practice				
Have a dedicated experienced and trained marine fauna observer (MFO) onboard the survey vessel to undertake marine fauna observations.	F: Yes. However, additional cost for dedicated and experienced MFO to be present during the survey. In addition, bunk space on vessels is a limiting factor, particularly as several MFO would be required to cover monitoring shifts. CS: Moderate, requires the provision of a dedicated and experienced MFO to undertake marine fauna observations.	Use of an MFO would detect fauna in the area; however, control provides limited benefit when managing impacts associated with vessel noise alone. Limited benefit as detection by the MFO is hindered at night and in poor weather.	Given limited benefit associated with managing vessel noise impacts and costs associated with control, implementation of an experienced MFO is not considered necessary.	No
Professional judgement – Eliminate				
Eliminate generation of noise from the vessels including DP.	F: No. Generation of noise from these sources cannot be eliminated due to operating requirements. Note that vessels operating on	Not considered – control not feasible.	Not considered – control not feasible.	No

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[28]***	***Benefit in impact reduction***	***Proportionality***	***Control adopted***
	DP may be a safety-critical requirement. CS: Inability to conduct the GPGT Surveys Program. Loss of project.			
Professional judgement – Substitute				
Manage vessel noise by varying the timing of the GPGT Surveys Program to avoid migration and breeding periods.	F: No. Timing of survey activities is currently undetermined, and due to vessel availability and operational requirements, undertaking activities during migration seasons may not be able to be avoided. CS: Significant cost and schedule impacts due to delays in securing survey vessel for specific timeframes.	Not considered – control not feasible.	Not considered – control not feasible.	No
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 2.3.4.2) and Woodside's criteria for demonstrating ALARP (Section 2.4.1), Woodside considers the adopted controls appropriate to manage potential impacts associated with acoustic emissions generated by survey vessels. 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, vessel noise disturbance may result in slight, short-term (<1 year) behavioural disturbance to fauna within the Operational Area with no significant impacts to populations or sensitive life stages. On the basis of the assessment outcomes, use of the relevant tools appropriate to the decision type (i.e. Decision Type A; Section 2.3.4.2) and Woodside's criteria for demonstrating acceptability (Section 2.4.2), 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.

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EPOs, EPS and MC			
EPO	***Controls***	***PS***	***MC***
EPO 3 No injury of, or mortality to, EPBC Act 1999 (Cth) and Biodiversity Conservation Act 2016 (WA) listed marine fauna as a result of noise generated by the GPGT Surveys Program. EPO 4 No displacement of marine turtles from habitat critical during nesting/breeding (inc. internesting periods) and ensure biologically important behaviour can continue in BIAs.	C 3.1 EPBC Regulations 2000 – Part 8 Division 8.1 Interacting with cetaceans, including the following measures[29]: • Survey vessels will not deliberately approach greater than 6 knots within 300 m of a cetacean or turtle (caution zone) and not deliberately approach closer than 100 m from a whale. • Survey 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, survey vessels will immediately withdraw from the caution zone at a constant speed of less than 6 knots. • Vessels will not deliberately approach greater than 8 knots within 250 m of a whale shark and not allow the vessel to approach closer than 30 m of a whale shark.	PS 3.1 Compliance with EPBC Regulations 2000 – Part 8 Division 8.1 (Regulations 8.05 and 8.06) Interacting with cetaceans (with modification to include turtles and whale sharks).	MC 3.1.1 Vessel bridge daily log demonstrates no breaches of EPBC Regulations 2000 – Part 8 Division 8.1 Interacting with cetaceans (with modification to include turtles and whale sharks).

[29] *For safety reasons, the distance requirements are not applied for a vessel holding station or with limited manoeuvrability e.g. lifting, loading, back-loading, bunkering, close standby cover for overside working and emergency situations.*

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6.8.4 Routine acoustic emissions: generation of noise from geophysical and geotechnical survey equipment

Context		
Geophysical surveys – Section 3.6 Geotechnical surveys – Section 3.7	Habitats and biological communities – Section 4.5 Protected species – Section 4.6	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 geophysical and geotechnical survey equipment				X	X		A	E	-	-	GP PJ	Broadly Acceptable	EPO 3, 4
Generation of acoustic signals from transponders (USBL)					X		A	E	-	-			

Description of source of impact

Geophysical survey activities

Geophysical sources are used for bathymetric mapping and shallow sub-bottom profiling, penetrating to depths of about 60 m below the seabed. The geophysical surveys will use a range of sources as outlined in Section 3.6.

MBES and SSS are very high-frequency and high-resolution systems, producing short micro-pulses of sound at frequencies in the tens or hundreds of kilohertz. The high-frequency pulses of sound produced by MBES are focused within multiple highly directional and narrow beams, which form a fan shape directed at the seabed (Jiménez-Arranz *et al.* 2017, Salgada *et al.* 2016). The frequency is typically 150 to 300 kHz with source levels between 173 and 188 dB re 1 µPa².s (SEL) (as outlined in Table 3-3).

SSS also produces sound in a focussed swath directed at the seabed. The pulses of sound produced by these instruments are of such high frequency that they rapidly attenuate outside of the beam (75 to 900 kHz) (Zykov 2013). Despite relatively high source levels (200 dB re 1 µPa².s (SEL)), the high operating frequencies of most MBES and SSS places the dominant sound frequencies above the principal auditory range of most marine fauna species, although high-frequency cetaceans that may occur in the GPGT Surveys Program (e.g. dolphins) have the capability to hear some of the sound energy at the lower end of the operating frequency ranges (NMFS 2018).

Most commercial SBPs are small, low-powered, high-resolution and shallow-penetrating systems, producing electrical pulses across a range of frequencies (Jiménez-Arranz *et al.* 2020, Salgado *et al.* 2016). The SBP instruments (chirp, pinger, boomer or sparker) proposed for the survey produce pulses of sound between approximately 50 Hz and 30 kHz with source levels between approximately 198 and 218 dB re 1 µPa (SPL $_{PK}$) at 1 m; and 171 and 193 dB re 1 µPa².s (SEL) (as outlined in Table 3-3).

Refraction SBP consists of a very low powered airgun (typically 10 in³ up to 25 in³) used close to the seabed. The acoustic source emits low frequency sound, most of it below 250 Hz, with 90 percent of its energy in the band 70 to 140 Hz (Jiménez-Arranz *et al.* 2020).

Positioning equipment

An ultrashort baseline (USBL) system may also be used during the survey for the purpose of accurate underwater positioning. USBL systems work by emitting short pulses of medium to high frequency sound (19 to 34 kHz) in short 'chirps'. Source levels are in the order of 184 to 202 dB re 1 µPa (SPL) at 1 m. The operating frequency range is above the auditory range of marine turtles and the majority of fish species (<1 kHz; McCauley *et al*. 2000, Ladich 2000). Similar to MBES and SSS, dolphins have the capability to hear the sound produced from USBL. Although USBL operating frequencies are outside the peak hearing range of low frequency cetaceans (0.2-19 kHz; NMFS 2024) they remain within the group's generalised hearing range (0.7-36 kHz; NMFS 2024).

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Geotechnical survey activities

The key sound sources during geotechnical surveys include the penetration tests and sampling boreholes undertaken at the seabed. Sound levels associated with standard penetration testing and small-core drilling have been measured in waters off WA (Erbe and McPherson 2017). The broadband (20 Hz to 24 kHz) source levels for penetration testing were 151 to 160 dB re 1 µPa².s SEL at 1 m (equivalent to approximately 160 to 170 dB re 1 µPa SPL at 1 m), with received levels reducing to approximately 141 to 146 dB re 1 µPa SPL within 20 m distance from the source (Erbe and McPherson 2017). The broadband (30 Hz to 2 kHz) drilling source levels were 142 to 145 dB re 1 µPa SPL at 1 m (Erbe and McPherson 2017). The reported levels are tens of decibels less than those produced during production or construction operations and below levels commonly considered in marine noise regulations (Erbe and McPherson 2017).

Impact assessment

Environmental value(s) potentially impacted

The Operational Area is located in water depths of approximately 35 to 135 m (refer to Section 3.3). The fauna associated with this area will be predominantly pelagic species of fish, with migratory species such as cetaceans and marine turtles potentially occurring in the area seasonally (Section 4.6). Noise interference is a key potential threat to a number of migratory and threatened cetaceans and marine turtles identified as potentially occurring within the Operational Area, including the pygmy blue whale. Relevant actions included in recovery plans for these species are outlined in Section 6.10.

Geophysical and geotechnical survey techniques will generate impulsive sound sources. As described in Section 6.8.3, elevated underwater noise has the potential to affect marine fauna, including cetaceans, fish, 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.

Acoustic modelling

Acoustic modelling was performed by JASCO Applied Sciences (JASCO) for a refraction SBP using a single airgun within the Operational Area. The modelling study considered a single airgun with a chamber volume of 30 in³ operated at 2000 psi, towed at a nominal depth of 1.5 m above the seafloor (JASCO 2024). Use of a 30 in³ airgun is conservative and in excess of standard refraction SBP.

Three single impulse sites aggregated into a singlenominal survey line acquisition scenario were modelled, with the latter assuming a survey vessel sailed along a line between the three sites. Eighteen thousand impulses were assumed to be discharged along the survey line, which is a nominal but upper bound number of impulses that would be discharged during any 24-hour period. The water depths across the modelled sites range from 41 m to 59 m, representative of the Operational Area.

The airgun source was modelled over AASM[30]'s full frequency range, up to 25 kHz. While airgun signatures are highly repeatable at the low frequencies, which are used for surveying the seabed, their sound emissions have a large random component at higher frequencies that cannot be predicted using a deterministic model. Therefore, AASM uses a stochastic simulation to predict the high-frequency (800-25,000 Hz) sound emissions of individual airguns, using a data-driven multiple-regression model (JASCO 2025, Appendix B1).

The modelling study specifically assessed distances from operations where underwater sound levels were predicted to reach thresholds corresponding to potential behavioural response, TTS and PTS. The animals considered include LF, HF and VHF cetaceans, turtles, fish including larvae and eggs, and benthic invertebrates.

Cetaceans

Species sensitivity and thresholds

Sound exposure thresholds and criteria for impulsive sound sources applicable to the types of cetaceans that may be present near the Operational Area are summarised in Table 6-7. Thresholds for potential hearing impairment, in terms of PTS or TTS are presented as dual metric criteria, the peak pressure (PK) from a single impulse or the sound exposure level (SEL) accumulated from multiple impulses over a period of 24 hours (SEL_{24h}). The SEL_{24h} thresholds are frequency weighted according to the auditory weighting categories of different types of cetaceans, including LF cetaceans (large baleen whales such as humpback and pygmy blue whales) and HF cetaceans (sperm whale, all beaked whales and most dolphins) (Southall *et al.* 2019). The PK thresholds for a single impulse are not frequency weighted. Updates to recommended thresholds in October 2024 (NMFS 2024) are included in Table 6-7, showing

[30] *Airgun Array Source Model*

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higher peak SPL thresholds for onset of PTS and TTS in LF cetaceans and higher SEL_{24h} thresholds for PTS and TTS onset in HF cetaceans.

A range of behavioural changes can occur in marine fauna in response to sound pressure levels. Onset of behavioural disturbance to cetaceans has been reported to occur in response to sound levels ranging from 120 to over 180 dB re 1 µPa SPL (Wood *et al.* 2012). This may include minor responses, such as a momentary pause in vocalisation or reorientation of an animal to the source of the sound, or stronger avoidance responses (Southall *et al.* 2007). The US National Marine Fisheries Service (NMFS) proposes a threshold of 160 dB re 1 µPa SPL for a potentially significant behavioural response to impulsive sound sources (NMFS 2014).

Table 6-7: Exposure thresholds for impulsive sounds applicable to cetaceans

Hearing group	***NOAA (2019)***	***NMFS (2024)***			
	Behaviour	***PTS onset thresholds* (received level)***		***TTS onset thresholds* (received level)***	
	SPL (L_p; dB re 1 µPa)	***Weighted SEL_{24h} ($L_{E,24h}$; dB re 1 µPa²·s)***	***PK (L_{pk}; dB re 1 µPa)***	***Weighted SEL_{24h} ($LE_{,24h}$; dB re 1 µPa²·s)***	***PK (L_{pk}; dB re 1 µPa)***
LF cetaceans	160	183	222	168	216
HF cetaceans		193	230	178	224
VHF cetaceans		159	202	144	196

Note: PTS is used interchangeably with auditory injury (AUD INJ).

* Dual metric (SEL_{24h} and PK) acoustic thresholds for impulsive sounds: Use whichever results in the largest isopleth for calculating TTS and PTS/AUD INJ onset.

L_p denotes sound pressure level and has a reference value of 1 µPa.

L_{pk} denotes peak sound pressure is flat weighted or unweighted and has a reference value of 1 µPa.

$L_{E,24h}$ denotes cumulative sound exposure over a 24 h period and has a reference value of 1 $\mu Pa^2 \cdot s$.

Impact assessment

Geophysical survey activities

Acoustic modelling of sub-bottom profilers by Zykov (2013), MacGillivray *et al.* (2013) and McPherson and Wood (2017) indicates limited horizontal sound propagation outside of the main directional beams of sound. The modelling studies also indicate that PK and SEL_{24h} thresholds for PTS are not exceeded. The potential for TTS resulting from single pulse PK pressure exposure is not predicted to occur, while the potential for TTS resulting from SEL_{24h} exposures is limited to a few metres from the moving sound source (Zykov 2013, McPherson and Wood 2017), which is not expected for mobile marine fauna as they are likely to move out of the area relatively quickly. Exceedance of the 160 dB re 1 µPa SPL behavioural response threshold is limited to within a few tens of metres in most instances, or up to a maximum of 150 m depending upon which instrument is used, water depth and the seabed sediment characteristics (Zykov 2013, McPherson and Wood 2017).

The very high-frequency micro-pulses of sound produced by the MBES and SSS also rapidly attenuate outside of the beam (Zykov 2013, MacGillivray *et al.* 2013). The high operating frequencies of these instruments also places the majority of sound frequencies above the auditory range of most marine fauna species. Dolphins and other HF cetaceans, which have peak hearing sensitivity up to 110 kHz, with potential for some limited hearing ability up to approximately 160 kHz (NMFS 2018), may be able to detect a small amount of the sound energy from some MBES and SSS instruments in the lower operating frequency ranges (Zykov 2013, MacGillivray *et al.* 2013). Modelling of the propagation of the HF sound from MBES and SSS with similar source frequency characteristics as those proposed for the GPGT Surveys Program has been undertaken by Zykov (2013) and MacGillivray *et al.* (2013). The modelling results indicate that the sound emissions outside of the main beams are below the threshold levels for potential injury, PTS or TTS. Sound levels that may result in behavioural effects are likely limited to within tens of metres, but potentially up to a few hundreds of metres from the sound source for high-frequency cetaceans such as dolphins (Zykov 2013, MacGillivray *et al.* 2013). Varghese *et al.* (2020) recently studied the foraging behaviours and vocalisations of beaked whales (high-frequency cetaceans) to 12 kHz MBES surveys and concluded there was not a consistent change in foraging behaviour during the MBES surveys that would suggest a clear response. The animals did not leave the area nor stop foraging during MBES activity. Geophysical and other survey activities using this technology or similar are therefore expected to result in temporary behavioural effects to marine mammals within tens or hundreds of metres from the survey activities. Such localised effects are smaller than those expected from the vessels and are not expected to be biologically significant.

Refraction sub-bottom profiler modelling results

The acoustic modelling of refraction SBP showed per-pulse sound exposure levels (SEL) did not exceed 160 dB re 1 $\mu Pa^2 \cdot s$ beyond 410 m of the source (JASCO 2025, Table 10).. The maximum distance to behavioural disturbance onset was predicted to be 1.11 km for both LF and HF cetaceans (JASCO 2025, Table 11).. For LF cetaceans, PTS

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(@183 LE,24h; dB re 1 µPa²·s) onset could occur at a distance of up to 110 m and TTS at a distance of up to 2.99 km based on cumulative sound exposure level (SEL) thresholds (JASCO 2025, Table 15, 11 & 8). PTS and TTS thresholds were not exceeded for HF cetaceans within the limits of the modelled resolution (20 m). For VHF cetaceans TTS threshold is exceeded within 30 m from source.

The SEL_{24h} criterion used for calculating the potential for TTS and PTS impacts is a cumulative metric that reflects the dosimetric impact of sound energy accumulated over a 24-hour period and assumes that an animal is consistently exposed to such noise levels at a fixed distance from the source. The radii that correspond to SEL_{24h} therefore represent an unlikely worst-case scenario for SEL-based exposure since, more realistically, marine fauna would not stay in the same location or at the same range for 24 hours (Stroot *et al.* 2023). It is highly unlikely that PTS and TTS thresholds would be exceeded, given the known movement behaviour of cetaceans, including key migrating LF whale species such as humpback and pygmy blue whales transiting through the Operational Area.

Table 6-8: Maximum predicted horizontal distances (Rmax) to permanent and temporary threshold shift and behavioural response in cetaceans and turtles

Hearing group	*Sound exposure threshold*	*R_{max} (km)*
PTS*		
LF cetaceans	183 dB re 1 µPa².s (SEL_{24h})	0.11
HF cetaceans	193 dB re 1 µPa².s (SEL_{24h})	-
VHF cetaceans	159 dB re 1 µPa².s (SEL_{24h})	-
Turtles	184 dB re 1 µPa².s (SEL_{24h})	0.03
TTS*		
LF cetaceans	168 dB re 1 µPa².s (SEL_{24h})	2.99
HF cetaceans	178 dB re 1 µPa².s (SEL_{24h})	-
VHF cetaceans	144 dB re 1 µPa².s (SEL_{24h})	0.03
Turtles	169 dB re 1 µPa².s (SEL_{24h})	1.77
Behavioural response+		
LF/HF/VHF cetaceans	160 dB re 1 µPa (SPL)	1.11
Turtles	166* dB re 1 µPa (SPL) 175 dB re 1 µPa (SPL)	0.63[A] 0.13[B]

A dash indicates the threshold was not reached within the limits of the modelling resolution (20 m).
** PTS & TTS response threshold (NMSF 2024).*
+ Behavioural response threshold (NOOA 2019), except for Turtles: [A]McCauley et al (2000) & [B]NOOA (2019).

Based on the above assessment, the geophysical survey activities are expected to result in behavioural effects to cetaceans within 1.11 km from the survey activities. Such localised effects and potential deviations are not expected to be significant given the transient nature of cetaceans or in the context of long distance migrations undertaken by pygmy blue whales, humpback whales or other migratory species that might be present. It is highly unlikely that PTS or TTS effects will occur as individual animals are unlikely to remain within range of the survey activities (i.e. within 2.99 km of the passing geophysical survey vessel) for durations long enough for the relevant sound exposure threshold to be exceeded.

Positioning equipment

USBL positioning equipment also produces high frequency sound, which may only be audible to dolphins and other HF cetaceans, and to a lesser extent to LF cetaceans. The USBL has lower source levels than the other instruments proposed for the geophysical survey and is not expected to result in any injury or hearing impairment. Some localised behavioural effects may occur in close proximity to the USBL, but the extent of any effect is expected to be smaller than that of other survey instruments and so the effects are considered to be negligible. Based on empirical spreading loss estimates measured by Warner et al. (2011), received levels from USBL transponders are expected to exceed the cetacean behavioural response threshold for impulsive sources out to about 42 m. Given the short-duration chirps and the mid frequencies used by positioning equipment, the acoustic noise from a single transponder is unlikely to have any substantial effect on the behavioural patterns of marine fauna. Therefore, potential impacts from transponder noise are likely to be restricted to temporary and localised avoidance behaviour of individuals transiting through the PAA and therefore are considered localised with no lasting effect.

Geotechnical survey activities

Sound emitted from the geotechnical activities at the seabed (penetration tests and sampling boreholes) may be at levels that result in very localised behavioural effects to animals that happen to be exposed within less than 10 m, but

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such effects will be temporary and the sound levels are well below those that may result in any injury or hearing impairment (Erbe and McPherson 2017).

Pygmy blue whale biologically important area

The western extent of the pygmy blue whale distribution BIA overlaps the Operational Area and a pygmy blue whale migration BIA is located approximately 38 km to the north (Section 4.6.3). As described in Section 6.8.3, there is likely to be occasional individuals or small groups transiting through the distribution range during the northbound or southbound migration seasons.

While the modelling for a refraction SBP survey shows a PTS or TTS impact is possible in close proximity to a geophysical survey vessel operating within the pygmy blue whale distribution BIA within the Operational Area, PTS and TTS criteria exceedances are based upon exposure for 24 hours by a stationary receptor, which is not a realistic scenario. As described above, the SEL_{24h} criterion is a cumulative metric that reflects the dosimetric impact of sound energy accumulated over a 24-hour period and assumes that an animal is consistently exposed to such noise levels at a fixed location. The radii that correspond to SEL_{24h} therefore represent an unlikely worst-case scenario for SEL-based exposure since, more realistically, marine fauna would not stay in the same location or at the same range for 24 hours (Stroot *et al.* 2023). PTS and TTS thresholds are therefore unlikely to be exceeded for cetaceans transiting through the Operational Area. This aligns with the Blue Whale Conservation Management Plan (Action Area 2), which states that anthropogenic noise in BIAs should be managed such that any blue whale continues to utilise the area without injury (Commonwealth of Australia 2015b).

GPGT survey equipment used within the Operational Area may also result in some behavioural disturbance resulting in slight deviation of individuals. However, effects are expected to be minimal based on a survey vessel operating for a short period in any given area within the Operational Area.

Humpback whale biologically important area

Given the intersection of the Operation Area with the humpback whale migration BIA, the species is expected to be encountered during GPGT survey activities along the trunkline, particularly should these activities occur during annual migrations (July [northbound] and late August/September [southbound]). PTS and TTS impacts are not considered credible, as discussed above for pygmy blue whales. Behavioural response may result in a deviation in course during migration, which is expected to be insignificant in the context of the long distances over which individuals migrate (thousands of kilometres). Marine mammals that are frequently exposed to sounds such as vessel noise may also habituate and adapt to this noise (Richardson *et al.* 1995, NASEM 2003). This may be the case for the humpback whale population that regularly passes through areas of significant shipping traffic during their migrations.

Marine turtles

Species sensitivity and thresholds

Sound exposure thresholds and criteria for impulsive sound applicable to marine turtles are summarised in Table 6-9 (see JASCO 2025, Table 8).

McCauley et al. (2000) observed the behavioural response of caged green and loggerhead turtles to 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 ("Behavioural disturbance"). The 166 dB re 1 µPa SPL has been used as the threshold level for a behavioural disturbance response by the US NMFS (2011) and is applied to this impact assessment. Finneran *et al.* (2017) presented thresholds for turtle PTS and TTS, considering both PK and frequency-weighted SEL, which have been applied in this study.

Table 6-9: Exposure thresholds for impulsive sounds applicable to marine turtles

McCauley et al. (2000), NMFS (2011)	***Finneran et al. (2017)***			
Behaviour	***PTS onset thresholds (received level)***		***TTS onset thresholds (received level)***	
SPL (L_p; dB re 1 µPa)	***Weighted SEL_{24h} ($L_{E,24h}$; dB re 1 µPa²·s)***	***PK (L_{pk}; dB re 1 µPa)***	***Weighted SEL_{24h} ($L_{E,24h}$; dB re 1 µPa²·s)***	***PK (L^{pk}; dB re 1 µPa)***
166	184	230	169	224

Impact assessment

Sound levels that are likely to be produced by various different SBP (chirp, sparker and boomer) instruments are predicted to fall below the 166 dB re 1 µPa SPL threshold within a few metres or tens of metres (Zykov 2013, McPherson and Wood 2017). The high-frequency sounds produced by the MBES, SSS and USBL are expected to be above the auditory range of marine turtles and so behavioural impacts are not expected to occur.

As with cetaceans, the sound produced during geotechnical activities may only result in very localised behavioural effects to animals that happen to be exposed within less than 10 m, but such effects are anticipated to be temporary and the sound levels are well below those that may result in any injury or hearing impairment.

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Acoustic modelling results (Table 6-8) for a refraction SBP acoustic source found the maximum distance to a behavioural disturbance threshold was 630 m. PTS thresholds were not exceeded up to 30 m from source just outside of the modelling resolution (20 m), while TTS thresholds were exceeded at 1.77 km based on a SEL_{24h} criterion. These results reflect an unrealistic worse case, given the survey will be continually moving at low speeds and turtles are likely to exhibit a behavioural response (avoidance), therefore any exposure is likely to be brief.

The Operational Area overlaps internesting buffer BIAs for hawksbill, loggerhead, green and flatback turtles. Habitat critical buffer zones for hawksbill, green and flatback turtles overlap the Operational Area, with peak nesting between December and January. The localised and short-term behavioural disturbances that may result from the geophysical and geotechnical surveys will not have a discernible impact on internesting behaviours or result in the displacement of individual animals (potentially exposed within hundreds of metres of the activity for a brief period). As a result, and given the temporary nature of the survey activities, no population level impacts are expected.

Fishes and elasmobranchs

Species sensitivity and thresholds

Fishes are primarily sensitive to the particle motion component of sound at close range to a sound source, while the presence of the swim bladder results in a varying degree of sensitivity of some fishes to sound pressure (Popper and Hawkins 2018, Popper *et al.* 2019). Consequently, fishes are broadly categorised into three groups with respect to their hearing capabilities that are relevant to the types of fishes and sharks that may be present in the Operational Area (McCauley *et al.* 2000):

- Fishes with no swim bladder or other gas chamber (e.g. sharks, mackerels) – Sensitive only to particle motion, not sound pressure changes.
- Fishes with swim bladders, but without a direct connection between the swim bladder and the inner ear (e.g. demersal snappers and emperors) – Hearing primarily involves particle motion with some limited ability to indirectly detect changes in sound pressure.
- Fishes with a swim bladder or other gas volume connected directly to the inner ear (e.g. herrings, sardines, pilchards, shads) – These fishes are able to detect both sound pressure as well as particle motion and are susceptible to barotrauma.

Sound exposure thresholds and criteria applicable to the types of fishes and sharks that are likely to occur in the Operational Area are summarised in Table 6-10. It is important to note, however, that the criteria are based on studies into the effects of exploration seismic surveys and are therefore highly conservative for the low energy geophysical instruments proposed for this activity.

Table 6-10: Sound exposure thresholds and criteria for impulsive sounds applicable to fishes

Type of animal	***Mortality and potential mortal injury***	***Impairment***			***Behaviour***
		Recoverable injury	***TTS***	***Masking***	
Fish I: No swim bladder (particle motion detection)	>219 dB SEL_{24h} or >213 dB PK	>216 dB SEL_{24h} or >213 dB PK	>>186 dB SEL_{24h}	(N) Low (I) Low (F) Low	(N) High (I) Moderate (F) Low
Fish II: Swim bladder not involved in hearing (particle motion detection)	210 dB SEL_{24h} or >207 dB PK	203 dB SEL_{24h} or >207 dB PK	>>186 dB SEL_{24h}	(N) Low (I) Low (F) Low	(N) High (I) Moderate (F) Low
Fish III: Swim bladder involved in hearing (primarily pressure detection)	207 dB SEL_{24h} or >207 dB PK	203 dB SEL_{24h} or >207 dB PK	186 dB SEL_{24h}	(N) Low (I) Low (F) Moderate	(N) High (I) High (F) Moderate

Peak sound pressure level: dB re 1 µPa; SEL24h dB re 1µPa²·s.

Popper et al. (2000) proposed a relative risk criteria (high, moderate, low) for behavioural and masking effects to fishes at three distance categories, near (N) (tens of metres from the source), intermediate (I) (hundreds of metres from the source), and far (F) (kilometres from the source).

Impact assessment

The potential for injury or TTS effects to fish resulting from single impulse PK or accumulated exposures to SBP, MBES and SSS sound is limited to within 1 to 2 m beneath or to the side of the sound source (Zykov 2013,

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McPherson and Wood 2017). Single impulse exposures at this range are highly unlikely to occur as are accumulated exposures over several hours at this range.

The impacts to fishes are, therefore, likely to be limited to localised and temporary behavioural changes. The criteria suggested by Popper *et al.* (2000) in Table 6-10 are based on exploration seismic surveys and are therefore highly conservative for the low energy geophysical instruments proposed for this activity. Therefore, the potential behavioural effects to the demersal and pelagic fish species in the Operational Area (which are primarily sensitive to close-range particle motion changes rather than sound pressure) are likely to be limited to within tens of metres of the various geophysical and geotechnical sound sources proposed for this activity.

Impacts to protected species of sharks and rays, such as whale sharks, are not expected given that sharks do not possess swim bladders and are less sensitive to sound pressure. The Operational Area overlaps with the BIA for foraging whale sharks; however, the potential for behavioural effects within just tens of metres of the geophysical survey instruments indicates that behavioural effects will not be significant and whale sharks will be able to continue to utilise the wider area for foraging.

Refraction sub-bottom profiler modelling results

Table 6-11: Maximum predicted horizontal distances (Rmax) to 24-hour sound exposure level (SEL_{24h}) impact thresholds in fish

Type of animal	*Threshold for SEL_{24h} (dB re 1 $\mu Pa^2 \cdot s$)*	*R_{max} (km)*
Mortality and potential mortal injury		
I	219	-
II, fish eggs and fish larvae	210	-
III	207	-
Fish recoverable injury		
I	216	-
II, III	203	-
Fish TTS		
I, II, III	186	0.56

A dash indicates the threshold was not reached within the limits of the modelled resolution (5 m).

Refraction SBP is the highest energy geophysical survey activity planned during the GPGT survey program. Acoustic modelling (as described above) found 24-hour SEL mortality and injury thresholds were not reached within the modelled resolution within the water column for fish either with or without a swim bladder, or for fish eggs and larvae. Recoverable injury thresholds were reached within 10 m in the water column for fish with a swim bladder and were not reached for fish with no swim bladder. The results of the modelling showed worst-case potential impact to fishes with or without a swim bladder was exceedance of the TTS SEL_{24h} threshold within 560 m of the acoustic source (Table 6-10). This represents an unlikely worst-case scenario whereby a fish could be exposed to the sound level associated with TTS if it remained within 560 m of the source for 24 hours. However, it is unlikely a fish would remain within this distance given the movement of the vessel while conducting surveys.

Single pulse peak pressure levels received at the seafloor exceeded mortality and potential mortal injury thresholds within 3 m for fish with no swim bladder and within 7 m for fish with a swim bladder, fish eggs and larvae.

Commercial fish spawning

Key spawning periods for key indicator commercial fish on the NWS are described in Section 6.8.3. It is understood that all of these species undergo group spawning throughout their range, rather than aggregating at specific locations. The potential impact of acoustic emissions on demersal and pelagic fishes is expected to be limited to a short-lived behavioural response, confined to a few hundred metres from the survey vessel, with some potential for highly localised mortality or potential mortal injury or recoverable injury to fish with no swim bladder within 3 m, to fish with a swim bladder, or fish eggs and larvae within 7 m of the refraction SBP source. As such, the potential for the GPGT Surveys Program to impact spawning of key indicator commercial fish species is assessed as being extremely low.

Potential impacts from acoustic emissions on fish, sharks and rays are likely to be restricted to localised and temporary avoidance behaviour while transiting through the Operational Area, and individuals impacted are unlikely to represent a significant proportion of the population with the Operational Area and the NWS region overall.

Potential impacts to ecosystems/habitats

Modelling of sound levels beneath SBP, MBES and SSS instruments (Zykov 2013, McPherson and Wood 2017, Grooms *et al*. 2019) indicates there would be no impact to benthic invertebrates. Therefore, benthic habitats and communities, including those within the Ancient Coastline at the 125 m Depth Contour KEF and the Glomar Shoals KEF, will not be affected by sound produced by the GPGT Surveys Program. Acoustic modelling of refraction SBP

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showed PK-PK sound pressure levels exceeding 202 dB re 1 µPa received at the seafloor up to 13 m from the source (JASCO 2024). This is considered a conservative threshold above which crustaceans may be affected (JASCO 2024).

Impacts to plankton will be limited to within just metres (McPherson and Wood 2017), which is negligible in the context of naturally variability.

Therefore, impacts to marine habitats, primary and secondary production (plankton) and ecosystems are not expected.

Cumulative underwater sound impacts

Given the very localised extent of potential effects from the geophysical and geotechnical survey techniques described above, there is limited potential for the GPGT Surveys Program to contribute to cumulative sound impacts from other concurrent activities in the Operational Area. Vessel noise associated with these activities may result in some localised behavioural effects in addition to those that result from the geophysical and geotechnical activities, but the cumulative effects resulting from the addition of infrequent, short-term vessel activity in an area that is frequented by existing vessels and shipping traffic will be limited. Overall, cumulative impacts associated with sound emitted during the GPGT Surveys Program are likely to be slight and short-term.

Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[31]***	***Benefit in impact reduction***	***Proportionality***	***Control adopted***
Legislation, codes and standards				
No additional controls were identified.				
Good practice				
EPBC Regulations 2000 – Part 8 Division 8.1 Interacting with cetaceans, including the following measures: • Survey vessels will not travel greater than 6 knots within 300 m of a cetacean or turtle (caution zone) and not approach closer than 100 m from a whale. • Survey vessels will not 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, survey vessels will immediately withdraw from the caution zone at a constant speed of less than 6 knots.	F: Yes. CS: Minimal cost. Standard practice.	Implementation of controls for reduced vessel speed around cetaceans can potentially reduce the potential impacts of the geophysical survey equipment. Adopting this control in relation to whale sharks and marine turtles will also reduce potential impacts to protected species.	Controls based on legislative requirements – must be adopted.	C 3.1

[31] *Qualitative measure.*

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[31]***	***Benefit in impact reduction***	***Proportionality***	***Control adopted***
• Survey vessels will not travel greater than 8 knots within 250 m of a whale shark and not allow the vessel to approach closer than 30 m of a whale shark.				
Implement an observation zone for 30 minutes prior to start-up around geophysical survey equipment and implement start-up delay procedures for whales.	F: Yes. CS: Minimal. Bridge crews already maintain a constant watch during operations.	Reduces the likelihood of individual pygmy blue whales being within proximity of the acoustic source where behavioural impact could occur. This control is intended to minimise the impact of noise emitting survey equipment to protected pygmy blue whales. A precautionary approach has been taken, and the control has been applied to whales more broadly.	Benefits outweigh cost/sacrifice. Given the conservation status of pygmy blue whales, and to conduct the activity in a way that is not inconsistent with the Blue Whale Conservation Management Plan, conducting prestart visual observations prior to the start-up of noise emitting survey equipment is considered a proportionate measure.	C 4.1
Implement a shut-down zone around MBES, SSS, SBP (other than refraction SBP) for: • cetaceans (low and high frequency) • marine turtles • whale sharks.	F: Yes. However, as equipment is underwater effective implementation of zones is challenging from topside observation. CS: Moderate, requires use of a dedicated suitably trained crew member to undertake marine fauna observations.	Limited. None of the proposed MBES, SSS or SBP sources will reach received injury levels to cetaceans. Turtles or whale sharks would need to be less than 1 m from the source which is not credible. Species that can be detected reliably enough to implement a shutdown are expected to self-mitigate against TTS through avoidance of the vessel keeping them outside the range of the acoustic source where TTS could occur.	Disproportionate. Limited environmental benefit and additional costs.	No

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[31]***	***Benefit in impact reduction***	***Proportionality***	***Control adopted***
Implement a shutdown zone around refraction SBP activities.	F: Yes. CS: Cost implications associated with survey over-run resulting from shut-downs of SBP activities.	Reduces the likelihood of individual marine fauna being within proximity of the acoustic source where behavioural impact could occur.	Limited benefit given the lack of sensitive habitats overlapping the Operational Area, the short duration of the GPGT Surveys Program and given that there are pre-start-up observations by vessel crew.	No
Have trained marine crew or MFO onboard the survey vessel to observe for marine fauna.	F: Yes. CS: Costs associated with implementation are limited to time associated with training marine crew, as observations would be made as part of general watch.	Trained marine crew are to conduct prestart observations when deploying equipment to provide the opportunity to modify the GPGT Surveys Program if marine fauna are observed.	Limited benefit given the lack of sensitive habitats overlapping the Operational Area, the short duration of the GPGT Surveys Program and given that there are pre-start up observations by vessel crew (see C 4.1). Cost associated with training specialist staff would outweigh potential benefit.	No
Conduct prestart visual observations for dolphins prior to start-up of noise emitting survey equipment.	F: Yes. CS: Minimal. Bridge crews already maintain a constant watch during operations.	Reduces the likelihood of individual dolphins being within proximity of the acoustic source where behavioural impact could occur.	Disproportionate, it is expected that the sound levels that may result in behavioural impacts to dolphins are most likely to occur when the vessel is at a proximity of tens of metres. Implementation of C 3.1 reduces the likelihood of individuals of dolphins being within 50 metres of the vessel, so it is unlikely individual dolphins will experience sound levels that may result in behavioural impacts.	No See C 3.1 in Section 6.8.3
Conduct prestart visual observations for whale sharks and turtles prior to start-up of noise emitting survey equipment.	F: Yes. CS: Minimal. Bridge crews already maintain a constant watch during operations.	Reduces the likelihood of individual turtles and/or whale sharks being within proximity of the acoustic source where behavioural impact could occur.	Disproportionate as the implementation of C 3.1 will limit vessels from approaching whale sharks and turtles within distances (50 m and 30 m respectively) and thereby already reducing the likelihood of individuals of whale sharks and turtles	No See C 3.1 in Section 6.8.3

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[31]***	***Benefit in impact reduction***	***Proportionality***	***Control adopted***
			being within proximity of the acoustic source where behavioural impact could occur.	
Only conduct geophysical activities outside peak sensitivity periods for sound sensitive marine fauna (e.g. migration and breeding periods).	F: No. Timing of geotechnical activities is currently undetermined, and due to vessel availability and operational requirements, undertaking activities during peak sensitivity periods may not be able to be avoided. CS: Significant cost and schedule impacts due to delays in securing survey vessel for specific timeframes.	Not considered – control not feasible.	Not considered – control not feasible.	No
Professional judgement – Eliminate				
Eliminate generation of noise from survey equipment.	F: No. Generation of noise from these sources cannot be eliminated due to operating requirements. CS: Inability to conduct the GPGT Surveys Program. Loss of project.	Not considered – control not feasible.	Not considered – control not feasible.	No
Professional judgement – Substitute				
Apply soft start procedures.	F: Not feasible. When using lower power sources such as those described in Table 3-3, there is limited ability to ramp up pulses, so doing a soft start at a lower sound level is physically not possible. CS: Not considered – control not feasible.	Not considered – control not feasible.	Not considered – control not feasible.	No

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[31]***	***Benefit in impact reduction***	***Proportionality***	***Control adopted***
Professional judgement – Engineered solution				
Passive acoustic monitoring (PAM).	F: Yes. CS: Additional costs of PAM operators onboard the vessels. Operational costs of unnecessary shutdowns potentially prolonging the activity.	PAM has limited applicability for baleen whales such as those found in the Operational Area (humpback, blue). Although efficacy of PAM is greater for toothed whales and dolphins, given the expected occurrence of these species in the Operational Area, and the low level of impact that could occur, applying PAM is unlikely to benefit the cetacean species.	Disproportionate. Additional costs for little benefit to cetacean species expected in the Operational Area.	No
Apply bubble curtains to reduce noise propagation.	F: No. Bubble curtain installation and operation in open water is not feasible due to technical operation constraints, i.e. water depth/ current. CS: Not considered – control not feasible.	Not considered – control not feasible.	Not considered – control not feasible.	No
Use of thermal imaging equipment at night or periods of low visibility to identify cetacean presence.	F: Yes. Feasible to install on survey vessel. CS: Costs associated with infrared technology acquisition and implementation.	Can increase likelihood of identifying cetacean presence; however, limitations on detection distance/depth, interpretation of data (identification of cetacean type for example) and practicality.	Disproportionate – cost/sacrifice outweighs benefit to be gained. Lack of proven application in detection of cetaceans in deep water environment and limitations of the technology reduce potential benefit gained when compared with low likelihood of expected cetacean activity.	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 2.3.4.2) and Woodside's criteria for demonstrating ALARP (Section 2.4.1), Woodside considers the adopted controls appropriate to manage potential impacts associated with routine noise emissions from survey equipment. As no reasonably practicable additional/alternative controls were identified that would further reduce the impacts without disproportionate sacrifice, the impacts are considered ALARP.				

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Demonstration of acceptability
Acceptability statement: The impact assessment has determined that, given the adopted controls, noise emissions from geophysical and geotechnical survey equipment may result in slight, short-term (<1 year) behavioural disturbance to fauna within the Operational Area with no significant impacts to populations or sensitive life stages. On the basis of the assessment outcomes, use of the relevant tools appropriate to the decision type (i.e. Decision Type A; Section 2.3.4.2) and Woodside's criteria for demonstrating acceptability (Section 2.4.2), 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 No injury of, or mortality to, EPBC Act 1999 (Cth) and Biodiversity Conservation Act 2016 (WA) listed marine fauna as a result of noise generated by the GPGT Surveys Program. EPO4 No displacement of marine turtles from habitat critical during nesting/breeding (inc. internesting periods) and ensure biologically important behaviour can continue in BIAs.	C 3.1 Refer Section 6.8.3.	PS 3.1 Refer Section 6.8.3.	MC 3.1.1 Refer Section 6.8.3.
	C 4.1 Implement an observation zone for 30 minutes prior to start up around geophysical survey equipment and implement start-up delay procedures for whales.	PS 4.1 Start-up delayed if a whale is sighted within the observation zone (150 m).	MC 4.1.1 Vessel bridge daily log shows geophysical survey equipment not started up until no whales are sighted within 150 m observation zone.

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6.8.5 Routine light emissions: external lighting on survey vessels

Context		
Vessels – Section 3.9	Physical environment – Section 4.4 Habitats and biological communities – Section 4.5	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 from survey vessels					X		A	E	-	-	GP PJ	Broadly Acceptable	EPO 5, 16

Description of source of impact

Vessel operations

Routine light emissions include light sources that alter the ambient light conditions in an environment at night. The survey vessels will routinely use external lighting to facilitate navigation and conduct safe operations at night throughout the GPGT Surveys Program. This lighting typically consists of bright white (i.e. metal halide, halogen, fluorescent) lights and is not dissimilar to lighting used for other offshore activities, including fishing and shipping.

Lighting levels will be determined primarily by operational safety and navigational requirements under relevant legislation, specifically the *Navigation Act 2012* (Cth). Survey vessels will be lit to maintain operational safety on a 24-hour basis. External light emissions from the vessels are typically managed to a level that maintains good night vision for crew members. Lighting on the vessels is used to allow safe operations during night hours, and to communicate the vessel's presence and activities to other marine users (i.e. navigation lights). Lighting is required to safely operate the vessels and cannot reasonably be eliminated.

The GPGT Surveys Program is expected to take up to 100 days to complete. The activity will be split over a number of campaigns over the five-year period of this EP. Operations will take place 24 hours a day, seven days a week during campaigns. Due to the transient nature of the survey activity, the source location of the light emissions will vary across the Operational Area throughout the activity.

Lighting from survey vessels 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 the vessel (namely height above sea level) and environmental conditions (e.g. cloud cover). The external lighting, which is located over the entire vessel, is not expected to be more than 20 m above sea level. The distance to the horizon at which components of the vessel will be directly visible can be estimated using the formula of:

$$horizon\ distance = 3.57 \times \sqrt{height}$$

where 'horizon distance' is the distance to the horizon at sea level in kilometres and 'height' is the height above sea level of the light source in metres. Using this formula, the approximate distances at which vessel lighting will be visible at sea level is about 16 km from the vessel, based on the typical survey vessels that are proposed to be used for the GPGT Surveys Program.

While the line of sight may extend to 16 km from the source (vessel), the light density (measured in lux) – which represents the intensity of light that arrives at or leaves a surface, as perceived by the human eye) rapidly decreases as distance increases from the source of the light. Monitoring undertaken as a part of Woodside's 2014 study indicated light density (from navigational lighting) attenuated to below 1.00 lux and 0.03 lux at distances of 300 m and 1.4 km, respectively, from the source (a MODU). Light densities of 1.00 lux and 0.03 lux are comparable to natural light densities experienced during deep twilight and during a quarter moon. Navigational lighting levels from survey

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vessels are expected to be appreciably lower than lighting on a MODU, hence light emissions from the survey vessels are expected to be below 1.00 lux within 300 m from the source.

Impact assessment

Environmental value(s) potentially impacted

A 20 km buffer around the Operational Area has been considered for the impact assessment, based on recommendations of the National Light Pollution Guidelines for Wildlife Including Marine Turtles, Seabirds and Migratory Shorebirds (Commonwealth of Australia 2023). The 20 km threshold provides a precautionary limit based on observed effects of sky glow on marine turtle hatchlings, demonstrated to occur at 15 to 18 km, and fledgling seabirds grounded in response to artificial light 15 km away (Commonwealth of Australia 2023). Within the 20 km buffer of the Operational Area, no additional species were identified that are potentially affected by light.

Light emissions have the potential to disrupt ecological processes that rely on natural light for visual cues. 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 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 override natural cues, leading to disorientation.

There is no known critical habitat within the Operational Area for EPBC listed species. The Operational Area overlaps internesting habitat critical for the survival of marine turtles for hawksbill, green and flatback turtles (Table 4-8 and Figure 4-7). The Operational Area also overlaps several BIAs (Section 4.6), specifically:

- flatback turtle internesting buffer
- hawksbill turtle internesting buffer
- green turtle internesting buffer
- humpback whale migration
- pygmy blue whale distribution
- wedge-tailed shearwater breeding
- roseate tern breeding
- Australian fairy tern breeding
- whale shark foraging

The fauna within the Operational Area are predominantly pelagic fish and zooplankton, with a low abundance of transient species such as seabirds, marine turtles, whale sharks and whales transiting through the area. Cetaceans, fish (including whale sharks) and planktonic organisms are not expected to be impacted by above-surface light emissions from occasional survey vessels. An assessment of potential impacts to seabirds and marine turtles is provided below.

Seabirds and migratory shorebirds

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 Area may occasionally be visited by migratory and oceanic birds but does not contain any emergent land that could be used as roosting or nesting habitat and contains no known critical habitats for any species.

Given its proximity to islands of the Dampier Archipelago, seabirds and migratory shorebirds are likely to transit and forage over the Operational Area. 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 2015a). The BIA for wedge-tailed shearwater breeding overlaps the Operational Area, with the breeding period occurring from August to April (Section 4.6.5). The species occurs throughout the EMBA across fringing islands of the Dampier Archipelago to Cape Range and to Barrow Island. Given the broad breeding distribution, it may be assumed that wedge-tailed shearwaters may breed on any of the vegetated, unoccupied islands of the Dampier Archipelago. Breeding BIAs for Roseate terns and Australian fairy terns also overlap the Operational Area and are expected to occur from April to July and July to September, respectively.

Direct lighting impacts to birds on the islands of the Dampier Archipelago are not expected based on the maximum extent of lighting emissions from the survey vessels. However, there is potential for interference with fledgling or foraging birds. 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 2023). 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.* 2016, Telfer *et al.* 1987).

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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 adult wedge-tailed shearwaters may be attracted to sources of light emissions to feed on fish drawn to the light, or may be attracted to vessel light during periods of low visibility (Catry *et al.* 2009, Whittow 2020); however, the species feeds primarily during the day. Artificial light can also impact behaviour and adult nest attendance, 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).

Behavioural disturbance to birds is expected to be localised to within the vicinity of the vessels within the Operational Area. The light source from the vessels within the Operational Area will be temporary and intermittent, only when operations are occurring. Interactions with seabirds are therefore expected to be unlikely and any impacts are predicted to be at an individual and not a population level. Therefore, any temporary behavioural disturbance of birds will be localised around the light sources and not result in a substantial adverse effect on a population of species or its lifecycle.

Based on the detailed evaluation, the magnitude of impacts to birds from light emissions during activities associated with the GPGT Surveys Program is expected to be slight given the localised and temporary nature of any effects as described above, plus the incremental increase of survey vessel lighting in a region that already experiences considerable vessel traffic.

Marine turtles

The Operational Area overlaps habitat critical to the survival for turtles and overlaps various BIAs for flatback, green, and hawksbill turtles. Adult female turtles will spend several months in the shallow coastal marine environment in proximity to nesting beaches. Pendoley (2005) provides details of tracking data for green and hawksbill turtles nesting on Rosemary Island. Results suggested that nesting female hawksbill turtles remained within 1 km of nesting beaches on Rosemary Island (Pendoley 2005). Female green turtles travelled greater distances, up to 5 km, but typically remained within shallow, nearshore waters between 0 and 10 m deep (Pendoley 2005). The 60 km internesting buffer for flatback turtles in the Recovery Plan for Marine Turtles in Australia (Commonwealth of Australia 2017) is based primarily on the movements of tagged internesting flatback turtles along the NWS from a 2014 study, which found that flatback turtles may demonstrate internesting displacement distances up to 62 km from nesting beaches (Whittock *et al.* 2014). However, these movements were confined to longshore movements in nearshore coastal waters or travel between island rookeries and the adjacent mainland (Whittock *et al.* 2014). The flatback turtle internesting habitat along the NWS has since been defined more precisely using satellite tracking of 47 turtles, combined with a range of environmental variables (Whittock *et al.* 2016). Suitable internesting habitats were identified at water depths of 0 to 16 m, within 5 to 10 km of the coastline.

Seasonality of nesting differs between flatback, green and hawksbill turtle species. Whiting (2018) provides defined seasonality specific nesting data for Rosemary Island and found that hawksbill turtles have a much earlier peak (October/November) compared to flatback turtles (December/January peak). Seasonality for green turtles was not well defined from the available data (Whiting 2018). Fossette *et al.* (2021) reported a peak in nesting for green turtles for the period November and December.

The peak hatchling emergence time for the three turtle species nesting within Dampier Archipelago differs between species, with hawksbill turtles earliest (December to January peak), flatback turtle peak from January to February and green turtle peak from January to March (Pendoley Environmental 2023). Given that GPGT Surveys Program activities will take place as required throughout the year, there is potential for activities to occur within the Operational Area during the described nesting and hatchling seasons.

Individuals undertaking behaviours such as internesting, migration or foraging may occur within the Operational Area; however, marine turtles do not use light cues to guide these behaviours. Furthermore, there is no evidence, published or anecdotal, to suggest that internesting, foraging or migrating turtles are impacted by light from offshore vessels. As such, light emissions from the survey vessels are unlikely to result in displacement of, or behavioural changes to individuals in these life stages (Pendoley Environmental 2020). It is therefore more relevant to consider separation distances between light sources and nesting habitat critical for turtles (i.e. the nesting locations as identified in Table 6 of the Recovery Plan for Marine Turtles in Australia 2017–2027) (Commonwealth of Australia 2017). At the closest point, the Operational Area is located approximately 6 km away from the nearest turtle nesting location at Delambre Island and 7 km away from a nesting location at Cohen Island. Given the distance to nesting beaches, impacts to nesting female turtles, including discouraging females from nesting, or affecting nest site selection and sea-finding behaviour, are not predicted, and females are not expected to be displaced from nesting habitat (Pendoley Environmental 2023).

Impacts to hatchling emergence, including hatchling mis- or dis-orientation, are not predicted and highly unlikely. Impacts to hatchling dispersal resulting from vessel lighting are possible but will be limited as:

- the distance between turtle nesting beaches and the Operational Area at the closest point is 8 km (6 km to the closest nesting beach on Delambre Island and 7 km to Cohen Island)
- nearshore currents would need to carry hatchlings into the zone where behavioural impacts from vessel lighting are possible
- the density of hatchlings will decrease with distance from the nesting beach as individuals disperse in open ocean

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- nearshore currents in the region must be weaker than hatchling swimming speed in order for hatchlings to override wave cues and successfully swim toward light sources
- the potential for attraction to vessel lighting is expected to be overridden by the radiance of the moon during full moon periods
- vessels within 20 km of nesting beaches will be in the area temporarily (hours to days) during the GPGT Surveys Program, meaning light emissions will not be ongoing
- attraction to light sources will not occur during daylight and hatchling dispersal will resume upon sunrise.

Attraction to artificial lighting may have consequences at the individual level (e.g. energy depletion and increased predation risk), however, the number of marine turtles that could be impacted is likely to be low and undetectable against normal population fluctuations. Light emissions from the survey vessels are unlikely to result in more than localised behavioural disturbance to isolated transient individuals, with no lasting effect to the species.

Australian Marine Parks

A small portion of the Operational Area is adjacent to the Dampier Marine Park. The North-west Marine Parks Network Management Plan (DNP 2018) lists the natural values of the Dampier AMP as including a range of threatened, migratory, marine or cetacean species listed under the EPBC Act, as well as BIAs that include seasonal breeding habitat for seabirds, internesting habitat for marine turtles and a migratory pathway for humpback whales. The Dampier AMP also includes foraging habitat for seabirds and is overlapped by an internesting buffer for habitat critical to the survival of flatback, green and hawksbill turtles. As described above, internesting, mating, foraging or migrating turtles are not considered to be impacted by light from offshore vessels. Although individuals undertaking internesting, migration, mating (adults) or foraging (adults and pelagic juveniles) may occur within the Operational Area, marine turtles do not use light cues to guide these behaviours, and therefore light emissions from survey vessels are unlikely to result in displacement of, or behavioural changes to individuals during these life stages. Hence, light emissions from survey vessels will not result in any impacts to internesting female turtles within the AMP.

The three seabird species with BIAs overlapping the Operational Area, occupy offshore islands including the Montebello Island groups and the Dampier Archipelago. For activities occurring adjacent to the Dampier Marine Park, the short-term and transient nature of activities associated with light emissions will not be inconsistent with the objectives of the management plan for the North-west Marine Park Network (DNP 2018).

The values identified for the AMP, including BIAs for marine turtles, seabirds and migratory shorebirds will not be impacted given the distance from sensitive locations.

The magnitude of impact to AMPs from artificial light emissions will be 'no lasting effect' given the localised and temporary nature of any effects as described above.

Fish

Lighting from the presence of a vessel may result in the localised aggregation of fish below the vessel. These aggregations of fish are considered localised and temporary and any long-term changes to fish species, including whale sharks, composition of abundance is considered highly unlikely. Similarly, any localised impacts to marine fish are not expected to impact on any commercial fishers in the area.

Cumulative impacts

The level of lighting from survey vessels in the Operational Area will be relatively low compared to ambient light in a region that already experiences considerable vessel traffic (as described in Section 4.9.5). Approximate timings of project activities are summarised in Section 3.5 and are temporary and intermittent in nature. As such, and given the lack of significant impacts to individuals described above, cumulative impacts from routine light emissions are not anticipated.

Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[32]***	***Benefit in impact reduction***	***Proportionality***	***Control adopted***
Legislation, codes and standards				
No additional controls were identified.				
Good practice				
Lighting will be limited to the minimum required for navigational and safety	F: Yes. Lighting is typically appropriate for navigation and safety.	Given the potential impacts to turtles during this activity is insignificant,	While the control does not result in significant reduction of impacts, it	C 5.1

[32] *Qualitative measure.*

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[32]***	***Benefit in impact reduction***	***Proportionality***	***Control adopted***
requirements, with the exception of emergency events.	CS: Minor.	implementation of this control would not result in a reduction in consequence.	is good practice and not at significant cost.	
Implement an Offshore Seabird Management Plan (Section 7.2.5) that includes: • standardisation and maintenance of record keeping and reporting of seabird interactions • procedures on seabird intervention, care and management • regulatory reporting requirements for seabirds (unintentional death of or injury to seabirds that constitute MNES) • a scalable adaptive management process should negative light impacts to nocturnal seabirds be detected.	F: Yes. The management plan is an internal Woodside process developed to manage the impacts of artificial light emissions. CS: Minimal cost/sacrifice.	Implementing a Seabird Management Plan will enable standardised data collection to better understand seabird interactions with survey vessels, provide guidance on seabird management to enable the best outcomes for grounded birds and facilitate escalation and adoption of management actions within 24 hrs, preferably before next nightfall, should triggers be met.	While the control does not result in significant reduction of impacts, it is good practice and not at significant cost.	C 5.2
Professional judgement – Eliminate				
Substitute external lighting with 'turtle-friendly' light sources (reduced emissions in turtle visible spectrum) during peak turtle hatchling season (Dec to Mar).	F: Yes. Replacement of external lighting with turtle-friendly lighting is technically feasible, although is not considered to be practicable. CS: Significant cost sacrifice. The retrofitting of all external lighting on the vessels would result in considerable cost and time expenditure. Considerable logistical effort to source sufficient inventory of the range of light types onboard the vessel.	Given the potential impacts to turtles during this activity are insignificant, implementing this control would not reduce the consequence.	Disproportionate – cost/sacrifice outweighs benefit to be gained.	No
Vary the timing of the GPGT Surveys Program to avoid peak	F: Yes. Variation of the GPGT Surveys Program timing to avoid turtle internesting periods is technically	Given the impacts to turtles during this activity are insignificant, implementing this control would not	Grossly disproportionate. Implementing the control requires considerable cost	No

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[32]***	***Benefit in impact reduction***	***Proportionality***	***Control adopted***
turtle internesting periods (Dec to Jan).	feasible, although it is not considered practicable. CS: Significant cost and schedule impacts due to delays in securing vessels for specific timeframes.	reduce the consequence.	sacrifice for minimal environmental benefit. The cost/sacrifice outweighs the benefit gained.	
No project activities to be conducted at night.	F: Not feasible. Conducting project activities during daylight hours only would result in a significant delay to the project schedule and significant associated costs. CS: Not considered – control not feasible.	Not considered – control not feasible.	Not considered – control not feasible.	No
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 2.3.4.2) and Woodside's criteria for demonstrating ALARP (Section 2.4.1), Woodside considers the adopted controls appropriate to manage potential impacts associated with routine light emissions from the survey vessels. 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 the survey vessels may result in localised, short-term (<1 year) behavioural disturbance to fauna within the Operational Area. On the basis of the assessment outcomes, use of the relevant tools appropriate to the decision type (i.e. Decision Type A; Section 2.3.4.2) and Woodside's criteria for demonstrating acceptability (Section 2.4.2), 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 impacts to marine fauna greater than that caused by minimum required light emissions for safe work / navigation.	C 5.1 Lighting will be limited to the minimum required for navigational and safety requirements, with the exception of emergency events.	PS 5.1 Lighting limited to that required for safe work/navigation.	MC 5.1.1 Inspection verifies no excessive light being used beyond that required for safe work/navigation.

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EPOs, EPS and MC			
EPO	***Controls***	***PS***	***MC***
EPO 16 No displacement of marine turtles from habitat critical during nesting and internesting periods and marine turtles' biologically important behaviour can continue in BIAs.	C 5.2 Implement an Offshore Seabird Management Plan (Section 7.2.5) that includes: • standardisation and maintenance of record keeping and reporting of seabird interactions • procedures on seabird intervention, care and management • regulatory reporting requirements for seabirds (unintentional death of or injury to seabirds that constitute MNES) • a scalable adaptive management process should negative light impacts to nocturnal seabirds be detected.	PS 5.2 Implementation of the Woodside Offshore Seabird Management Plan by GPGT Surveys Program vessels to minimise potential impact should nocturnal seabird groundings occur.	MC 5.2.1 Relevant crew inductions to include requirements under the Offshore Seabird Management Plan. MC 5.2.2 Seabird sightings and interactions (where occurrent) recorded in offshore marine fauna log. MC 5.2.3 Copy of regulatory reports completed as required in accordance with the Offshore Seabird Management Plan.

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6.8.6 Routine atmospheric and greenhouse gas emissions associated with fuel use

Context		
Vessels – Section 3.9	Physical environment – Section 4.4	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
Emissions associated with internal combustion engines on survey vessels and machinery			X				A	F	-	-	LCS GP PJ	Broadly Acceptable	EPO 6

Description of source of impact

Atmospheric emissions assessed in this EP have been classified into two categories:

- Atmospheric emissions (non-greenhouse gas emissions) are gases and particulates associated with an activity, or piece of machinery, which have a recognised adverse effect on human health and/or flora and fauna. The main emissions responsible for these effects include carbon monoxide (CO), oxides of nitrogen (NO_x), sulphur dioxide (SO_2), particulate matter less than 10 microns (PM_{10}), non-methane volatile organic compounds (VOCs), and benzene, toluene, ethylbenzene and xylenes, which are specific VOCs of interest.
- GHG emissions are those gasses within the atmosphere that absorb long-wave radiation, and thus trap heat reflected from the Earth's surface. The main gases responsible for this effect include carbon dioxide (CO_2), methane and nitrous oxide. Other GHGs include perfluorocarbons, hydrofluorocarbons and sulphur hexafluoride.

Atmospheric emissions will be associated with the survey vessels' internal combustion engines (including equipment, generators and incinerators) during the GPGT Surveys Program.

Atmospheric emissions associated with these operations will include SO_x, NO_x, particulates and VOCs. SO_x and particulate matter emissions are heavily influenced by the fuel used and its relative sulphur content, MGO usually having a lower sulphur content than marine diesel oil or heavy fuel oil.

There is the potential for use of a drillship during the activity (for geotechnical drilling) and a smaller geophysical survey vessel. The assumption is that the vessels will use up to 10 tonnes of fuel per day, and the geophysical survey vessel up to seven tonnes of fuel per day. Helicopter use has not been provided for in this EP. The total expected GHG emissions associated with the vessels' activities is presented in Table 6-12.

Table 6-12: Greenhouse gas emissions estimates and sources

Source	*GHG emissions released ($CO2^{-e}$ t)*
Geophysical/geotechnical operations	
Geophysical survey vessel operations	759
Geotechnical survey vessel	2168
Total GHG emissions	**2927**

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Impact assessment
Environmental value(s) potentially impacted
Air quality (atmospheric emissions) Atmospheric emissions may result in a decline in local air quality, within the immediate vicinity of the emissions source. As described above, emissions associated with the GPGT Surveys Program will include SO_2, NO_x, ozone depleting substances, CO_2, particulates, and VOCs. Emissions from engines, generators and deck equipment may be toxic, odoriferous, or aesthetically unpleasing, and will result in a reduction in air quality. Given the offshore location of the GPGT Surveys Program, and the low volume of atmospheric emissions associated with the GPGT Surveys Program, biodiversity, ecological integrity, social amenities, and human health will not be impacted and potential impacts to air quality are negligible.

Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[33]***	***Benefit in impact reduction***	***Proportionality***	***Control adopted***
Legislation, codes and standards				
Marine Order 97 (Marine pollution prevention – air pollution).	F: Yes. CS: Minimal cost. Standard practice.	Legislative requirements to be followed may slightly reduce the likelihood of air pollution.	Control based on legislative requirements – must be adopted.	C 6.1
Provide emissions data where relevant to vessel contractor to enable legislative reporting requirements under the *National Greenhouse and Energy Reporting Act 2007* (Cth) (NGER Act) to be met.	F: Yes. CS: Standard practice. Required by Woodside standards.	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.	C 6.2
Good practice				
Use only low sulphur fuel	F: Yes CS: Minimal cost. Standard practice.	Legislative requirements to be followed may slightly reduce the likelihood of air pollution.	Control based on legislative requirements – must be adopted.	C 6.1
Professional judgement – Eliminate				
Do not combust hydrocarbons.	F: No. There are no vessels that do not use internal combustion engines. CS: Not considered – control not feasible.	Not considered – control not feasible.	Not considered – control not feasible.	No
Professional judgement – Substitute				
No additional controls were identified.				
Professional judgement – Engineered solution				
No additional controls were identified.				

[33] *Qualitative measure.*

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[33]***	***Benefit in impact reduction***	***Proportionality***	***Control adopted***
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 2.3.4.2) and Woodside's criteria for demonstrating ALARP (Section 2.4.1), Woodside considers the adopted controls appropriate to manage potential impacts associated with atmospheric and GHG emissions from fuel combustion. 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, atmospheric and GHG emissions from fuel combustion may result in temporary, localised decrease in air quality that is not significant to environmental receptors, with no lasting effect. On the basis of the assessment outcomes, use of the relevant tools appropriate to the decision type (i.e. Decision Type A; Section 2.3.4.2) and Woodside's criteria for demonstrating acceptability (Section 2.4.2), 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 6 Minimise GHG emissions from vessels through efficient fuel usage and consideration of fuel types used.	C 6.1 Marine Order 97 (Marine pollution prevention - air pollution) which details requirements for: • an International Air Pollution Prevention Certificate, required by vessel class • use of low sulphur fuel when available • a Ship Energy Efficiency Management Plan, where required by vessel class.	PS 6.1 Survey vessels compliant with Marine Order 97 (Marine pollution prevention – air pollution) to restrict emissions to those needed to perform the activity. Woodside Vessel Marine Assurance Process conducted before contracting vessel, to ensure suitability and compliance with vessel combustion certification/ marine order requirements.	MC 6.1.1 Marine Assurance inspection records demonstrate compliance with Marine Order 97.
	C 6.2 Provide emissions data, where relevant, to contractor vessel to enable legislative reporting requirements under the NGER Act to be met.	PS 6.2 GHG emissions data to be provided to contractor vessel to enable necessary regulatory reporting, where required.	MC 6.2.1 Where required, GHG emissions data was provided to contractor vessel to enable necessary regulatory reporting. Where required, email records showing emissions data was provided to contractor vessel to enable necessary regulatory reporting.

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6.8.7 Routine and non-routine discharges to the marine environment from survey vessels

Context		
Vessels – Section 3.9	Physical environment – Section 4.4 Habitats and biological communities – Section 4.5	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 sewage, grey water and putrescibles from vessels to the marine environment		X			X		A	F	-	-	LCS GP PJ	Broadly Acceptable	EPO 7
Discharge of deck, bilge and drain water from vessels to the marine environment		X			X		A	F	-	-			
Discharge of reverse osmosis brine from vessels to the marine environment		X			X		A	F	-	-			
Discharge of cooling water from vessels to the marine environment		X			X		A	F	-	-			
Discharge of drill cuttings and chemicals during geotechnical drilling to the marine environment from survey vessels		X			X		A	F	-	-			

Description of source of impact

The survey vessels will routinely generate/discharge to the marine environment:

- small volumes of grey water
- relatively small volumes (routinely/periodically) of bilge water, which can contain water, oil, detergents, solvents, chemicals, particles and other liquids, solids or chemicals
- variable water from 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 and brine water produced during the desalination process of reverse osmosis to produce potable water onboard the survey vessels.

Environmental risks relating to disposal/discharges above regulated levels or incorrect disposal/discharge of waste would be unplanned (non-routine/accidental) and are addressed in Section 6.8.5.

Drill cuttings

The geotechnical seabed coring will result in the indirect discharge of a small quantity of drill cuttings and fluid at the seafloor (refer Section 6.8.2). Drilling fluid will consist primarily of seawater and may have small quantities of additives. These additives are considered to be very low toxicity (as assessed through Woodside's Chemical Selection and Assessment Environment Guideline), as described in Section 6.8.2, and are expected to dilute rapidly upon discharge. As such, no toxic effect to biota is expected to occur.

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All drilling fluids used during the drilling process will be discharged from the borehole at the seabed including small amounts of excess fluid which may be produced. Volumes of excess drilling fluid will be limited as fluids are mixed for use on an as needed basis.

Impact assessment

Environmental value(s) potentially impacted

The survey vessels will routinely discharge (on a daily basis if necessary) relatively small volumes of grey water and bilge water to the marine environment in compliance with MARPOL requirements. It is noted that sewage and putrescible wastes are not allowed to be discharged within 3 NM of land but may be discharged beyond 3 NM (including outside of the Operational Area) so long as it is discharged in accordance with MARPOL requirements. No significant impacts are anticipated given the minor quantities involved, localised area of impact, high level of dilution into oceanic waters and high biodegradability/low persistence of the wastes disposed.

Bilge tanks receive fluids from many parts of the vessel. Bilge water can contain water, oil, detergents, solvents, chemicals, particles and other liquids, solids or chemicals. Treatment of bilge water will be conducted using an oily water separator or transported onshore for treatment and disposal.

The discharges outlined, which may include other non-organic contaminants (e.g. bilge water, deck drainage and cooling water), will be rapidly diluted when discharged. Variable water discharge from the survey vessel deck directly overboard or vial deck drainage systems could also occur. Water sources could include rainfall events and/or from deck activities such as cleaning/wash-down of equipment/decks. They are expected to be in very small quantities and concentrations that don't pose any significant risk to any relevant receptors. As such, no significant impacts from the planned (routine and non-routine) discharges listed above are anticipated, because of the minor quantities involved and the expected localised mixing zone and high level of dilution into the open water marine environment of the Operational Area.

The potential impact from routine discharge of treated or untreated sewage, grey water, bilge water and putrescible wastes is expected to be low.

Drilling fluid discharges are expected to increase turbidity and TSS levels above ambient concentrations above the seabed for a short duration during geotechnical drilling. Given the very small volumes discharged short duration and selection of low toxicity (as assessed through Woodside's Chemical Selection and Assessment Environment Guideline), the potential impacts are expected to be negligible.

Cumulative impacts

The survey vessels will be continuously moving in the Operational Area during the majority of the survey with only short stationary periods during the collection of geotechnical survey data. These routine and non-routine discharges are expected to be intermittent in nature for the duration of the GPGT Surveys Program. Therefore, cumulative impacts to water quality within the Operational Area are expected to be localised and short-term, 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, cetaceans, fish, Section 4.6); however, given the localised extent of cumulative impacts from vessel discharges within the Operational Area, significant impacts to marine fauna are not expected.

Demonstration of ALARP

Control considered	*Control feasibility (F) and cost/sacrifice (CS)*[34]	*Benefit in impact reduction*	*Proportionality*	*Control adopted*
Legislation, codes and standards				
Marine Order 95 – Marine pollution prevention – garbage (as appropriate to vessel class).	F: Yes. CS: Minimal cost. Standard practice.	No reduction in consequence would result.	Controls based on legislative requirements – must be adopted.	C 7.1
Marine Order 96 – Marine pollution prevention – sewage (as appropriate to vessel class).	F: Yes. CS: Minimal cost. Standard practice.	No reduction in consequence would result.	Controls based on legislative requirements – must be adopted.	C 7.2

[34] *Qualitative measure.*

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[34]***	***Benefit in impact reduction***	***Proportionality***	***Control adopted***
Marine Order 91 – Marine pollution prevention – oil (as relevant to vessel class).	F: Yes. CS: Minimal cost. Standard practice.	No reduction in consequence would result.	Controls based on legislative requirements – must be adopted.	C 7.3
Good practice				
Detergents used for deck wash on survey vessels will be biodegradable and phosphate free.	F: Yes. CS: Minimal cost.	Minimise consequence of discharges by reducing toxicity.	Benefits outweigh cost/sacrifice.	C 7.4
Implement Woodside's Chemical Selection and Assessment Environment Guideline, or equivalent.	F: Yes. CS: Minimal cost. Standard practice. Where Gold/Silver/E/D OCNS rating (and no OCNS substitution or product warning), chemicals are selected, no further control required. If chemicals with a different OCNS rating, sub warning or non-OCNS rated chemicals are required chemicals will be assessed in accordance with the guideline prior to use.	Selection and assessment of chemicals in accordance with the Woodside process, reduces environmental impacts associated with planned chemical discharge.	Benefits outweigh cost/sacrifice.	C 2.2
Vessel firefighting system (portable or in-built), to be consistent with IMO SOLAS Chapter 11-2, Part C, Regulation 10 amendments related to the use and storage of firefighting foams containing perfluoroctane sulfonic acid (PFOS), as outlined in MSC.532(107), including: • For vessels constructed on or after 1 January 2026, no use or storage of extinguishing media containing PFOS. For vessels constructed before 1 January 2026, no use or storage of extinguishing media	F: Yes. CS: Minimal cost. Standard practice.	Consistency with IMO SOLAS Chapter 11-2, Part C, Regulation 10 amendments, as outlined in MSC.532(107) may reduce the presence of PFOS-containing firefighting foams on vessels. While not yet incorporated into ratified in relevant Australian domestic lLegislation (Marine Order 15), implementing contemporary IMO requirements for the use and storage of fire extinguishing media is consistent with international best practice.	Benefit outweighs cost/ sacrifice.	Yes C 7.5

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[34]***	***Benefit in impact reduction***	***Proportionality***	***Control adopted***
containing PFOS, beyond the date of first survey on or after 1 January 2026.				
Professional judgement – Eliminate				
No additional controls were identified.				
Professional judgement – Substitute				
Store, transport and treat/dispose greywater, and bilge wastes onshore.	F: No. Would present additional safety and hygiene hazards resulting from storing, loading and transporting the waste material. CS: Not considered – control not feasible.	Not considered – control not feasible.	Not considered – control not feasible.	No
Monitor the ambient water quality during discharge of operational fluids to verify impact during activity.	F: Yes. CS: Undertaking sampling would incur costs, specifically: • for in-water sampling using ROV – time and logistics for tool change-out from operational tools to specialised sampling tools • additional personnel onboard to operate ROV and coordinate sampling program • if additional ROV is required on the vessel, deck space and resources to run/store/service ROV • resources for sample processing (space/equipment/ personnel). Low ROV availability due to operations can limit time to complete environmental monitoring.	Minimal environmental benefit would be gained by monitoring during the activity. Monitoring could be used to inform additional control measures in future activities, although it's not guaranteed that additional controls would be feasible, or if they would provide any environmental benefit.	Based on the nature of the activity (i.e. predictable impacts) and relatively low sensitivity of the area, application of an environmental monitoring control is considered grossly disproportionate. Disproportionate – cost/sacrifice outweighs benefit to be gained in the context of the existing environment (open ocean communities).	No
Professional judgement – Engineered solution				
No additional controls were identified.				

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[34]***	***Benefit in impact 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 2.3.4.2) and Woodside's criteria for demonstrating ALARP (Section 2.4.1), Woodside considers the adopted controls appropriate to manage potential impacts associated with planned (routine and non-routine) 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 discharges (routine and non-routine) may result in localised impacts not significant to environmental receptors, and no lasting effect. On the basis of the assessment outcomes, use of the relevant tools appropriate to the decision type (i.e. Decision Type A; Section 2.3.4.2) and Woodside's criteria for demonstrating acceptability (Section 2.4.2), 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 Vessel discharges shall meet requirements defined by Marine Orders and the Woodside chemical assessment and approval process.	C 7.1 Marine Order 95 – Marine pollution prevention – garbage (as appropriate to vessel class) which includes the following requirements: • A Garbage Log Book must be maintained. • Discharge of putrescible waste is not permitted within Operational Area (i.e. <3 NM from land). • Discharge of greywater is permitted.	PS 7.1 Survey vessels compliant with Marine Order 95 – Marine pollution prevention – garbage (as appropriate to vessel class).	MC 7.1.1 Marine assurance records demonstrate survey vessels are compliant with Marine Order 95 (as appropriate to vessel class).
	C 7.2 Marine Order 96 – Marine pollution prevention – sewage (as appropriate to vessel class) which includes requirements for: • a valid International Sewage Pollution Prevention Certificate, as required by vessel class • an AMSA-approved sewage treatment plant • a sewage comminuting and disinfecting system	PS 7.2 Survey vessels compliant with Marine Order 96 – Marine pollution prevention – sewage (as appropriate to vessel class).	MC 7.2.1 Marine assurance records demonstrate survey vessels are compliant with Marine Order 96 (as appropriate to vessel class).

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EPOs, EPS and MC			
EPO	***Controls***	***PS***	***MC***
	• a sewage holding tank sized appropriately to contain all generated waste (black and grey water) • discharge of sewage which is not comminuted or disinfected to only occur at a distance of more than 12 NM from the nearest land • discharge of sewage which 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 (i.e. outside of Operational Area). • discharge of sewage to occur at a moderate rate while the support vessel is proceeding (> 4 knots), to avoid discharges in environmentally sensitive areas.		
	C 7.3 Marine Order 91 – Marine pollution prevention – oil (as relevant to vessel class) requirements which includes mandatory measures for processing oily water before discharge, including: • Have and implement a Shipboard Oil Pollution Emergency Plan (SOPEP). • Machinery space bilge/oily water shall have IMO-approved oil filtering equipment (oil/water separator) with an on-line monitoring device to measure oil in water (OIW) content to be less than 15 ppm before discharge. • IMO-approved oil filtering equipment shall have an alarm and an automatic stopping device or be capable of	PS 7.3.1 Survey vessels deck drainage and bilge water discharges will comply with Marine Order 91 (Marine pollution prevention – oil) details expectations on first response and emergency management when a hydrocarbon spill has occurred.	MC 7.3.1 Marine assurance records demonstrate survey vessels comply with Marine Order 91 and has in place a current SOPEP (as appropriate to vessel class).
		PS 7.3.2 Machinery space bilge/oily water will be discharged to meet the oil content standard of < 15 ppm without dilution.	MC 7.3.2 Environmental inspection records demonstrate maintained and up-to-date oil discharge records for survey vessels.

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EPOs, EPS and MC			
EPO	***Controls***	***PS***	***MC***
	recirculating if OIW concentration exceeds 15 ppm. • A deck drainage system shall be capable of controlling the content of discharges for areas at high risk of fuel/oil/ grease or hazardous chemical contamination. • There shall be a waste oil storage tank available, to restrict oil discharges. • If machinery space bilge and deck drainage discharges cannot meet the oil content standard of < 15 ppm without dilution or being treated by an IMO-approved oil/water separator, they will be contained onboard and disposed onshore. • Have a valid International Pollution Prevention Certificate.		
	C 7.4 Detergents used for deck wash on survey vessels will be biodegradable and phosphate free.	PS 7.4 Survey vessels compliant with MARPOL 73/78 Annex V – Garbage. Survey vessel deck wash detergents will be biodegradable and phosphate free.	MC 7.4.1 Environmental inspection records demonstrate survey vessels use only biodegradable and phosphate free detergents.
	C 2.2 Refer to Section 6.8.2.	PS 2.2 Refer to Section 6.8.2.	MC 2.2.1 Refer to Section 6.8.2.
	C 7.5 Vessel firefighting system (portable or in-built), to be consistent with IMO SOLAS Chapter 11-2, Part C, Regulation 10 amendments related to the use and storage of firefighting foams containing perfluoroctane sulfonic acid (PFOS), as outlined in MSC.532(107): • For vessels constructed on or after 1 January 2026, no use or storage	PS 7.5 Survey vessel firefighting system consistent with IMO SOLAS Chapter 11-2, Part C, Regulation 10 amendments related to the use and storage of firefighting foams containing PFOS, as outlined in MSC.532(107).	MC 7.5.1 Records demonstrate survey vessel firefighting systems are consistent with IMO SOLAS Chapter 11-2, Part C, Regulation 1 – amendments related to the use and storage of firefighting foams containing PFOS, as outlined in MSC.532(107).

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EPOs, EPS and MC			
EPO	***Controls***	***PS***	***MC***
	of extinguishing media containing PFOS). For vessels constructed before 1 January 2026, no use or storage of extinguishing media containing PFOS, beyond the date of first survey on or after 1 January 2026.		

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6.9 Unplanned activities (accidents, incidents, emergency situations)

6.9.1 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 GPGT Surveys Program.

Quantitative hydrocarbon spill modelling was undertaken by RPS, on behalf of Woodside, using a three-dimensional hydrocarbon spill trajectory and weathering model, Spill Impact Mapping and Analysis Program (SIMAP). The model is designed to simulate the transport, spreading and weathering of specific hydrocarbon types under changing meteorological and oceanographic forces.

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 a historic time-series of wind and current data representative of the study area. Results of the replicate simulations were then statistically analysed and mapped to define contours of percentage probability of contact at identified thresholds around the hydrocarbon release point.

The model simulates surface releases and uses the unique physical and chemical properties of a hydrocarbon type to calculate rates of evaporation and viscosity change, including the tendency to form oil-in-water emulsions. Moreover, the unique transport and dispersion of surface slicks and in-water components (entrained and dissolved) are modelled separately. Thus, the model can be used to understand the wider potential consequences of a spill, including direct contact of hydrocarbons due to surface slicks (floating hydrocarbon) and exposure of organisms to entrained and dissolved aromatic hydrocarbons in the water column.

During each simulation, the SIMAP model records the location (by latitude, longitude and depth) of each particle (representing a given mass of hydrocarbons) on or in the water column, at regular time steps. For any particles that contact a shoreline, the model records the accumulation of hydrocarbon mass that arrives on each section of shoreline over time, less any mass that is lost to evaporation and/or subsequent removal by current and wind forces.

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.

6.9.1.1 Hydrocarbon characteristics

Table 6-13 summarises the characteristics of the hydrocarbons used as the basis for the modelling studies and subsequently used to inform the assessment of credible hydrocarbon spills. Additional detail on the characteristics of these hydrocarbons is also provided in the sections below.

Table 6-13: 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
Marine diesel (surrogate for MGO)	0.829	4.0	% of total	6	34.6	54.4	5	3.0
			% of aromatics	1.8	1.0	0.2	-	-

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6.9.1.1.1 Marine gas oil

Marine gas oil (MGO) typically has relatively low viscosity and density and will consequently spread rapidly as a floating film on calm seas. In general, about 6% of the oil mass should evaporate within the first 12 hours (boiling point <180°C); a further 35% should evaporate within the first 24 hours (180°C < boiling point <265°C); and a further 54% should evaporate over several days (265°C < boiling point <380°C). About 5% of the oil is shown to be persistent. The aromatic content of the oil is about 3%.

The mass balance forecast for the constant low-wind case for the MGO specifications indicates rapid evaporation of the mixture over the first 12 hours and then progressively slower evaporation over the following days. Approximately 38% of the oil is predicted to evaporate within the first 12 hours and another ~2% over the following 12 hours (Figure 6-1). Around 5% of the remaining mass would evaporate over the next six days. A relatively small (~2%) conversion of the mass to simpler compounds by microbial and photo-degradation is indicated over the first week for these conditions (Figure 6-1).

Under the stronger and more variable-wind case, where the wind speeds exceeding eight knots were allowed for at times, significant entrainment of MGO into the water column is indicated. Approximately 24 hours after the spill, around 74% of the oil mass is forecast to have entrained and a further 26% is forecast to have evaporated, leaving only a small proportion of the oil floating on the water surface (<1%) (Figure 6-2). The entrained component remained subsurface under the conditions imposed. The increased level of entrainment in the variable-wind case will result in a higher dissolution of the soluble compounds, with dissolved hydrocarbons forecasted at ~0.5% of the original mass after 12 hours in comparison to <0.01% 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 to 10 m/s), generating breaking waves on the ocean surface.

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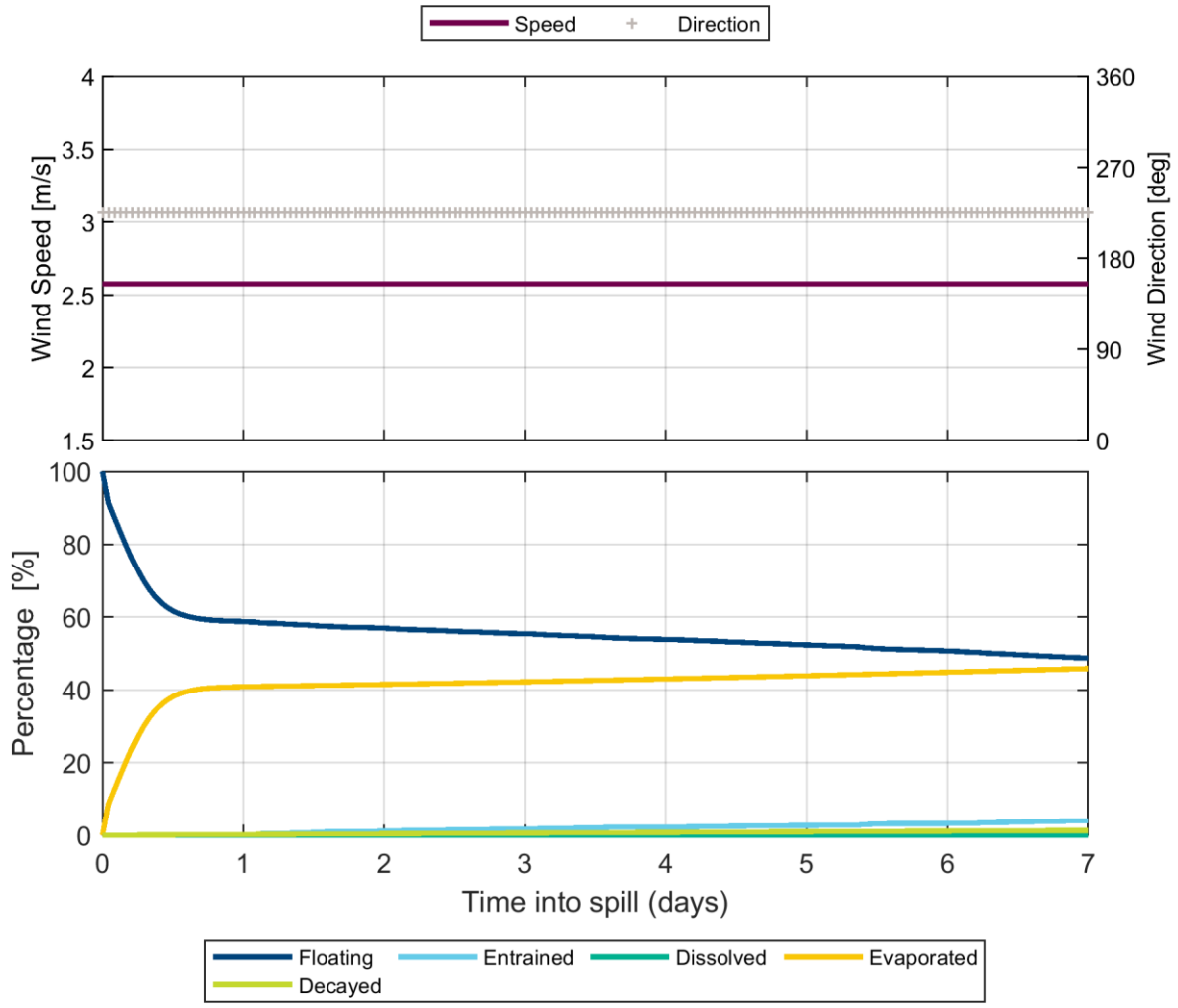


Figure 6-1: Proportional mass balance plot representing weathering of a surface spill of marine gas oil as a one-off release (150 m³ over one hour) and subject to constant 5 knot wind at 27°C water temperature and 25°C air temperature

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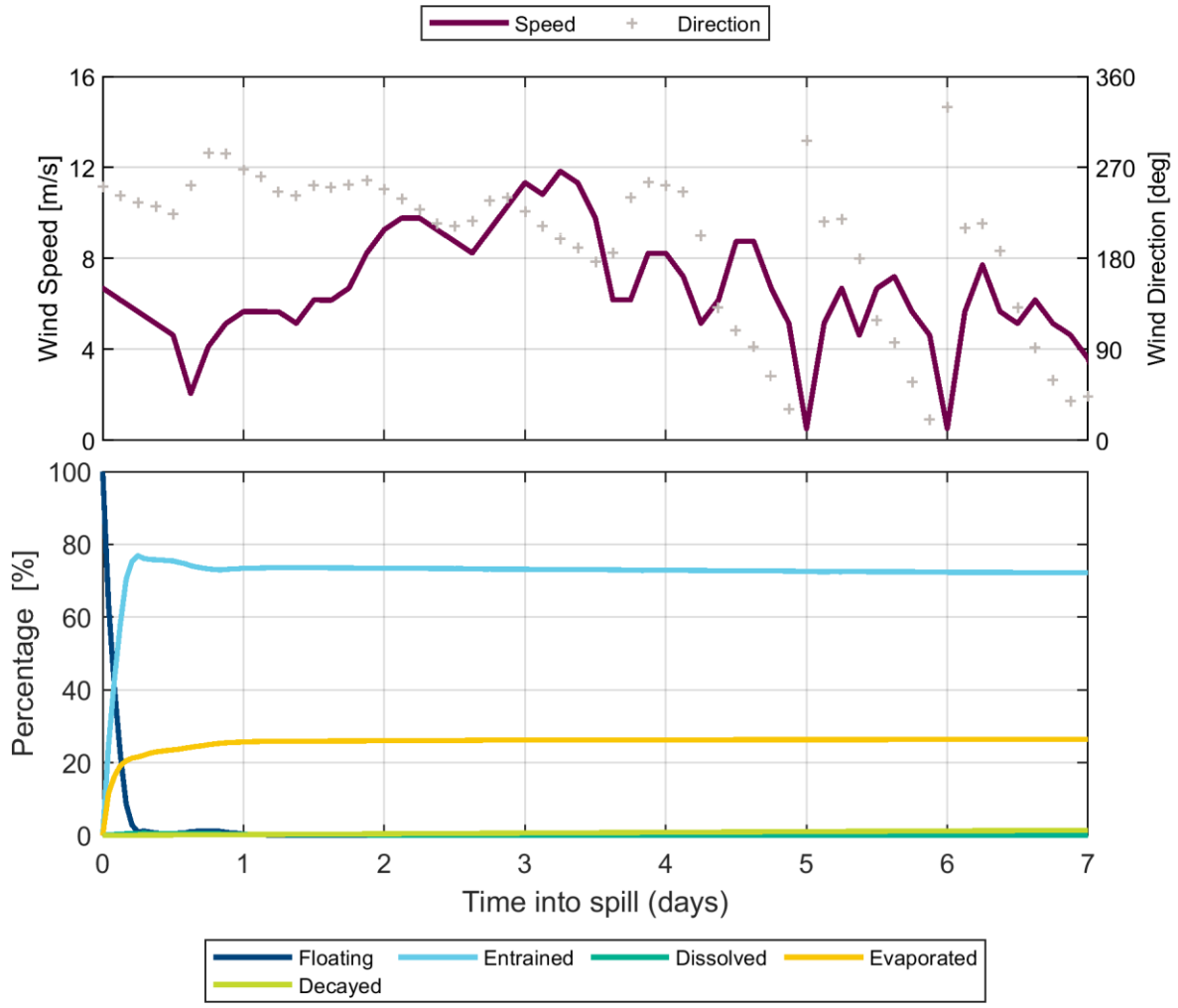


Figure 6-2: Proportional mass balance plot representing weathering of a surface spill of marine gas oil as a one-off release (150 m³ over one hour) and subject to variable wind at 27°C water temperature and 25°C air temperature

6.9.1.2 Environment that may be affected (EMBA) 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. Furthermore, as the weathering of different fates of hydrocarbons (surface, entrained and dissolved) differs due to the influence of the metocean mechanism of transportation, a different EMBA is presented for each hydrocarbon fate. Together, these EMBA have defined the spatial extent for the existing environment described in Section 4.

The spill modelling outputs are presented as areas that meet threshold concentrations for surface, entrained and dissolved hydrocarbons for the modelled scenarios. Surface spill concentrations are expressed as grams per square metre (g/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

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hydrocarbons to define the EMBA. 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 6-14 and described in the subsections below.

Table 6-14: 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)
Marine diesel (surrogate for MGO)	50	100	10	100	1

6.9.1.3 Scientific monitoring

A planning area for scientific monitoring is also described in Section 5.7 of the Oil Spill Preparedness and Response Mitigation Assessment (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. The low exposure threshold is based on the potential for exceeding water quality triggers.

A scientific monitoring program may be activated following a release event with the potential to contact sensitive environmental receptors. This would consider receptors at risk (ecological and socio-economic) and in particular, any identified pre-emptive baseline areas for the worst-case credible spill scenario or other identified unplanned hydrocarbon releases associated with the operational activities.

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6.9.2 Unplanned hydrocarbon release: vessel collision

Context		
Vessels – Section 3.9	Physical environment – Section 4.4 Habitats and biological communities – Section 4.5 Protected species – Section 4.6 Key ecological features – Section 4.7 Protected places – Section 4.8 Socio-economic environment – Section 4.9	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. other survey vessels or other marine users)	X	X		X	X	X	A	C	1	M	LCS GP PJ	Broadly Acceptable	EPO 8

Description of source of risk

The GPGT Surveys Program will involve primarily one survey vessel undertaking each activity, though allowance for two survey vessels in the Operational Area at any one time is provided. Support vessels are not proposed as part of the survey and vessel transfer activities are not planned during this survey (except in an emergency).

The worst-case credible hydrocarbon release would be breach of the survey vessel's largest fuel tank through collision with a third-party vessel. The total maximum inventory onboard the survey vessel is unknown as the vessel contracting has not been completed. A conservative vessel fuel tank size of 150 m³ has been selected, as per Table 3-6 in Section 3.9.

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 to 2012 that resulted in a spill of 25 to 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 collision involved a vessel under pilot control in a port colliding 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 event of a vessel collision.

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 (ATSB 2011). Of those, 15% related to poor communication and 42% related to poor monitoring, checking and documentation. Most of these related to the grounding instances.

Credible scenarios

For a vessel collision to result in the worst-case scenario of a hydrocarbon spill potentially impacting an environmental receptor, several factors must align:

- The identified causes of vessel interaction must result in a collision.
- The collision must have enough force to penetrate the vessel hull.

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- The collision must be in the exact location of the fuel tank.
- The fuel tank must be full, or at least have a volume higher than the point of penetration.

The probability of the chain of events described above aligning, to result in a breach of fuel tanks resulting in a spill that could potentially affect the marine environment, is considered highly unlikely.

A collision between the survey vessel and a third-party vessel (i.e. commercial shipping, other petroleum related vessels and commercial fishing vessels) was assessed as being credible, but highly unlikely given the standard vessel operations and equipment in place to prevent collision at sea, and the short duration of the activities.

Given the minimum water depths in the Operational Area, hydrocarbon release due to grounding is not considered credible, Credible scenarios are outlined in Table 6-15.

Table 6-15: Details of identified hydrocarbon spill scenarios

Scenario	*Likelihood*	*Credible*	*Volume (m^3)*	*Justification*
Vessel-to-vessel collision or third-party collision resulting in breach of the survey vessel's hull	Highly unlikely	Credible	150	Primarily one survey vessel will be operating in the Operational Area at any one time. Considering the slow speeds travelled (~4 knots), breach of the survey vessel's hull is considered highly unlikely. Third party vessels in the survey vicinity may be commercial shipping vessels which will be notified, by Notices to Mariners through AMSA, of the survey activity in the area. All third-party vessels operating in the vicinity will be tracked on radar and alerted (as required) to the presence of the survey vessel operations and therefore collision resulting in breach of the survey vessel's hull is considered highly unlikely.
Vessel grounding resulting in breach of the survey vessel's hull	Highly unlikely	Not credible	150	Given the depths that will be encountered by survey vessels operating in the Operational Area (> 35 m in Commonwealth waters), the scenario of vessel grounding is considered not credible.

Quantitative hydrocarbon risk assessment

Woodside commissioned quantitative hydrocarbon spill modelling of one vessel collision scenario at two different locations as detailed in Table 6-16. The volumes selected for modelling are based on the potential vessels that may be used and represent an instantaneous release. The modelling assessed the extent of a marine gas oil (MGO) spill volume of 150 m^3 for all seasons, using an historic sample of wind and current data for the region.

Table 6-16: Details of identified marine gas oil spill scenarios modelled in vicinity of the Operational Area

Location	*Coordinates*	*Volume (m^3)*	*Justification*
State waters boundary	20° 19' 34.0"S 116° 45' 50.2"E	150	Closest location to land.
Offshore location	19° 34' 19.6"S 116° 32' 56.0"E	150	Closest location to Glomar Shoals KEF.

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Consequence assessment
Environmental value(s) potentially impacted
Modelling results Quantitative hydrocarbon spill modelling result outputs for surface hydrocarbons are shown in Table 6-17. As no receptors were contacted at or above thresholds for the offshore location, all values relate to the State waters boundary location. **Surface hydrocarbons and shoreline accumulated hydrocarbons** The probability contour figures for floating hydrocarbons indicate that concentrations equal to or greater than the 1 g/m² threshold can be found up to 25 km east of the worse-case scenario (State waters boundary) and 16 km south-west for the 10 g/m² thresholds for probabilities greater or equal to 1%. Surface hydrocarbons at or greater than 1 g/m² and 10 g/m² are predicted to make contact with Madeleine Shoals (12% and 2.5%), Dampier Archipelago (9% and 2.5%), Legendre Island (4.5% and 1.5%), Dampier Marine Park (4.5% and 0.5%) and Keast Island (1% and 0.5%). Receptors only predicted to be contacted by 1 g/m² include Cohen Island (1%), Hammersley Shoal (1%), Rosemary Island (0.5%), Malus Island (0.5%), Cape Bruguieres (0.5%) and Gidley Island (0.5%). No receptors are predicted to be contacted at or above surface hydrocarbon thresholds (1 g/m² and 10 g/m²) for the offshore location. Floating oil at 1 g/m² may be present in open waters up to 41 km south-west from spill location and 29 km south-east at the 10 g/m² threshold. Accumulated hydrocarbons above threshold concentrations (≥100 g/m²) for the worst-case credible scenario are predicted for the Dampier Archipelago (2666 g/m²), Legendre Island (2666 g/m²), Keast Island (1645 g/m²) and Cape Bruguieres (209 g/m²). No shoreline receptors were predicted to be contacted by accumulated hydrocarbons at or above the 100 g/m² threshold for the offshore location. **Entrained hydrocarbons** Entrained oil at concentrations equal to or greater than the 100 ppb threshold is predicted to be found up to approximately 108 km west from the spill site in the worst case scenario (State waters boundary). Contact by entrained hydrocarbons at concentrations equal to or greater than 100 ppb is predicted at Madeleine Shoals (38%), Dampier Marine Park (32%), Dampier Archipelago (16%), Rosemary Island (11%), Legendre Island (10.5%), Kendrew Island (4%), Cohen Island (3.5%), Hammersley Shoal (3.5%), Keast Island (3%), Cape Bruguieres (2.5%), Cod Bank (1.5%) and Courtenay Shoal (1%). Any other receptor potentially contacted is <0.5% and not discussed further. The maximum entrained oil concentration forecast for any receptor is predicted to be 1824 ppb at Madeleine Shoals. No receptors were predicted to be contacted at or above threshold concentrations for entrained hydrocarbons for the offshore location. **Dissolved hydrocarbons** Dissolved aromatic hydrocarbons at concentrations equal to or greater than the 50 ppb threshold are predicted to be found up to 6 km west from the spill site for the worst-case scenario (State waters boundary). No receptors were predicted to be contacted at or above threshold concentrations for dissolved hydrocarbons equal to or greater than 50 ppb for both spill scenarios (Table 6-17). Dissolved aromatic hydrocarbons at concentrations equal to or greater than the 50 ppb threshold are predicted to be found up to approximately 5 km west from the spill site for the offshore scenario.

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Table 6-17: Key receptor locations and sensitivities within the EMBA potentially contacted above impact thresholds by a 150 m³ instantaneous release of marine gas oil

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)
Offshore	Dampier AMP	✓	✓	✓	✓		✓	✓	✓	✓					✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		4.5*		0.5*	32		
Submerged shoals	Cod Bank	✓	✓	✓				✓							✓					✓	✓	✓		✓	✓	✓		✓						1.5		
	Courtenay Shoal	✓	✓	✓				✓							✓					✓	✓	✓		✓	✓	✓		✓						1		
	Hammersley Shoal	✓	✓	✓			✓	✓		✓						✓				✓		✓		✓	✓	✓		✓			1*			3.5		
	Madeleine Shoals	✓	✓	✓			✓	✓		✓						✓				✓		✓		✓	✓	✓		✓			12*		2.5*	38		
Islands	Gidley Island	✓	✓	✓	✓	✓	✓	✓				✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		0.5	0.5				
	Keast Island	✓	✓	✓	✓	✓	✓	✓				✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		1	1	0.5	3		1
	Rosemary Island	✓	✓	✓	✓	✓	✓	✓		✓		✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓			✓	✓		0.5	0.5		11		
	Legendre Island	✓	✓		✓		✓		✓			✓		✓		✓	✓		✓	✓		✓	✓	✓	✓	✓		✓	✓		4.5	4.5	1.5	10.5		2.5
	Kendrew Island	✓	✓		✓		✓		✓			✓		✓		✓	✓		✓	✓		✓	✓	✓	✓	✓		✓	✓					4		
	Cohen Island	✓	✓		✓		✓		✓			✓		✓		✓	✓		✓	✓		✓	✓	✓	✓	✓		✓	✓		1	1		3.5		
	Malus Island	✓	✓		✓		✓		✓			✓		✓		✓	✓		✓	✓		✓	✓	✓	✓	✓		✓	✓		0.5	0.5				
Mainland (nearshore waters)	Dampier Archipelago	✓		✓	✓	✓		✓		✓	✓	✓	✓		✓	✓	✓		✓	✓	✓	✓	✓		✓			✓	✓		9	4.5	2.5	16		2.5
	Cape Bruguieres	✓		✓	✓	✓		✓		✓	✓	✓	✓		✓	✓	✓		✓	✓	✓	✓	✓		✓			✓			0.5	0.5		2.5		0.5

** Note: Surface hydrocarbons cannot accumulate on open ocean, submerged receptors, or receptors not fully emergent.*

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Summary of potential impacts to protected species

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 below. It is noted that the toxic components in MGO 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. MGO also contains additives that contribute to its toxicity.

Marine mammals

Marine mammals that have direct physical contact with surface, entrained or dissolved aromatic hydrocarbons may suffer surface fouling or ingestion of hydrocarbons and inhalation of toxic vapours. This may result in the irritation of sensitive membranes such as the eyes, mouth, digestive and respiratory tracts and organs, impairment of the immune system or neurological damage (Helm *et al*. 2015). If prey (fish and plankton) are contaminated, this can result in the absorption of toxic components of the hydrocarbons (polycyclic aromatic hydrocarbons). In a review of cetacean observations in relation to a number of large-scale hydrocarbon spills, Geraci (1988) found little evidence of mortality associated with hydrocarbon spills; however, behavioural disturbance (i.e. avoiding spilled hydrocarbons) was observed in some instances for several species of cetacean. This suggests cetaceans have the ability to detect and avoid surface slicks.

Cetaceans that may interact with spilled hydrocarbons are most likely to be subject to physical impacts. Given cetaceans maintain thick skin and blubber, external exposure to hydrocarbons may result in irritation to skin and eyes. Entrained hydrocarbons may also be ingested, particularly by baleen whales which feed by filtering large volumes of water.

As identified in Section 4.6.3, protected species including migrating pygmy blue whales and humpback whales may be encountered near the Operational Area, and therefore could be impacted in close proximity to the MGO spill location, where the volatile, water soluble and most toxic components of the hydrocarbon 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. Impacts on the overall population viability of cetaceans are not predicted.

Marine turtles

Adult sea turtles exhibit no avoidance behaviour when they encounter hydrocarbon spills (NOAA 2010). Contact with entrained (or floating) hydrocarbon can result in hydrocarbon adherence to body surfaces (Gagnon and Rawson 2010), causing irritation of mucous membranes in the nose, throat and eyes and 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 pathway includes an increase in the production of white blood cells; even a short exposure to hydrocarbons may affect the functioning of their salt gland (Lutcavage *et al.* 1995).

Hydrocarbons in surface waters may impact turtles when they surface to breathe and inhale toxic vapours. Their breathing pattern, involving large ‘tidal’ volumes and rapid inhalation before diving, results in direct exposure to petroleum vapours which are the most toxic component of the hydrocarbon spill (Milton and Lutz 2003). This can lead to lung damage and congestion, interstitial emphysema, inhalant pneumonia and neurological impairment (NOAA 2010). Contact with entrained hydrocarbons can result in hydrocarbon adherence to body surfaces (Gagnon and Rawson 2010), causing irritation of mucous membranes in the nose, throat and eyes and leading to inflammation and infection (Gagnon and Rawson 2010). Given the hydrocarbon is expected to weather rapidly when released to the environment, relatively fresh entrained hydrocarbons (which are typically relatively close to the release location) are considered to have the greatest potential for impact.

The EMBA overlaps with a variety of BIAs, including internesting, nesting, foraging, migration, mating for hawksbill, green, loggerhead and flatback turtles, with significant nesting beaches on the islands of the Dampier Archipelago. The Operational Area also overlaps internesting BIAs for the above suite of marine turtles. The EMBA also overlaps several areas of habitat critical to the survival of marine turtle species, including hawksbill, green and flatback turtles. The Operational Area overlaps habitat critical areas around the Dampier Archipelago for hawksbill, green and flatback turtles.

In the event of a worst-case vessel spill of MGO, 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 16 km and 108 km respectively, from the worst-case scenario release site. Toxicity of hydrocarbons will be significantly reduced by weathering 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

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to marine turtles is limited to small numbers of transient individuals that may be present in offshore waters near the release location.

During the breeding season, turtle aggregations near nesting beaches within the EMBA are most vulnerable due to greater turtle densities. A 150 m³ MGO spill has the potential to result in sub-lethal and lethal impacts to turtles within and around the Dampier Archipelago area. Should a spill occur in the breeding season, oiling of nesting females or emerging hatchlings on shorelines is possible. Potential impacts on marine turtles may be moderate and medium-term in the unlikely event of a spill. However, given the predicted extent of the spill and the volatile and non-persistent nature of the hydrocarbons, the extent of impacts is not expected to result in a threat to the overall viability of marine turtle populations in the wider region.

Seabirds and migratory shorebirds

The modelled MGO spill scenarios predict localised floating hydrocarbons above impact thresholds centred around the release location. Physical contact of seabirds and migratory shorebirds with surface slicks is by several exposure pathways, primarily immersion, ingestion and inhalation. Such contact with hydrocarbons may result in plumage fouling and hypothermia (loss of thermoregulation), decreased buoyancy and potential to drown, inability to fly or feed, anaemia, pneumonia and irritation of eyes, skin, nasal cavities and mouths (AMSA 2013, IPIECA 2004) and result in mortality due to oiling of feathers or ingestion of hydrocarbons. Longer term exposure effects that may potentially impact seabird populations include a loss of reproductive success (loss of breeding adults) and malformation of eggs or chicks (AMSA 2013). In feeding habitats, 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). Whether the toxicity of ingested hydrocarbons is lethal or sub lethal will depend on the weathering stage and its inherent toxicity.

The Dampier Archipelago is recognised as an important area for foraging seabirds and migratory shorebirds and there are a number of BIAs for seabirds that overlap with the wider EMBA, as provided in Section 4.6.4. Offshore and nearshore waters of the EMBA provide potential foraging grounds for seabirds associated with the coastal roosting and nesting habitat, which includes the numerous islands along the Pilbara coast. The extent of the EMBA for surface hydrocarbon concentration of >10 g/m², as a result of a 150 m³ MGO spill, is predicted to extend approximately 16 km south-west from the worse-case scenario release location. Therefore, a hydrocarbon spill is unlikely to disrupt a significant portion of the foraging habitat for seabirds.

Migratory shorebirds may be exposed to stranded hydrocarbons when foraging or resting in intertidal habitats. Modelling predicts that shoreline accumulation above impact thresholds could occur on the islands of the Dampier Archipelago. There is therefore potential for impacts to migratory shorebirds either directly or indirectly through impacts to foraging habitat by accumulated hydrocarbons on shorelines. Direct oiling of shorebirds is possible, however, considering the duration of the spill, and the rapid weathering of MGO, will be restricted to relatively small portion of birds.

Potential impacts on seabirds and migratory shorebirds may be moderate and medium-term in the unlikely event of a 150 m³ MGO spill. However, based on the assessment above and given the volatile and non-persistent nature of the hydrocarbons, the extent of impacts is not expected to result in a threat to the overall viability of seabird or shorebird populations in the wider region.

Fish, sharks and rays

Other protected species that may occasionally transit through the area and may potentially be exposed to a MGO spill, include shark and ray species such as whale sharks. Impacts to sharks and rays may occur through direct contact with hydrocarbons and contaminate the tissues and internal organs either through direct contact or via the food chain (consumption of prey). As gill breathing organisms, sharks and rays may be vulnerable to toxic effects of dissolved hydrocarbons (entering the body via the gills) and entrained hydrocarbons (coating of the gills inhibiting gas exchange). In the offshore environment, it is probable that pelagic shark species are able to detect and avoid surface waters underneath hydrocarbon spills by swimming into deeper water or away from the affected areas. Therefore, any impact on sharks and rays is predicted to be minor and localised.

Hydrocarbon contact may affect whale sharks through ingestion (entrained/dissolved hydrocarbons), particularly if feeding. Whale sharks may transit offshore waters when migrating to and from Ningaloo Reef, where they aggregate for feeding from March to July. The Operational Area overlaps the whale shark foraging BIA along the 200 m isobath northwards of the Ningaloo coast. Should sharks or fish be present in offshore waters near the Operational Area 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.

Sawfish may be more vulnerable than other marine fishes to population-level impacts from hydrocarbons (Woodvard *et al*. 2022), due to their limited abundance, distribution, reproductive turnover and habitat requirements. Sawfish may exhibit high habitat fidelity, and – unlike other shark species – may fail to leave a hydrocarbon contaminated area. In such cases, sawfish could encounter dissolved and entrained hydrocarbons for extended periods. There is little scientific understanding of how waterborne pollution affects adult and juvenile sawfish (Consales and Marseili 2021), and no ecotoxicological data on hydrocarbon toxicity exists for these animals. Habitat loss and degradation is a listed

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threat for sawfish species. Shoreline accumulation of oil in the Dampier Archipelago may result in the loss of mangrove habitat and restrict the area of important habitat in nearshore environments. This is particularly important for juvenile sawfish species, which have been shown to exhibit high site fidelity, inhabiting estuaries and tidal mangrove creeks (David *et al.* 2017). However, adult sawfish move offshore and inhabit deeper offshore environments and are widely distributed and therefore habitat loss in one location is unlikely to result in a threat to the overall viability of sawfish populations in the NWS region.

Potential impacts on sharks, sawfish and rays may be moderate and medium-term in the highly unlikely event of vessel collision releasing MGO. However, based on the assessment above and given the relatively volatile and non-persistent nature of the hydrocarbons, the extent of impacts is not expected to result in a threat to the overall viability of shark, sawfish and ray populations within the EMBA.

Potential impacts on sharks, sawfish and rays may be moderate and medium-term in the highly unlikely event of vessel collision releasing MGO. However, based on the assessment above and given the relatively volatile and non-persistent nature of the hydrocarbons, the extent of impacts is not expected to result in a threat to the overall viability of shark, sawfish and ray populations within the EMBA.

Summary of potential impacts to other species

Pelagic and demersal fish

Fish mortalities are rarely observed to occur as a result of hydrocarbon spills (International Tanker Owners Pollution Federation 2011). 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 can eliminate the toxicants once placed in clean water; hence, individuals exposed to a spill are likely to recover (King *et al.* 1996). Where fish mortalities have been recorded, 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 oil spills (Hjermann *et al.* 2007). This suggests juvenile and adult fish can avoid water contaminated with high concentrations of hydrocarbons.

The effects of exposure to oil on the metabolism of fish appears to vary according to the organs involved, exposure concentrations and route of exposure (waterborne or food intake). Oil reduces the aerobic capacity of fish exposed to aromatics in the water and to a lesser extent affects fish consuming contaminated food (Cohen *et al.* 2005). The liver, a major detoxification organ, appears to be the organ where anaerobic activity is most impacted, probably increasing anaerobic activity to facilitate the elimination of ingested oil from the fish (Cohen *et al.* 2005).

Fish are perhaps most susceptible to the effects of spilled oil in their early life stages, particularly during egg and planktonic larval stages, which can become entrained in spilled oil. Contact with oil droplets can mechanically damage feeding and breathing apparatus of embryos and larvae (Fodrie and Heck 2011). The toxic hydrocarbons in water can result in genetic damage, physical deformities and altered developmental timing for larvae and eggs exposed to even low concentrations over prolonged timeframes (days to weeks) (Fodrie and Heck 2011). More subtle, chronic effects on the life history of fish as a result of exposure of early life stages to hydrocarbons include disruption to complex behaviour 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). Polycyclic aromatic hydrocarbons 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.

The Dampier Archipelago supports a diverse fish fauna including coral reef fishes and bottom dwellers associated with mangrove and silty intertidal habitats. Also within the EMBA is the Glomar Shoals KEF, which supports a number of commercially and recreationally important species. Fish associated with these features may be exposed to entrained hydrocarbons above impact thresholds and mortality and sub-lethal effects may occur. Additionally, if prey (infauna and epifauna) within the EMBA is contaminated, this can result in the absorption of toxic components of the hydrocarbons (polycyclic aromatic hydrocarbons) potentially impacting fish populations that feed on these. Resulting impacts are expected to be localised with minor, short-term effects.

Summary of potential impacts to marine primary producers

Coral

The Dampier Archipelago supports a diverse number of both scleractinian and non-scleractinian (soft) corals (see Section 4.5).

There would be potential for entrained hydrocarbons above threshold concentrations to reach reef habitat in the Dampier Archipelago. Additionally, shallow coral habitats may be vulnerable to hydrocarbon coating by direct contact with surface hydrocarbons during periods when corals are tidally-exposed. Water soluble hydrocarbon fractions associated with surface slicks are also known to cause high coral mortality (Shigenaka 2001) via direct physical

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contact of hydrocarbon droplets to sensitive coral species (such as the branching coral species). There is significant potential for lethal impacts due to the physical hydrocarbon coating of sessile benthos (e.g. by entrained hydrocarbons), with likely significant mortality of corals (adults, juveniles and established recruits) at the small spill affected areas. This particularly applies to branching corals which are reported to be more sensitive than massive corals (Shigenaka 2001).

Exposure to entrained hydrocarbons above threshold concentrations (≥100 ppb) has the potential to result in lethal or sub-lethal toxic effects to corals and other sensitive sessile benthos within the upper water column, including upper reef slopes (subtidal corals) and reef flat (intertidal corals). Mortality in a number of coral species is possible and this would result in the reduction of coral cover and change in the composition of coral communities. Sub-lethal effects to corals may include polyp retraction, changes in feeding, bleaching (loss of zooxanthellae), increased mucous production resulting in reduced growth rates and impaired reproduction (Negri and Heyward 2000). This could result in impacts to the shallow water fringing coral communities/reefs of the Dampier Archipelago islands.

In the unlikely event of a spill occurring at the time of coral spawning at potentially affected coral locations, there is the potential for a significant reduction in successful fertilisation and coral larval survival due to the sensitivity of coral early life stages to hydrocarbons (Negri and Heyward 2000). Such impacts are likely to result in the failure of recruitment and settlement of new population cohorts. In addition, some non-coral species may be affected via direct contact with entrained and dissolved aromatic hydrocarbons, resulting in sub-lethal impacts and in some cases mortality. This is with particular reference to the early life-stages of coral reef animals (reef attached fishes and reef invertebrates), which can be relatively sensitive to hydrocarbon exposure. Coral reef fish are site attached, have small home ranges and as reef residents they are at higher risk from hydrocarbon exposure than non-resident, more wide-ranging fish species. See 'Impacts to other species – pelagic and demersal fish' above. The exact impact on resident coral communities will depend on actual hydrocarbon concentration, duration of exposure and water depth of the affected communities.

In the unlikely event of a hydrocarbon spill, impacted coral reefs within the Dampier Archipelago may experience long-term effects (recovery >10 years).

Seagrass, macroalgae and mangroves

Spill modelling has predicted entrained hydrocarbons above threshold concentrations have the potential to contact shoreline sensitive receptors, such as those supporting biologically diverse, shallow subtidal and intertidal communities. The variety of habitat and community types, from the upper subtidal to the intertidal zones, support a high diversity of marine life and are used as important foraging and nursery grounds by a range of invertebrate and vertebrate species. Depending on the trajectory of the entrained hydrocarbon plume, macroalgal/seagrass communities including the Dampier Archipelago have the potential to be exposed.

Seagrass in the subtidal and intertidal zones have different degrees of exposure to hydrocarbon spills. Subtidal seagrass is generally considered much less vulnerable to hydrocarbon spills than intertidal seagrass, primarily because freshly spilled hydrocarbons float under most circumstances. Dean *et al.* (1998) found that oil mainly affects flowering; therefore, species that can spread through apical meristem growth are not as affected (such as *Zostera*, *Halodule* and *Halophila* species).

Seagrass and macroalgal beds in the intertidal and subtidal zone may be susceptible to impacts from entrained hydrocarbons. Toxicity effects can also occur due to absorption of soluble fractions of hydrocarbons into tissues (Runcie *et al.* 2010). The potential for toxicity effects of entrained hydrocarbons may be reduced by weathering processes that should serve to lower the content of soluble aromatic components before contact occurs. Exposure to entrained aromatic hydrocarbons may result in mortality, depending on actual entrained aromatic hydrocarbon concentrations received and duration of exposure. Physical contact with entrained hydrocarbon droplets could cause sub-lethal stress, causing reduced growth rates and reduced tolerance to other stress factors (Zieman *et al.* 1984). Impacts on seagrass and macroalgal communities are likely to occur in areas where hydrocarbon threshold concentrations are exceeded.

Mangroves and associated mud flats at the Dampier Archipelago have the potential to be exposed to entrained, surface and shoreline hydrocarbons. Pneumatophore roots of mangroves can be coated by entrained hydrocarbons when hydrocarbons are deposited on the aerial roots. Hydrocarbons deposited on the aerial roots can block the pores used to breathe, or interfere with the trees' salt balance, resulting in sub-lethal and potentially lethal effects. Mangroves can also be impacted by entrained/dissolved aromatic hydrocarbons that may adhere to the sediment particles. In low energy environments, such as in mangroves, deposited sediment-bound hydrocarbons are unlikely to be removed naturally by wave action and may be deposited in layers by successive tides (NOAA 2014). Impacts may occur in a localised area, if the release location occur in the vicinity of mangroves.

Entrained hydrocarbon impacts may also include sub-lethal stress and mortality to certain sensitive biota in these mangrove and mud flat habitats, including infauna and epifauna. Larval and juvenile fish, and invertebrates that depend on these shallow subtidal and intertidal habitats as nursery areas, may be directly impacted due to the loss of habitats and/or lethal and sub-lethal in-water toxic effects. This may result in mortality or impair growth, survival and reproduction (Heintz *et al.* 2000). In addition, there is the potential for secondary impacts on shorebirds, fish, sea turtles, rays, and crustaceans that use these intertidal habitat areas for breeding, feeding and nursery habitat.

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Summary of potential impacts to other habitats and communities

Benthic communities

In the event of a vessel collision incident result in loss of hydrocarbons, benthic communities may be exposed to entrained hydrocarbons ≥100 ppb. Benthic fauna of the Dampier Archipelago is diverse but generally well represented across the NWS (see Section 4.5). Lethal and sub-lethal effects are likely to occur to fauna in proximity to the release site, resulting in a localised loss of benthic fauna diversity.

Open water – productivity/upwelling

Primary production by plankton (supported by sporadic upwelling events in the offshore waters of the NWS) is an important component of the primary marine food web. Planktonic communities are generally mixed including phytoplankton (cyanobacteria and other microalgae) and secondary consuming zooplankton, such as crustaceans (e.g. copepods), and the eggs and larvae of fish and invertebrates (meroplankton). Upwelling events within the Operational Area are unlikely, however, may occur in the offshore environment of the EMBA.

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 (Batteen *et al.* 1992). Phytoplankton may also experience decreased rates of photosynthesis (Tomajka 1985). For zooplankton, direct effects of contamination may include toxicity, suffocation, changes in behaviour, or environmental changes that make them more susceptible to predation. Impacts on plankton communities are likely to occur in areas where entrained or dissolved aromatic hydrocarbon threshold concentrations are exceeded, but communities are expected to recover relatively quickly (within weeks or months). This is due to high population turnover with copious production within short generation times that also buffers the potential for long-term (i.e. years) population declines (International Tanker Owners Pollution Federation 2011). Therefore, impacts on exposed planktonic communities present in the EMBA are likely to be short term.

Filter feeders

Hydrocarbon exposure to filter-feeding communities within the Dampier Archipelago may occur depending on the depth of the entrained hydrocarbons. Exposure to entrained hydrocarbons (≥100 ppb) has potential to result in lethal or sub-lethal toxic effects. Sub-lethal 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.

Sandy shores/estuaries/tributaries/creeks (including mudflats)/rocky shores

Shoreline exposure for the upper and lower shore areas differ. The upper shore has the potential to be exposed to surface slicks, while the lower shore is potentially exposed to entrained hydrocarbon.

Potential impacts may occur due to hydrocarbon contact with intertidal areas, including sandy shores, mudflats and rocky shores of the Dampier Archipelago. Hydrocarbons on sandy shores are incorporated into fine sediments through mixing in the surface layers from wave energy, penetration down worm burrows and root pores. Hydrocarbons in the intertidal zone can adhere to sand particles however high tide may remove some or most of the hydrocarbon back off the sediments. Typically, hydrocarbon is only incorporated into the surface layers to a maximum of 10 cm. Accumulated hydrocarbons ≥100 g/m² could impact the survival and reproductive capacity of benthic epifaunal invertebrates living in intertidal habitat (French-McKay 2009). Note that shoreline accumulation above impact thresholds was identified as potentially occurring at islands of the Damper Archipelago, Legendre Island, Keast Island and Cape Bruguieres (where maximum local accumulated concentration [averaged over all replicate simulations] was estimated at 16 g/m²). Given the hydrocarbons are non-persistent, long-term impacts to shores are not expected.

The impact of hydrocarbon on rocky shores will be largely dependent on the incline and energy environment. On steep/vertical rock faces on wave exposed coasts there is likely to be no impact from a spill event. However, a gradually sloping boulder shore in calm water can potentially trap large amounts of hydrocarbon (IPIECA 2004). The impact of the spill on marine organisms along the rocky coast will be dependent on the toxicity and weathering of the hydrocarbon. Similar to sandy shores accumulated hydrocarbons ≥100 g/m² could coat the epifauna along rocky coasts and impact the reproductive capacity and survival.

Intertidal mudflats are susceptible to potential impacts from hydrocarbons as they are typically low energy environments and therefore trap hydrocarbons. The extent of oiling is influenced by the neap and spring tidal cycle and seasonal highs and lows affecting mean sea level. Potential impacts to tidal flats include heavy accumulations covering the flat at low tide, although it is unlikely that hydrocarbon will penetrate the water-saturated sediments. However, hydrocarbon can penetrate sediments through animal burrows and root pores. It has been demonstrated that infaunal burrows allow hydrocarbons to access subsurface sediments where it can be retained for months.

Impacts may result in localised changes to the community structure of these shoreline habitats which would be expected to recover in the medium term (two to five years).

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Summary of potential impacts to water and sediment quality

Water quality would be affected/reduced due to hydrocarbon contamination. Modelling predictions indicate that hydrocarbon contact at or above biological effect concentrations for entrained hydrocarbons would occur in nearshore waters of islands of the Dampier Archipelago (refer to Table 6-17). Such reduction in water quality is predicted to have minor long-term or significant short-term hydrocarbon contamination above background and/or national/international quality standards.

Surface and entrained hydrocarbons (above defined impact thresholds) are predicted to potentially contact shallow, nearshore waters of islands of the Dampier Archipelago and may accumulate. Such hydrocarbon contact may lead to reduced marine sediment quality by several processes, such as adherence to sediment and deposition on shoreline or seabed habitat.

Summary of potential impacts to protected areas

The hydrocarbon spill modelling predicted that hydrocarbons may reach the Dampier AMP above impact threshold concentrations in the event of a 150 m³ MGO spill (with a maximum probability of 4.5% for surface hydrocarbons and 32% for entrained hydrocarbons).

Values and sensitivities of the Dampier AMP include:

- foraging areas adjacent to important breeding areas for migratory seabirds
- foraging areas adjacent to important nesting sites for marine turtles
- part of the migratory pathway of the protected humpback whale
- high level protection for offshore shelf habitats adjacent to the Dampier Archipelago, and for the shallow shelf with depths ranging from 15 to 70 m
- examples of the communities and seafloor habitats of the NWS Province bioregion as well as the Pilbara (nearshore) and Pilbara (offshore) meso-scale bioregions
- part of a hotspot for sponge biodiversity (area between Dampier and Port Hedland).

Potential impacts on the values of these protected areas are discussed in the relevant sections above for ecological and physical values and below for socio-economic and heritage values. Additionally, such hydrocarbon contact may alter stakeholder understanding and/or perception of the protected marine environment, given the Dampier AMP represents an area largely unaffected by anthropogenic influences and contains biological diverse environments.

Potential impacts may also occur to shoreline habitat values of the Dolphin and Rosemary Island reserves. Potential impacts to shoreline habitats are described above and may result in localised changes to the community structure of shoreline habitats which would be expected to recover in the medium term (two to five years).

Summary of potential impacts to socio-economic values

Fisheries – commercial

In the event of a hydrocarbon spill, there is the possibility that target species in some areas utilised by Commonwealth and State fisheries in offshore and nearshore waters of the Dampier Archipelago that are within the EMBA could be affected. These fisheries are described in Section 4.9 and include aquarium fisheries in the nearshore waters. Targeted fish resources could experience sub-lethal stress, or in some instances, mortality depending on the concentration and duration of hydrocarbon exposure and its inherent toxicity.

Fish exposure to hydrocarbon can result in 'tainting' of their tissues. Even very low levels of hydrocarbons can impart a taint or 'off' flavour or smell in seafood. Tainting is reversible through the process of depuration which removes hydrocarbons from tissues by metabolic processes, although it is dependent upon the magnitude of the hydrocarbon contamination. Fish have a high capacity to metabolise these hydrocarbons while crustaceans (such as prawns) have a reduced ability (Yender *et al*. 2002). Seafood safety is a major concern associated with spill incidents. Therefore, actual or potential contamination of seafood can affect commercial and recreational fishing, and can impact seafood markets long after any actual risk to seafood from a spill has subsided (Yender *et al.* 2002). A vessel collision resulting in a hydrocarbon spill would result in the establishment of a safety 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. Additionally, hydrocarbons can foul fishing equipment such as traps and trawl nets, requiring cleaning or replacement.

Tourism and recreation

In the event of a hydrocarbon spill, the nearshore waters of the Dampier Archipelago could be reached by surface and entrained hydrocarbons. The islands of the Dampier Archipelago provide opportunities for nature-based tourism activities including fishing, diving, snorkelling, boating, wildlife appreciation, island tours, camping and a limited amount of surfing (CALM 2005).

Limited recreational fishing takes place in deeper offshore waters due to the distance from shore. Impacts on species that are recreationally fished are described under 'Summary of potential impacts to other species' above.

In the event of a spill, there could be restricted access to beaches for a period of days to weeks, until natural weathering or tides and currents remove the hydrocarbons. Exclusion of marine nature-based tourist activities may

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occur, resulting in a loss of revenue for operators Tourists and recreational users may also avoid areas due to perceived impacts, including after the hydrocarbon spill has dispersed.

Shipping

In the event of a spill, an exclusion zone may be established around the spill affected area. This could result in exclusion of other users such as shipping vessels or vessels used by the mining and petroleum industries. Any exclusion zone established would be limited to the immediate vicinity of the release point, and due to the rapid weathering of MGO would only be in place for days after release, therefore physical displacement to vessels is unlikely to be a significant impact.

Given hydrocarbon characteristics, expected rapid weathering to below impact thresholds, short duration of displacement, and the offshore location of the Operational Area, unplanned releases of MGO are not expected to interfere with shipping to a greater extent than necessary.

Industry

A change in water quality and change to the functions, interests or activities of other users may impact industry following an unplanned hydrocarbon release. In the event of a vessel collision resulting in a hydrocarbon spill, an exclusion zone may be established around the spill affected area. This could result in exclusion of other users such as vessels used by the mining and petroleum industries.

Defence

A change to the functions, interests or activities of other users may impact Defence following an unplanned hydrocarbon release. In the event of a vessel collision resulting in a hydrocarbon spill, an exclusion zone may be established around the spill affected area. This could impact Defence by restricting areas where training or exercises can be conducted, for a designated period of time.

Any exclusion zone established would be limited to the immediate vicinity of the release point and, due to the rapid weathering of MGO, would only be in place for days after release; therefore, physical displacement to vessels is expected to have a negligible impact.

Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[35]***	***Benefit in risk reduction***	***Proportionality***	***Control adopted***
Legislation, codes and standards				
Vessels to adhere to the navigation safety requirements including the *Navigation Act 2012* (Cth) and any subsequent Marine Orders.	F. Yes. CS: Minimal cost. Standard practice.	The *Navigation Act 2012* (Cth) regulates ship related activities and invokes certain requirements of MARPOL. Vessels (relevant to class) will adhere to requirements.	Benefits outweigh cost/sacrifice. Control is standard practice.	C 1.1
In the event of a spill, emergency response activities implemented in accordance with the OPEP.	F: Yes. CS: Costs associated with implementing response strategies vary dependent on nature and scale of spill event. Standard practice.	Potentially reduces consequence by implementing response to reduce impacts to the marine environment.	Control based on regulatory requirement – must be adopted.	C 8.1
Arrangements supporting the activities in the OPEP will be tested to ensure the OPEP can be implemented as planned.	F: Yes. CS: Minimal cost. Standard practice.	Legislative requirement based on vessel class. Unlikely to have a significant reduction in consequence.	Controls based on legislative requirements – must be adopted.	C 8.2

[35] *Qualitative measure.*

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[35]***	***Benefit in risk reduction***	***Proportionality***	***Control adopted***
Establishment of temporary safety exclusion zones by relevant vessels which are communicated to marine users.	F: Yes. CS: Minimal cost. Standard practice.	Establishment of a temporary safety exclusion zone around vessels reduces the likelihood of interaction with other marine users.	Controls based on legislative requirements – must be adopted.	C 8.3
Good practice				
Have a support vessel on standby during survey activities to communicate with third-party vessels and help maintain a safety exclusion zone.	F: Yes. CS: Additional costs.	Given the legislative controls in place and the duration of the activity, using a support vessel will provide only a small reduction in the likelihood of a collision with a third-party vessel and potentially add further collision risk.	Grossly disproportionate.	No
Develop SIMOPS Plan if more than one Woodside contracted vessel is operating in the Operational Area at any time.	F: Yes. CS: Minimal cost. Standard practice.	SIMOPS Plans between Woodside operated vessels in the Operational Area will reduce the likelihood of a collision occurring.	Benefits outweigh cost/sacrifice.	C 8.4
Australian Hydrographic Office (AHO) will be notified of activities and movements no less than four working weeks prior to commencement of the GPGT Surveys Program.	F: Yes. CS: Minimal cost. Standard practice.	Notifying AHO will enable them to update maritime charts and notify other mariners of survey activities, thereby reducing the likelihood of a collision with a third-party vessel.	Benefits outweigh cost/sacrifice. Control is standard practice and notification was requested during consultation (Appendix F).	C 1.2
Notify AMSA's Response Centre (ARC) of activities and movements.	F: Yes. CS: Minimal cost. Standard practice.	Communicating the GPGT Surveys Program to other marine users ensures they are informed and aware should emergency response be required.	Benefits outweigh cost/sacrifice. Control is standard practice and notification was requested during consultation (Appendix F).	C 1.3
Notify relevant fishing industry representative bodies of activities 10 days prior to the commencement and after completion of activities.	F: Yes. CS: Minimal cost. Standard practice.	Communicating the GPGT Surveys Program to other marine users ensures they are informed and aware should emergency response be required, and also thereby reducing the likelihood of a collision with a third-party vessel.	Benefits outweigh cost/sacrifice. Control is standard practice.	C 1.4

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[35]***	***Benefit in risk reduction***	***Proportionality***	***Control adopted***
Where activities overlap a defence area, the Department of Defence (DoD) will be notified of activities and movements no less than four working weeks prior to commencement of the GPGT Surveys Program.	F: Yes. CS: Minimal cost. Standard practice.	Communication of the GPGT Surveys Program to the DoD ensures they are informed and aware, thereby reducing the likelihood of interference with the DoD.	Benefits outweigh cost/sacrifice.	C 1.5
Apply Woodside Marine Offshore Vessel Assurance Procedure.	F: Yes. CS: Minimal cost. Standard practice.	Assurance activities outlined in procedure will reduce the likelihood of a vessel collision.	Control based on internal company requirements – must be adopted.	C 8.5
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 GPGT Surveys Program. CS: Not considered – control not feasible.	Not considered – control not feasible.	Not considered – control not feasible.	No
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 2.3.4.2) and Woodside's criteria for demonstrating ALARP (Section 2.4.1), Woodside considers the adopted controls appropriate to manage potential risks associated with an unplanned hydrocarbon release from a 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 impact/risk assessment has determined that, given the adopted controls, an unplanned hydrocarbon release from a vessel collision may result in moderate impacts with medium-term effects. On the basis of the assessment outcomes, use of the relevant tools appropriate to the decision type (i.e. Decision Type A; Section 2.3.4.2) and Woodside's criteria for demonstrating acceptability (Section 2.4.2), 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.

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EPOs, EPS and MC			
EPO	***Controls***	***PS***	***MC***
EPO 8 No release of hydrocarbons or chemicals to the marine environment due to a vessel collision associated with the activity.	C 1.1 Refer to Section 6.8.1.	PS 1.1 Refer to Section 6.8.1.	MC 1.1.1 Refer to Section 6.8.1.
	C 8.1 In the event of a spill, emergency response activities implemented in accordance with the OPEP.	PS 8.1 In the event of a spill the OPEP requirements are implemented.	MC 8.1.1 Records of completed incident documentation.
	C 8.2 Arrangements supporting the activities in the OPEP will be tested to ensure the OPEP can be implemented as planned.	PS 8.2 Exercises/tests will be conducted in alignment with the frequency identified in Section 7.12.2.	MC 8.2.1 Testing of arrangement records confirm that emergency response capability has been maintained.
		PS 8.2 Testing of arrangement records confirm that emergency response capability has been maintained.	MC 8.2.2 Emergency management dashboard confirms that minimum level of personnel trained for core OPEP roles are available.
	C 8.3 Establishment of temporary safety exclusion zones by relevant vessels which are communicated to marine users.	PS 8.3 Temporary safety exclusion zone maintained and monitored for incursions around applicable vessels.	MC 8.3.1 Daily Operations Reports and Incident records demonstrate breaches by unauthorised vessels within the safety exclusion zone are recorded.
	C 8.4 SIMOPS Plan will be developed if more than one Woodside contracted vessel is operating in the Operational Area at any one time.	PS 8.4 SIMOPS outline operating procedures when more than one Woodside-contracted vessel is operating in the Operational Area.	MC 8.4.1 SIMOPS Plan developed and in place for circumstances where more than one Woodside vessel is operating in the Operational Area.
	C 1.2 Refer to Section 6.8.1.	PS 1.2 Refer to Section 6.8.1.	MC 1.2.1 Refer to Section 6.8.1.
	C 1.3 Refer to Section 6.8.1.	PS 1.3 Refer to Section 6.8.1.	MC 1.3.1 Refer to Section 6.8.1.
	C 1.4 Refer to Section 6.8.1.	PS 1.4 Refer to Section 6.8.1.	MC 1.4.1 Refer to Section 6.8.1.
	C 1.5 Refer to Section 6.8.1.	PS 1.5 Refer to Section 6.8.1.	MC 1.5.1 Refer to Section 6.8.1.
	C 8.5 Apply Woodside Marine Offshore Vessel Assurance Procedure.	PS 8.5 Woodside Vessel Marine Assurance Process conducted before contracting vessel, to ensure suitability and compliance with procedure requirements and suitable emergency preparedness verification.	MC 8.5.1 Marine assurance records demonstrate compliance.

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6.9.3 Physical presence: interaction with marine fauna

Context		
Vessels – Section 3.9	Protected species – Section 4.6	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 survey vessel and threatened and migratory marine fauna					X		A	E	1	L	LCS GP PJ	Broadly Acceptable	EPO 9
Accidental entanglement of marine fauna in GPGT survey equipment					X		A	E	1	L			

Description of source of risk

The survey vessels operating in and around the Operational Area may present a potential hazard to cetaceans and other protected marine fauna such as whale sharks and marine turtles. 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), or 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. Survey vessels are typically moving at low speeds when conducting geophysical and geotechnical survey activities.

As discussed in Section 3.9.3, a tethered ROV will be required during the GPGT survey. There is potential for threatened and migratory marine fauna to become entangled in the ROV tether when transiting the Operational Area.

Consequence assessment

Environmental value(s) potentially impacted

The likelihood of vessel/marine 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 lethally injuring a large whale due to a vessel strike increases from about 20% at 8.6 knots to 80% at 15 knots. According to the data of Vanderlaan and Taggart (2007), it is estimated that the risk is less than 10% at a speed of four knots. Vessel-whale collisions at this speed are uncommon and, based on reported data contained in the US NOAA database (Jensen and Silber 2004), there are only two known instances of collisions when the vessel was travelling at less than six knots. Both were from whale watching vessels that were deliberately placed among whales.

Survey vessels are likely to be travelling less than five knots in the Operational Area; therefore, the chance of a vessel colliding with protected species and resulting in a lethal outcome is reduced.

The nearest recognised BIAs for cetaceans (considered to be at risk due to relatively slow movement and proportion of time spent at or near the sea surface) are the humpback whale migration BIA and pygmy blue whale distribution BIA which overlap the Operational Area (refer to Section 4.6.3). Adverse interactions between vessels and humpback or pygmy blue whales are considered to be unlikely due to the slow speeds of survey vessels within the Operational Area (mostly less than five knots). However, the likelihood of encountering individuals increases during migration periods (April to July northern migration, October to January southern migration [pygmy blue whales]; June to October northern migration, September to November southern migration [humpback whales]).

Whale sharks are at risk from vessel strikes when feeding at the surface or in shallow waters (where there is limited option to dive). Whale sharks may traverse offshore NWS waters including the Operational Area during their migrations to and from Ningaloo Reef and a BIA for foraging whale sharks overlaps with the Operational Area. However, it is expected that whale shark presence within the Operational Area would not comprise of significant numbers, given there is no main aggregation area within the vicinity of the Operational Area, and their presence would

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be transitory and of a short duration. There are no constraints preventing whale sharks moving away from vessels (e.g. shallow water or shorelines).

With consideration of the absence of potential turtle nesting or foraging habitat (i.e. no emergent islands, reef habitat) but the presence of shallow shoals and the water depth 70 to 130 m, it is considered that the Operational Area is unlikely to represent important habitat for marine turtles other than in the areas around the shallower shoals. It is acknowledged that there are significant nesting sites along the mainland coast and islands of the region and there are four internesting buffer BIAs for turtles which overlap the Operational Area. These are associated with nesting on islands of the Dampier Archipelago for green, flatback, hawksbill and loggerhead turtles. As with cetaceans, the risk of collisions between turtles and vessels increases with vessel speed (Hazel *et al.* 2007). The typical response from turtles on the surface to the presence of vessels is to dive (a potential 'startle' response), which decreases the risk of collisions (Hazel *et al.* 2007). Given the low speeds of vessels undertaking the GPGT Surveys Program, along with the expected low numbers of turtles within the Operational Area, interactions between vessels and turtles are considered to be highly unlikely.

Marine mammals, turtles and fish are at risk of mortality through being caught in thrusters during station-keeping operations (DP). The risk of listed marine species getting caught in operating thrusters is unlikely, given the low presence of individuals, combined with the avoidance behaviour commonly displayed during DP operations. The entanglement of marine fauna within survey equipment has the potential to cause physical injury or mortality.

It is unlikely vessel movement associated with the GPGT Surveys Program will significantly impact marine fauna populations, given the low presence of transiting individuals, expected avoidance behaviour commonly displayed by whales and turtles combined with the low operating speed of the survey vessels (generally less than five 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 anticipated to have no impact on critical habitat or activity supported by BIAs.

Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[36]***	***Benefit in risk reduction***	***Proportionality***	***Control adopted***
Legislation, codes and standards				
EPBC Regulations 2000 – Part 8 Division 8.1 Interacting with cetaceans, including the following measures: • Survey vessels will not travel greater than 6 knots within 300 m of a cetacean or turtle (caution zone) and not approach closer than 100 m from a whale. • Survey vessels will not 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, survey vessels will immediately	F: Yes CS: Minimal cost. Standard practice.	Implementing these controls will reduce the likelihood of an interaction occurring between a cetacean, whale shark or turtle. The consequence of a collision is unchanged.	Controls based on legislative requirements – must be adopted.	C 3.1

[36] *Qualitative measure.*

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[36]***	***Benefit in risk reduction***	***Proportionality***	***Control adopted***
withdraw from the caution zone at a constant speed of less than 6 knots. • Survey vessels will not travel greater than 8 knots within 250 m of a whale shark and not allow the vessel to approach closer than 30 m of a whale shark.				
Good practice				
Vary the timing of the GPGT Surveys Program to avoid whale migration and turtle breeding periods.	F: No. Timing of activities is linked to project schedule. Timing of all activities is currently not determined, and due to vessel availability and operational requirements, undertaking 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 were identified.				
Professional judgement – Substitute				
No additional controls were identified.				
Professional judgement – Engineered solution				
The use of dedicated MFOs on the survey vessel for the duration of each activity to watch for whales and provide direction on and monitor compliance with Part 8 of the EPBC Regulations.	F: Yes, however vessel crews already maintain a constant watch during operations CS: Additional cost of MFOs beyond that required during surveys considered unnecessary.	Not considered – control not feasible.	Disproportionate – cost/sacrifice outweighs benefit to be 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 2.3.4.2) and Woodside's criteria for demonstrating ALARP (Section 2.4.1), Woodside considers the adopted controls appropriate to manage potential risks associated with vessel interaction 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.				

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Demonstration of acceptability
Acceptability statement: The impact/risk assessment has determined that, given the adopted controls, vessel interaction with marine fauna may result in slight, temporary disruption to a small proportion of the population, and no impact on critical habitat or activity. On the basis of the assessment outcomes, use of the relevant tools appropriate to the decision type (i.e. Decision Type A; Section 2.3.4.2) and Woodside's criteria for demonstrating acceptability (Section 2.4.2), 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 9 No injury of, or mortality to, *EPBC Act 1999* (Cth) and *Biodiversity Conservation Act 2016* (WA) listed marine fauna as a result of the GPGT Surveys Program.	C 3.1 Refer Section 6.8.3.	PS 3.1 Refer Section 6.8.3.	MC 3.1.1 Refer Section 6.8.3.

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6.9.4 Physical presence: disturbance to seabed from dropped objects and equipment loss

Context		
Geophysical surveys – Section 3.6 Geotechnical surveys – Section 3.7 Vessels – Section 3.9	Habitats and biological communities – Section 4.5	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 significant geophysical or geotechnical equipment				X			A	F	2	L	LCS GP	Broadly Acceptable	EPO 10
Dropped objects resulting in seabed disturbance				X			A	F	2	L			

Description of source of risk

While undertaking the activity, towed or submersible equipment may become detached and lost to the seabed, resulting in disturbance or damage to benthic habitat on the seabed.

In addition, there is the potential for objects to be dropped overboard from the survey vessels to the marine environment. Objects and equipment that have been dropped during previous offshore projects (primarily windblown or dropped overboard) include small numbers of personnel protective gear (e.g. glasses, gloves, hard hats), small tools (e.g. spanners), a metal pole, hardware fixtures. These have occurred during periods of adverse weather and incorrect storage.

The spatial extent in which dropped objects can occur is restricted to the Operational Area.

Consequence assessment

Environmental value(s) potentially impacted

In the unlikely event of loss of equipment or dropped objects to the marine environment, potential environmental effects are anticipated to include localised physical impacts on benthic habitats and possible heritage features on the Ancient Landscape. As a result of recovering any dropped objects, impacts to benthic habitats will be temporary in nature. However, if the object cannot be recovered due to health and safety, operational constraints, or other factors, then the impact may be longer term or permanent. Impacts to heritage features may be temporary or permanent depending on the nature of the associated values. The areas potentially impacted will depend on the scenario, with equipment loss likely to impact a greater area compared to dropped objects.

The temporary or permanent loss of dropped objects into the marine environment is not likely to have a significant environmental impact on benthic habitats, as the benthic habitats associated with the sand/silt habitats comprising most of the Operational Area are of low sensitivity and are broadly represented throughout the broader region (Section 4.5). Although there are areas of higher sensitivity associated with shoals within the Glomar Shoals KEF, survey activities are not planned over the shoals and therefore dropped objects on shoal habitat is not credible. Given the types, size, and frequency of dropped objects that could occur, it is unlikely that a dropped object would have a significant impact on the marine environment. Any unplanned seabed disturbance within a KEF would be minor and relatively small compared to the size of the KEF. There is not expected to be any substantial adverse effects on communities within the KEFs.

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[37]***	***Benefit in risk reduction***	***Proportionality***	***Control adopted***
Legislation, codes and standards				
Vessels to adhere to the navigation safety requirements and any subsequent Marine Orders: • Marine Order 21 (Safety and emergency arrangements) • Marine Order 27 (Safety of navigation and radio equipment) • Marine Order 30 (Prevention of collisions).	F: Yes. CS: Minimal cost. Standard practice.	Legislative requirements to be followed reduce the likelihood of Collison with other marine users which could incur dropped objects overboard.	Controls based on legislative requirements – must be adopted.	C 1.1
Good practice				
Apply safe work procedures to prevent dropped objects from survey vessel and during deployment and retrieval of geophysical/ geotechnical equipment.	F: Yes. CS: Minimal cost. Standard practice.	By following these procedures, the likelihood of a dropped object event is reduced. No change in consequence will occur.	Benefits outweigh cost/sacrifice.	C 10.1
Recover dropped objects and geophysical/ geotechnical equipment and relocate where safe and practicable to do so.	F: May not always be possible. Assessed case by case. CS: Potentially significant cost. Standard practice.	Occurs after a dropped object event; therefore, no change to the likelihood. Since the object may be recovered, a reduction in consequence is possible.	Benefits outweigh cost/sacrifice.	C 10.2
Include in vessel inductions the training and control measures for crew in dropped object prevention.	F: Yes. CS: Minimal cost. Standard practice.	By following these procedures, the likelihood of a dropped object event is reduced. No change in consequence will occur.	Benefits outweigh cost/sacrifice.	C 10.3
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.				

[37] *Qualitative measure.*

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[37]***	***Benefit in 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 2.3.4.2) and Woodside's criteria for demonstrating ALARP (Section 2.4.1), Woodside considers the adopted controls appropriate to manage potential risks associated with seabed disturbance from dropped objects and/or equipment loss. 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/risk assessment has determined that, given the adopted controls, seabed disturbance from dropped objects and/or equipment loss may result in a temporary disruption to a small area of the seabed, which would comprise a small proportion of the benthic population with no lasting effect and no impact on critical habitat or activity. On the basis of the assessment outcomes, use of the relevant tools appropriate to the decision type (i.e. Decision Type A; Section 2.3.4.2) and Woodside's criteria for demonstrating acceptability (Section 2.4.2), 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 10 Seabed disturbance to be limited to planned activities and impacts described as part of the GPGT Surveys Program and will not occur outside the Operational Area.	C 1.1 Refer to Section 6.8.1.	PS 1.1 Refer to Section 6.8.1.	MC 1.1.1 Refer to Section 6.8.1.
	C 10.1 Safe work procedures to prevent dropped objects from survey vessel and during deployment and retrieval of geophysical/ geotechnical equipment.	PS 10.1.1 Operational procedures will be in-place on board the vessel for deployment and retrieval of geophysical and geotechnical equipment.	MC 10.1.1 Project Execution Plan confirms Safe Work procedures for deployment and retrieval of survey equipment are in place.
		PS 10.1.2 Geotechnical design packs will be provided by the Contractor to demonstrate that geotechnical equipment rigging and supporting structures do not become overloaded during any phase of the geotechnical equipment deployment or recovery operations.	MC 10.1.2 Geotechnical design pack is completed prior to geotechnical survey mobilisation.

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EPOs, EPS and MC			
EPO	***Controls***	***PS***	***MC***
	C 10.2 Reasonable attempts made to recover dropped objects and geophysical/ geotechnical equipment lost overboard.	PS 10.2 Any dropped objects and/or geophysical/ geotechnical equipment lost to the marine environment will be recovered where safe and practicable to do so. Where safe and practicable for this activity, consider: • risk to personnel to retrieve object • whether the location of the object is in recoverable water depths • the object's proximity to subsea infrastructure • ability to recover the object (i.e. nature of object, lifting equipment or ROV availability, and suitable weather).	MC 10.2.1 Incident reports detail the recovery attempt consideration and status of any dropped objects and/or geophysical/geotechnical equipment lost to the marine environment.
	C 10.3 Vessel inductions include control measures and training for crew in dropped object prevention.	PS 10.3 Crew training/inductions, and job safety analyses where relevant, will include a component on preventing dropped objects to increase awareness of requirements.	MC 10.3.1 Records show training to minimise the potential for dropped objects is provided to the survey vessel(s) crew.

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6.9.5 Physical presence: interaction with live infrastructure

Context		
Geophysical surveys – Section 3.6 Geotechnical surveys – Section 3.7 Vessels – Section 3.9	Socio-economic environment – Section 4.9	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
Interaction with live infrastructure from dropped objects						X	A	E	1	L	LCS GP	Broadly Acceptable	EPO 17

Description of source of risk

As detailed in Section 4.9.6, the Operational Area overlaps the operational area associated with operating Woodside's North Rankin Complex and the Angel field. During GPGT Surveys Program there is potential for the vessels to be operating over and/or near the live infrastructure.

Dropped objects

There is the potential for objects to be dropped overboard from the survey 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). However, there is potential for larger equipment to be dropped during the activity depending on the nature of survey activities within the Operational Area. The spatial extent in which dropped objects can occur is restricted to the Operational Area.

Consequence assessment

Environmental value(s) potentially impacted

Interactions with other marine users

In the unlikely event of an object being dropped on live infrastructure there is potential impacts to the infrastructure.

Within the Operational Area, there is infrastructure associated with the North Rankin Complex and the Angel Field owned by Woodside.

If interactions with live infrastructure were to occur, Woodside would notify the relevant operations team in accordance with the SIMOPS Plan. This would trigger responses from the operator to assess and respond to any damage caused in accordance with the relevant operations EP for the live infrastructure. Under Regulation 56 of the Environment Regulations, a Titleholder may refer NOPSEMA to information previously given to NOPSEMA for another purpose under the OPGGS Act, the Environment Regulations or any other regulations made under the Act, to comply with a requirement on the Titleholder under the Environment Regulations to give NOPSEMA information or include information in a document. In accordance with Regulation 56, NOPSEMA is referred to the relevant operations EP submitted by Woodside, and accepted by NOPSEMA, for the detail of the assessment and response in such a scenario. Potential impacts therefore include time and costs associated with inspecting the infrastructure and time and costs associated with any associated repair, which are expected to be slight and short-term in nature.

Potential subsequent loss of containment

In the unlikely event of an object being dropped on live infrastructure, and in the further unlikely event of a severe interaction with the infrastructure, there is a possibility that live infrastructure could be ruptured releasing hydrocarbons into the marine environment in such a scenario. In accordance with Regulation 56, NOPSEMA is referred to the relevant operations EPs submitted by Woodside for the operation of the live infrastructure associated

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with the field production system, and accepted by NOPSEMA, for the detail of potential impacts, receptors and the extent of the EMBA in such a scenario, being:

- Angel Facility Operations EP (NOPSEMA Doc A1090786, https://docs.nopsema.gov.au/A1090786)
- North Rankin Complex Facility Operations EP (NOPSEMA Doc A696401, https://docs.nopsema.gov.au/A696401).

As detailed in this section above and below, this EP addresses the risks and impacts (interaction with live infrastructure) that arise from the activities under this EP (interaction from dropped objects). This EP also contains controls to prevent such an event from occurring that are within the operational control of this EP. As detailed in this section, the operational control, maintenance and incident response associated with the live infrastructure and/or loss of containment from the live infrastructure is not within the operational control of this EP. As detailed below, the risks and impacts of the activities under this EP are managed to ALARP and an acceptable level by implementing the SIMOPS Plan and notifying the relevant operators in the instance of an interaction with live infrastructure, to allow the relevant operator's detailed response strategies under the relevant operations EPs to be triggered, if required. In the event of a loss of containment caused by an interaction with live infrastructure, Woodside will follow direction from the relevant operations team and will respond as per the relevant requirements. In accordance with Regulation 56, NOPSEMA is referred to the relevant operations EP submitted by Woodside for the live infrastructure associated with the North Rankin Complex and the Angel Field, and accepted by NOPSEMA, for the detail of the operational control, maintenance and incident response associated with the live infrastructure and/or loss of containment from the live infrastructure.

Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[38]***	***Benefit in risk reduction***	***Proportionality***	***Control adopted***
Legislation, codes and standards				
No additional controls were identified.				
Good practice				
Apply safe work procedures to prevent dropped objects from survey vessel and during deployment and retrieval of geophysical/ geotechnical equipment.	F: Yes. CS: Minimal cost. Standard practice.	By following these procedures, the likelihood of a dropped object event is reduced. No change in consequence will occur.	Benefits outweigh cost/sacrifice.	C 10.1
Include in vessel inductions the training and control measures for crew in dropped object prevention.	F: Yes. CS: Minimal cost. Standard practice.	By following these procedures, the likelihood of a dropped object event is reduced. No change in consequence will occur.	Benefits outweigh cost/sacrifice.	C 10.3
Professional judgement – Eliminate				
No additional controls were identified.				
Professional judgement – Substitute				
No additional controls were identified.				
Professional judgement – Engineered solution				
SIMOPS Plan in place when working in the vicinity of other facilities, vessels or live infrastructure.	F: Yes. CS: Minimum cost. Standard practice.	Reduces the likelihood of failure resulting in dropped objects.	Benefits outweigh cost/sacrifice.	C 17.1

[38] *Qualitative measure.*

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[38]***	***Benefit in risk reduction***	***Proportionality***	***Control adopted***
SIMOPS Plan will contain information on: • minimum separation distances • communications • exclusion zone entry and exit processes • ROV operations • key roles, responsibilities and emergency contacts • PTW arrangements • incident reporting and investigation • management of change.				
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 2.3.4.2) and Woodside's criteria for demonstrating ALARP (Section 2.4.1), Woodside considers the adopted controls appropriate to manage potential risks associated with a dropped object interacting with live infrastructure. 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/risk assessment has determined that, given the adopted controls, a dropped object interacting with live infrastructure may result in slight, short-term local impact (less than on year) on species, 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 2.3.4.2) and Woodside's criteria for demonstrating acceptability (Section 2.4.2), 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 hydrocarbons to the marine environment from subsea infrastructure during the GPGT Surveys Program.	C 10.1 Refer to Section 6.9.4.	PS 10.1.1 Refer to Section 6.9.4.	MC 10.1.1 Refer to Section 6.9.4.
		PS 10.1.2 Refer to Section 6.9.4.	MC 10.1.2 Refer to Section 6.9.4.
	C 10.3 Refer to Section 6.9.4.	PS 10.3 Refer to Section 6.9.4	MC 10.3.1 Refer to Section 6.9.4.
	C 17.1 SIMOPS Plan in place when working in the vicinity	PS 17.1 Applicable vessel compliant with SIMOPS Plan.	MC 17.1 Current and approved SIMOPS Plan in place.

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EPOs, EPS and MC			
EPO	***Controls***	***PS***	***MC***
	of other facilities, vessels or live infrastructure. SIMOPS Plan will contain information on: • minimum separation distances • communications • exclusion zone entry and exit processes • ROV operations • key roles, responsibilities and emergency contacts • PTW arrangements • incident reporting and investigation • management of change.		

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6.9.6 Unplanned discharges: loss of solid hazardous and non-hazardous wastes

Context		
Vessels – Section 3.9	Physical environment – Section 4.4 Habitats and biological communities – Section 4.5	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 solid wastes to the marine environment		X		X	X		A	E	1	L	LCS GP	Broadly Acceptable	EPO 11

Description of source of risk

The survey vessels will generate a variety of solid hazardous and non-hazardous 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. Woodside has not reported any significant loss of solid wastes to the marine environment during the past 12 months of geophysical and/or geotechnical operations.

Marine debris has been identified as a threat to humpback whales, marine turtles, whale sharks and sawfish (TSSC 2015, Commonwealth of Australia 2017, Commonwealth of Australia 2015c, DoEH 2005).

Consequence assessment

Environmental value(s) potentially impacted

The potential impacts of solid wastes accidentally discharged to the marine environment include direct pollution and contamination of the environment. Secondary impacts relate 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 types, size and frequency of wastes that could occur and species present.

Demonstration of ALARP

Control considered	*Control feasibility (F) and cost/sacrifice (CS)*[39]	*Benefit in risk reduction*	*Proportionality*	*Control adopted*
Legislation, codes and standards				
Apply Marine Order 95 – Marine pollution prevention – garbage (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.	C 7.1

[39] *Qualitative measure.*

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[39]***	***Benefit in risk reduction***	***Proportionality***	***Control adopted***
Good practice				
Apply a Vessel Waste Management Plan.	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.	C 11.1
Make reasonable attempts to recover solid wastes lost overboard.	F: Yes. CS: Minimal cost. Standard practice.	Occurs after an unplanned release of solid waste and therefore no change to the likelihood. Since the waste objects may be recovered, a reduction in consequence is possible.	Benefits outweigh cost/sacrifice.	C 11.2
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 2.3.4.2) and Woodside's criteria for demonstrating ALARP (Section 2.4.1), Woodside considers the adopted controls appropriate to manage potential risks associated with accidental discharge of solid waste. 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/risk assessment has determined that, given the adopted controls, accidental discharge of solid waste may result in slight, a short-term (<1 year) localised impact in species, 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 2.3.4.2) and Woodside's criteria for demonstrating acceptability (Section 2.4.2), 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.

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EPOs, EPS and MC			
EPO	***Controls***	***PS***	***MC***
EPO 11 No releases of solid hazardous or non-hazardous waste to the marine environment.	C 7.1 Refer to Section 6.8.7.	PS 7.1 Refer to Section 6.8.7.	MC 7.1.1 Refer to Section 6.8.7.
	C 11.1 The Vessel Waste Management Plan includes requirements for waste to ensure no waste is lost to the marine environment, including: • Records shall be maintained of all waste to be disposed, treated, or recycled. They shall include quantity and type of waste, and disposal/recycle location. • Waste streams shall be handled and managed according to their hazard and recyclability class. • All waste storage facilities in good working order and designed in such a way as to prevent or contain any discharges. • All hazardous wastes will be segregated prior to onshore disposal.	PS 11.1 Hazardous and non-hazardous waste will be managed in accordance with the Vessel Waste Management Plan.	MC 11.1.1 Environment inspection records demonstrate compliance against Vessel Waste Management Plan.
	C 11.2 Make reasonable attempts to recover solid hazardous wastes lost overboard.	PS 11.2 Material environmentally hazardous, non-hazardous solid waste dropped to the marine environment will be recovered where safe and practicable to do so, considering: • 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 (i.e. nature of object, lifting equipment, ROV availability and suitable weather).	MC 11.2.1 Records detail the recovery attempt consideration and status of material environmentally hazardous or nonhazardous solid waste lost to the marine environment.

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6.9.7 Unplanned discharges: deck and subsea spills from geotechnical and geophysical equipment

Context		
Geophysical surveys – Section 3.6 Geotechnical surveys – Section 3.7	Physical environment – Section 4.4 Habitats and biological communities – Section 4.5	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 to the ocean of other hydrocarbons/chemicals/ geotechnical drilling fluids from survey vessel deck activities and equipment (e.g. cranes)	X	X			X		A	E	1	L	LCS GP PJ	Broadly Acceptable	EPO 8
Subsea release of hydraulic fluid from geotechnical and geophysical survey equipment	X	X			X		A	E	1	L			

Description of source of risk

Vessels

Survey vessels will need to store small quantities of lubricating oils and hydraulic fluid on the vessel, which have the potential to spill if not appropriately managed. Hydraulic fluid may also potentially be spilled from a leak in hoses or lines on hydraulic equipment such as cranes or winches. Deck spills can result from spills from stored hydrocarbons/chemicals (including those used during geotechnical activities for borehole drilling) or equipment. Due to the short duration of surveys, significant chemical/ fluid storage volumes are not anticipated. 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).

Woodside's operational experience demonstrates that spills are most likely to originate from hydraulic hoses and have previously been less than 100 L, with an average volume <10 L.

Geotechnical survey equipment

Survey vessels will place equipment on the seabed which may contain relatively small volumes, about 5 L to 10 L, depending on the system, of hydraulic fluid. The hydraulic fluid enables various mechanical functions to be performed.

Some of the equipment requiring the supply of hydraulic fluid includes sources such as PCPT. PCPT involves pushing a penetrometer (probe) into the seabed at a constant rate of penetration to continuously measure the resistance, friction, and water pressure. There is the potential for hoses and seals associated with these systems to fail (i.e. hoses burst or crack) during operation, or leaks as a result of shifts in temperature or pressure can result in small volumes of hydraulic fluid being released to the marine environment. Geotechnical equipment is not designed to intentionally release hydraulic fluid in geotechnical operations. If equipment fails, there is the potential for less than 10 L to be released from the hydraulic source.

Towed equipment

If a chirp, boomer or sparker is used, the receiver will consist of individual hydrophone elements located within neutrally buoyant, synthetic hydrocarbon-filled tubing. They typically contain approximately eight to 12 hydrophone elements evenly spaced in approximately 100 m long, 25 mm diameter tubes. The cable will hold about 5 L of hydrophone fluid. The hydrophone cable has the potential to be punctured, resulting a leakage of fluid for a variety of reasons, including damage during deployment or retrieval.

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Consequence
Environmental value(s) potentially impacted
Accidental spills of hydrocarbons or chemicals from the vessels and geotechnical and geophysical survey equipment will decrease the water quality in the immediate area of the spill. However, the impacts are expected to be temporary and very localised as only small volumes of hydrocarbons or chemicals are likely to be used which are expected to rapidly disperse and dilute in the marine environment. Receptors such as marine fauna may be affected if they come in direct contact with a release (i.e. by traversing the immediate spill area). If marine fauna come into contact with a release, they could suffer fouling, ingestion, inhalation of toxic vapours, irritation of sensitive membranes in the eyes, mouth, digestive and respiratory tracts, and organ or neurological damage. Cetaceans may exhibit avoidance behaviour patterns and, given they are smooth skinned, hydrocarbons and other chemicals are not expected to adhere. Given the small area of the potential spill and the dilution and weathering of any spill, the likelihood of ecological impacts to marine fauna (protected species), other communities and habitats is likely to be slight. No impacts on socio-economic receptors are expected, due to the small volumes of hydrocarbons/chemicals that could be accidentally spilled and the localised and temporary nature of the impacts.

Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[40]***	***Benefit in risk reduction***	***Proportionality***	***Control adopted***
Legislation, codes and standards				
Implement Woodside's Chemical Selection and Assessment Environment Guideline, or equivalent.	F: Yes. CS: Minimal cost. Standard practice. Where Gold/Silver/E/D OCNS rating (and no OCNS substitution or product warning), chemicals are selected, no further control required. If chemicals with a different OCNS rating, sub warning or non-OCNS rated chemicals are required chemicals will be assessed in accordance with the guideline prior to use.	Selection and assessment of chemicals in accordance with the Woodside process, reduces environmental impacts associated with planned chemical discharge.	Benefits outweigh cost/sacrifice.	C 2.2
Apply Marine Order 91 (Marine pollution prevention – oil).	F: Yes. CS: Minimal cost. Standard practice.	Legislative requirements to be followed reduce the likelihood of an unplanned release including vessel maintenance requirements. The consequence is unchanged.	Controls based on legislative requirements – must be adopted.	C 7.3
In the event of a spill, emergency response activities implemented	F: Yes CS: Minimal cost. Standard practice.	Potentially reduces consequence by implementing response to reduce impacts to	Controls based on legislative requirements – must be adopted.	C 8.1

[40] *Qualitative measure.*

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[40]***	***Benefit in risk reduction***	***Proportionality***	***Control adopted***
in accordance with the OPEP.		the marine environment.		
Chemicals will be stored safely to prevent the release to the marine environment.	F: Yes. CS: Minimal cost. Standard practice.	Implementing procedures for chemical storage and handling on the vessels will reduce the consequence of impacts resulting from discharges to the marine environment by ensuring chemicals have been assessed for environmental acceptability.	Controls based on legislative requirements – must be adopted.	C 12.1
Good practice				
Deck bunding and spill response kits.	F: Yes. CS: Minimal cost. Standard practice	Use of deck bunding and spill kits will reduce the likelihood and volume of deck spills of hazardous liquids from entering the marine environment.	Benefits outweigh cost/sacrifice.	C 12.2
Professional judgement – Eliminate				
No additional controls were identified.				
Professional judgement – Substitute				
No additional controls were identified.				
Professional judgement – Engineered solution				
Store all hydrocarbons and chemicals below-deck.	F: No. During operations, small volumes must be kept near activities and within equipment requiring hydrocarbons and chemicals and can result in an 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
Reduce the volumes of chemicals and hydrocarbons stored onboard the vessel.	F: Yes. 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	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

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[40]***	***Benefit in risk reduction***	***Proportionality***	***Control adopted***
	from a supply vessel to survey vessel.			
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 2.3.4.2) and Woodside's criteria for demonstrating ALARP (Section 2.4.1), Woodside considers the adopted controls appropriate to manage potential risks associated with an unplanned minor discharge of hydrocarbons as a result of minor deck and subsea spills. 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/risk assessment has determined that, given the adopted controls, an unplanned minor discharge of hydrocarbons as a result of minor deck and subsea spills may result in localised, slight temporary disruption to a small proportion of the population, and no impact on critical habitat or activity. On the basis of the assessment outcomes, use of the relevant tools appropriate to the decision type (i.e. Decision Type A; Section 2.3.4.2) and Woodside's criteria for demonstrating acceptability (Section 2.4.2), 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 8 No release of hydrocarbons or chemicals to the marine environment during the GPGT Surveys Program.	C 2.2 Refer to Section 6.8.2.	PS 2.2 Refer to Section 6.8.2.	MC 2.2.1 Refer to Section 6.8.2.
	C 7.3 Refer to Section 6.8.7.	PS 7.3 Refer to Section 6.8.7.	MC 7.3.1 Refer to Section 6.8.7.
	C 8.1 Refer to Section 6.9.2.	PS 8.1 Refer to Section 6.9.2.	MC 8.1.1 Refer to Section 6.9.2.
	C 12.1 Chemicals will be stored safely to prevent the release to the marine environment.	PS 12.1 Liquid chemical and fuel storage areas are bunded or secondarily contained when they are not being handled/moved temporarily.	MC 12.1.1 Environment inspection records confirm all liquid chemicals and fuel are stored in bunded/ secondarily contained areas when not being handled/moved temporarily.
	C 12.2 Deck bunding and spill response kits on board vessels.	PS 12.2 Spill response bins/kits are maintained and located in close proximity to hydrocarbon storage areas and vessel deck equipment for use to contain and recover deck spills.	MC 12.2.1 Environment inspection records demonstrate spill response bins/kits are appropriately located and stocked, and regularly maintained.

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6.9.8 Physical presence: introduction of invasive marine species

Context		
Vessels – Section 3.9	Physical environment – Section 4.4 Habitats and biological communities – Section 4.5	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
Invasive species in vessel ballast tanks or on vessels/submersible equipment				X	X	X	A	E	0	L	LCS GP	Broadly Acceptable	EPO 13

Description of source of risk

Vessel operations

During the GPGT Surveys Program, vessels will be transiting to and from the Operational Area, which may include traffic mobilising from beyond Australian waters.

All vessels are subject to some level of marine fouling. Organisms attach to the vessel hull, particularly 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 and sea chests). Commercial vessels typically maintain anti-fouling coatings to reduce the build-up of fouling organisms.

Organisms can also be drawn into ballast tanks during onboarding of ballast water as cargo is loaded or to balance vessels under load.

Submersible equipment

The geophysical and geotechnical survey equipment will also be transported to and used within the Operational Area. As there is the potential for the equipment to be used on other projects before being used on this activity, there is the potential for invasive marine species (IMS) translocation.

During the GPGT Surveys Program, survey vessels and submersible equipment have the potential to introduce IMS to the Operational Area through biofouling and ballast water exchange (as described above).

Consequence assessment

Environmental value(s) potentially impacted

Non-indigenous marine species have been introduced into a region beyond their natural biogeographic range and have the ability to survive, reproduce and establish founder populations. Not all non-indigenous marine species introduced into an area will thrive or cause demonstrable impacts. Indeed, the majority of non-indigenous marine species around the world are relatively benign and few have spread widely beyond sheltered ports and harbours. Only a subset of non-indigenous marine species that become abundant and impact on social/cultural, human health, economic and/or environmental values can be considered IMS.

Potential IMS have historically been introduced and translocated around Australia by various natural and human means including biofouling 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.

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

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food, space or light and can also interbreed with local species, creating hybrids so 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.

Survey vessels and submersible equipment have the potential to introduce IMS into the Operational Area. Due to the shallow water depths in some areas, settlement and establishment of IMS is credible, albeit remote, given control measures in place.

Summary of potential impacts to environmental values

In support of Woodside's assessment of the impacts and risks of IMS introduction associated with the GPGT Surveys Program, risk and impact evaluations of the different aspects of marine pest translocation associated with the activity are undertaken. The results of this assessment are presented in Table 6-18. As a result of this assessment, Woodside has presented the highest potential consequence as a E (Slight) and likelihood as Remote (0), resulting in an overall Low risk following the implementation of identified controls.

Table 6-18: Credibility, consequence and likelihood of introducing invasive marine species

IMS Introduction Location	*Credibility of Introduction*	*Consequence of Introduction*	*Likelihood*
Introduced to Operational Area/transfer of IMS from infected vessel or submersible equipment to Operational Area and establishment on the seafloor or subsea structures.	**Credible** There is the potential for IMS to be transferred to the shallow shoal areas in the Operational Area.	**Environment – not credible** The translocation of IMS from a colonised survey vessel or submersible equipment to shallower environments via natural dispersion is not considered credible given the vessels are not expected to directly interact with the shoals within the Operational Area and distances of the Operational Area to shallow nearshore environments is greater than 12 NM (~35 km). There is therefore no credible environmental risk, and the assessment is limited to Woodside's reputation. **Reputation – E** If IMS were to establish on a survey vessel this could potentially impact the vessel operationally through the fouling of intakes, result in translocation of an IMS into the Operational Area and, depending on the species, potentially transfer of an IMS to other survey vessels, which would likely result in the quarantine of the vessel until eradication could occur (through cleaning and treatment of infected	**Remote (0)** Spread of marine pests via ballast water or spawning in these open ocean environments is also considered remote. Survey vessels and submersible equipment are not planned to directly interact with shoals within the Operational Area.
Introduced to Operational Area from infected vessel or submersible equipment and establishment on a survey vessel.	**Credible** There is potential for the transfer of marine pests between survey vessels or from submersible equipment within the Operational Area.		**Remote (0)** Spread of marine pests via ballast water or spawning in these open ocean environments is also considered remote.

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		areas), which would be costly to perform. Such introduction would be expected to have slight impact to Woodside's reputation, particularly with Woodside's contractors, and would likely have a reputational impact on future proposals.	
Transfer between survey vessels and from survey vessels to other marine environments beyond the Operational Area	**Not credible** This risk is considered so remote that it is not credible for the purposes of the assessment. The transfer of a marine pest between survey vessels is considered remote, given the offshore open ocean environment (i.e. transfer pathway discussed above). For a marine pest to then establish a mature spawning population on the new survey vessel (which would have been through Woodside's IMS process) and then transfer to another environment is not considered credible. The Operational Area where the vessels will operate are located offshore in an oceanic environment, which is uncongenial to the long-term survival of IMS. In the event of a vessel to vessel transfer (considered remote), the marine pest would need to become established on a new vessel with good hygiene (i.e. passed Woodside's vessel IMS risk assessment), survive the transport beyond the Operational Area, transfer and become established again elsewhere. This scenario is not considered to be credible.		

Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[41]***	***Benefit in risk reduction***	***Proportionality***	***Control adopted***
Legislation, codes and standards				
All vessels will exchange or treat ballast water using an approved ballast water treatment system, as specified in the Australian Ballast Water Management Requirements.	F: Yes. CS: Minimal cost. Standard practice.	Using an approved ballast water treatment system will reduce the likelihood of transferring marine pests between vessels within the Operational Area. No change in consequence would occur.	Controls based on legislative requirements under the *Biosecurity Act 2015* (Cth) – must be adopted.	C 13.1
Internationally sourced survey vessels will manage their biosecurity risk associated with biofouling as specified in the Australian Biofouling Management Requirements.	F: Yes. CS: Minimal cost. Standard practice.	Reduces the likelihood of transfer of marine pests between vessels within the Operational Area. No change in consequence would occur.	Controls based on legislative requirements under the *Biosecurity Act 2015* (Cth) – must be adopted.	C 13.2
Good practice				
Apply Woodside's IMS risk assessment	F: Yes.	The IMS risk assessment process will identify potential	Benefits outweigh cost/sacrifice.	C 13.3

[41] *Qualitative measure.*

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[41]***	***Benefit in risk reduction***	***Proportionality***	***Control adopted***
process[42] to survey vessels and relevant immersible survey equipment which enter the Operational Area. Based on the objectives of each IMS risk assessment, implement management measures commensurate with the risk (such as treating internal systems, inspecting for IMS or cleaning) to minimise the likelihood of IMS being introduced.	CS: Minimal cost. Standard practice.	risks and additional controls implemented accordingly. In doing so, the likelihood of transferring marine pests between vessels or from immersible survey equipment within the Operational Area is reduced. No change in consequence would occur.		
Professional judgement – Eliminate				
No discharge of ballast water during the GPGT Surveys Program.	F: No. Ballast water discharges are critical for maintaining vessel stability. Given the nature of the GPGT Surveys Program, the use of ballast (including the potential discharge of ballast water) is considered 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 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

[42] *The correct management of IMS requires careful consideration of multiple complex factors. These range from an understanding of the vectors through which IMS can be introduced and spread, the maintenance and operational history of vessels and rigs proposed to be used, climatic conditions, existing baseline data of past and proposed transit and Operational Area and consideration of different regulatory frameworks.*

Woodside's approach simplifies the management of IMS into a standardised toolkit that includes an IMS management plan, lists of 'species of concern', risk assessment score sheets, inspection procedures and a Contractor Information Pack to ensure the risk is managed in a simple and efficient manner. Woodside's risk-based process also delivers continued value to Woodside by reducing the risk of project delays and increased operational costs, whilst delivering excellent marine biosecurity and environmental objectives.

Woodside's approach has been validated through a proactive program that engaged relative persons during development of the methodology. This included Woodside personnel, scientific input and review by experienced external IMS consultants, recognised industry experts and liaison with regulatory agencies and vessel contractors. The result is a fit-for-purpose biofouling management process that is now embedded within Woodside's marine systems, procedures and contractual requirements.

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[41]***	***Benefit in risk reduction***	***Proportionality***	***Control adopted***
Professional judgement – Substitute				
Source survey vessels based in Australia only.	F: Potentially. Limiting activities to only use local survey vessels could potentially pose a significant risk in terms of time to source a vessel, and the ability of the local vessels to perform the required tasks. While the project will attempt to source survey 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 own vessels will increase cost due to completion. CS: Significant cost and schedule impacts due to restrictions of vessel hire opportunities.	Sourcing vessels from within Australia will reduce the likelihood of introducing IMS from outside Australian waters. However, it does not reduce the likelihood of introducing species native to Australia but alien to the Operational Area and NWMR, or of IMS that have established elsewhere in Australia. The consequence is unchanged.	Disproportionate – cost/sacrifice outweighs benefit to be gained. Sourcing survey vessels from Australian waters may reduce the likelihood of introducing IMS to the Operational Area; however, the potential cost of implementing this control is grossly disproportionate to the minor environmental gain (or reducing an already remote likelihood of introducing IMS) potentially achieved by using only Australian based vessels. Consequently, this risk is considered not reasonably practicable.	No
Inspect all vessels for IMS.	F: Yes. Approach to inspect vessels could be feasible. CS: Significant cost and schedule impacts. In addition, Woodside's IMS risk assessment process is seen to be more cost effective as this control allows Woodside to manage the introduction of marine pests through biofouling, while targeting its efforts and resources to areas of greatest concern.	Inspecting all vessels for IMS would reduce the likelihood of IMS being introduced to the Operational Area. However, this reduction is unlikely to be significant, given the other control measures implemented. No change in consequence would occur.	Disproportionate – cost/sacrifice outweighs benefit to be gained.	No
Professional judgement – Engineered solution				
No additional controls were identified.				

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[41]***	***Benefit in 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 2.3.4.2) and Woodside's criteria for demonstrating ALARP (Section 2.4.1), Woodside considers the adopted controls appropriate to manage potential risks associated with IMS introduction and establishment. 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/risk assessment has determined that, given the adopted controls, IMS introduction and establishment may result in slight, short-term impacts (<1 year) on marine communities within the Operational Area. On the basis of the assessment outcomes, use of the relevant tools appropriate to the decision type (i.e. Decision Type A; Section 2.3.4.2) and Woodside's criteria for demonstrating acceptability (Section 2.4.2), 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 13 No introduction and establishment of invasive marine species into the Operational Area as a result of the GPGT Surveys Program.	C 13.1 Internationally sourced survey vessels will exchange or treat ballast water using an approved ballast water treatment system option, as specified in the Australian Ballast Water Management Requirements.	PS 13.1 Prevents the translocation of IMS within the vessel's ballast water from high-risk locations to the GPGT Surveys Program.	MC 13.1.1 Ballast Water Records System maintained by vessels which verifies compliance against Australian Ballast Water Management Requirements.
	C 13.2 Internationally sourced survey vessels will manage their biosecurity risk associated with biofouling as specified in the Australian Biofouling Management Requirements.	PS 13.2 Compliance with Australia Biofouling Management Requirements.	MC 13.2.1 Woodside Invasive Marine Species Vessel and Equipment Questionnaire details ballast water management and internal biofouling treatment systems.
	C 13.3 Woodside's IMS risk assessment process[43] will be applied to the survey vessels and relevant immersible equipment undertaking the GPGT Surveys Program.	PS 13.3.1 Before entering the GPGT Surveys Program, survey vessels, and relevant immersible equipment are determined to be low risk of introducing IMS of concern and maintain this	MC 13.3.1 IMS risk assessment records maintained for all survey vessels and relevant immersible equipment entering the GPGT Surveys Program or IMS management area to

[43] 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 (DoEH 2005).

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EPOs, EPS and MC			
EPO	***Controls***	***PS***	***MC***
	Assessment will consider these risk factors: For vessels: • vessel/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 submersible 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.	low-risk status to mobilisation. PS 13.3 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.	undertake the GPGT Surveys Program. MC 13.3.2 IMS risk assessments records show assessment undertaken by an Environment Adviser or IMS inspector (as relevant).

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6.10 Recovery plan and threat abatement assessment

This section describes the assessment that Woodside has undertaken to demonstrate that the GPGT Surveys Program 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 2015b)
- Recovery Plan for the Grey Nurse Shark (*Carcharias taurus*) 2014 (Commonwealth of Australia 2014)
- Sawfishes and River Sharks Multispecies Recovery Plan (Commonwealth of Australia 2015c)
- 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 6-19 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 GPGT Surveys Program. For those objectives/action areas applicable to the GPGT Surveys Program, the relevant actions of each plan have been identified, and an evaluation has been conducted as to whether impacts and risks resulting from the activity are clearly inconsistent with that action or not. The results of this assessment against relevant actions are presented in Table 6-20 to Table 6-24.

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Table 6-19: Identification of applicability of recovery plan and threat abatement plan objectives and action areas

EPBC Act Part 13 statutory instrument	Applicable to:		
	Government	***Titleholder***	***GPGT Surveys Program***
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			
1. 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		
2. The management of marine turtles is supported	Y		
3. Anthropogenic threats are demonstrably minimised	Y	Y	Y
4. 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		

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EPBC Act Part 13 statutory instrument	Applicable to:		
	Government	***Titleholder***	***GPGT Surveys Program***
B. Enabling and measuring recovery			
B1. Determine trends in index beaches	Y	Y	
B2. Understand population demographics at key foraging grounds	Y		
B3. Address information gaps to better facilitate the recovery of marine turtle stocks	Y	Y	
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			
1. The conservation status of blue whale populations is assessed using efficient and robust methodology	Y		
2. The spatial and temporal distribution, identification of BIAs, and population structure of blue whales in Australian waters is described	Y	Y	Y
3. Current levels of legal and management protection for blue whales are maintained or improved and an appropriate adaptive management regime is in place	Y		
4. 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		

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EPBC Act Part 13 statutory instrument	Applicable to:		
	Government	***Titleholder***	***GPGT Surveys Program***
B.3: Describing spatial and temporal distribution and defining biologically important habitat	Y	Y	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			
1. Develop and apply quantitative monitoring of the population status (distribution and abundance) and potential recovery of the grey nurse shark in Australian waters	Y		
2. Quantify and reduce the impact of commercial fishing on the grey nurse shark through incidental (accidental and/or illegal) take, throughout its range	Y		
3. Quantify and reduce the impact of recreational fishing on the grey nurse shark through incidental (accidental and/or illegal) take, throughout its range	Y		
4. Where practicable, minimise the impact of shark control activities on the grey nurse shark	Y		
5. Investigate and manage the impact of ecotourism on the grey nurse shark	Y		
6. Manage the impact of aquarium collection on the grey nurse shark	Y		
7. Improve understanding of the threat of pollution and disease to the grey nurse shark	Y	Y	
8. 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	
9. Continue to develop and implement research programs to support the conservation of the grey nurse shark	Y	Y	
10. Promote community education and awareness in relation to grey nurse shark conservation and management	Y		

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EPBC Act Part 13 statutory instrument	Applicable to:		
	Government	***Titleholder***	***GPGT Surveys Program***
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			
1. Reduce and, where possible, eliminate adverse impacts of commercial fishing on sawfish and river shark species	Y		
2. Reduce and, where possible, eliminate adverse impacts of recreational fishing on sawfish and river shark species	Y		
3. Reduce and, where possible, eliminate adverse impacts of Indigenous fishing on sawfish and river shark species	Y		
4. Reduce and, where possible, eliminate the impact of illegal, unregulated and unreported fishing on sawfish and river shark species	Y		
5. Reduce and, where possible, eliminate adverse impacts of habitat degradation and modification on sawfish and river shark species	Y	Y	Y
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	Y	Y	Y
7. Reduce and, where possible, eliminate any adverse impacts of collection for public aquaria on sawfish and river shark species	Y		
8. 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		
9. Develop research programs to assist conservation of sawfish and river shark species	Y	Y	
10. Improve community understanding and awareness in relation to sawfish and river shark conservation and management	Y		

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EPBC Act Part 13 statutory instrument	Applicable to:		
	Government	***Titleholder***	***GPGT Surveys Program***
Marine Debris Threat Abatement Plan			
Objectives			
1. Contribute to long-term prevention of the incidence of marine debris	Y	Y	
2. Understand the scale of impacts from marine plastic and microplastic on key species, ecological communities and locations	Y	Y	Y
3. Remove existing marine debris	Y		
4. Monitor the quantities, origins, types and hazardous chemical contaminants of marine debris, and assess the effectiveness of management arrangements for reducing marine debris	Y		
5. Increase public understanding of the causes and impacts of harmful marine debris, including microplastic and hazardous chemical contaminants, to bring about behaviour change	Y		

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Table 6-20: 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 survival.	Refer to Sections 6.8.3, 6.8.4, 6.8.5 and 6.8.7. 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 GPGT Surveys Program will ensure that marine turtles are not displaced from identified habitat critical to the survival of marine turtles.	EPO 3, EPO 4, EPO 5, EPO 9 PS 3.1, PS 5.1
		Action: Manage anthropogenic activities in BIAs to ensure biologically important behaviour can continue.	Refer to Sections 6.8.3, 6.8.4, 6.8.5 and 6.8.7. 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 GPGT Surveys Program will ensure that biologically important behaviour can continue in BIAs.	EPO 3, EPO 4, EPO 5, EPO 9 PS 3.1, PS 5.1
	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: • Green turtle, North West Shelf (G-NWS) – understand the threat posed to this stock by marine debris • Loggerhead turtle, Western Australia (LH-WA) – determine the extent to which marine debris is impacting loggerhead turtles • Flatback turtle, Pilbara (F-Pil) and hawksbill turtle, Western Australia (H-WA) – no relevant actions.	Refer Section 6.9.5. 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 GPGT Surveys Program.	N/A

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Part 13 statutory instrument	Relevant action areas/objectives	Relevant actions	Evaluation	Relevant EPO and EPS
	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 spill risk strategies and response programs include management for turtles and their habitats • LH-WA and F-Pil – ensure 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 • H-WA – no relevant actions.	Refer Sections 6.9.2 and 6.9.7. 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 Section 7.1
	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 and H-WA – manage artificial light from onshore and offshore sources to ensure biologically important behaviours of nesting adults and emerging/dispersing hatchlings can continue.	Refer Section 6.8.6. Not inconsistent assessment: The assessment of light emissions has considered the potential impacts to green, flatback and hawksbill turtles. Internesting, mating, foraging or migrating turtles are not impacted by light from offshore vessels. Vessel light emissions could cause localised and temporary behavioural disturbance to isolated transient individuals, which is unlikely to result in displacement of adult turtles from internesting or nesting habitat critical to the survival of marine turtles.	N/A

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Part 13 statutory instrument	Relevant action areas/objectives	Relevant actions	Evaluation	Relevant EPO and EPS
	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 and H-WA – no relevant actions.	Not inconsistent assessment: Woodside contributes to Action Area B1 via its support of the Ningaloo Turtle Program.[44]	N/A
	Action Area B3: Address information gaps to better facilitate the recovery of marine turtle stocks.	Action: Understand the impacts of anthropogenic noise on marine turtle behaviour and biology. Priority actions at stock level: • G-NWS – given this is a relatively accessible stock that is likely to be exposed to anthropogenic noise, investigate the impacts of anthropogenic noise on turtle behaviour and biology and extrapolate findings from the NWS stock to other stocks • LH-WA and F-Pil – no relevant actions • H-WA – investigate mixed stock genetics at foraging grounds.	Refer Sections 6.8.3 and 6.8.4. Not inconsistent assessment: The assessment of acoustic emissions has considered the potential impacts to marine turtles. Survey equipment and survey vessel acoustic emissions could cause localised and short-term behavioural disturbance to isolated transient individuals, which is unlikely to result in displacement of adult turtles from internesting or nesting habitat critical to the survival of marine turtles.	N/A
Assessment summary The Marine Turtle Recovery Plan has been considered during the assessment of impacts and risks and the GPGT Surveys Program is not considered to be inconsistent with the relevant actions of this plan.				

[44] http://www.ningalooturtles.org.au/media_reports.html.

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Table 6-21: 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 BIAs will be managed such that any blue whale continues to use the area without injury, and is not displaced from a foraging area.	Refer Sections 6.8.3 and 6.8.4. Not inconsistent assessment: The assessment of acoustic emissions has considered the potential impacts to pygmy blue whales. Acoustic emissions from survey vessels will not cause injury to any pygmy blue whale. There is a distribution BIA for pygmy blue that overlaps the Operational Area. If the GPGT Surveys Program within the Operational Area overlaps with an individual northbound or southbound migration, they may deviate slightly from the migratory route, but will continue on their migration.	N/A
	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 6.8.2. Not inconsistent assessment: The assessment of vessel collision with marine fauna has considered the potential risks to pygmy blue whales. If the GPGT Surveys Program within the Operational Area 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 very slow vessel speeds.	EPO 9 PS 4.1
	Action Area B.3: Describing spatial and temporal distribution and defining biologically important habitat.	Action 2: Identify migratory pathways between breeding and feeding grounds. Action 3: Assess timing and residency within BIAs.	Not inconsistent assessment: Woodside contributes to Action Area B3 via its support of targeted research initiatives (e.g. satellite tracking of pygmy blue whale migratory movements (Double *et al.* 2014).	N/A

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Part 13 statutory instrument	Relevant action areas/objectives	Relevant actions	Evaluation	Relevant EPO and EPS
Assessment summary The Blue Whale Conservation Management Plan been considered during the assessment of impacts and risks and the GPGT Surveys Program is not considered to be inconsistent with the relevant actions of this plan.				

Table 6-22: 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 Sections 6.8.6, 6.8.7, 6.9.2, 6.9.5 and 6.9.7. Not inconsistent assessment: This EP includes an assessment of the impacts from accidental release of solid wastes as well, planned discharges from vessels on and the impact of introducing invasive marine species on listed marine species.	N/A
			Refer Sections 6.8.1, 6.8.7, 6.9.2 and 6.9.7. Not inconsistent assessment: The assessment of accidental release of chemicals/ hydrocarbons has considered the potential risks to grey nurse sharks.	Refer Section 7.1
Assessment summary The Grey Nurse Shark Recovery Plan been considered during the assessment of impacts and risks and the GPGT Surveys Program is not considered to be inconsistent with the relevant actions of this plan.				

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Table 6-23: Assessment against relevant actions of the Sawfish and River Shark Recovery Plan

Part 13 statutory instrument	Relevant action areas/objectives	Relevant actions	Evaluation	Relevant EPO and EPS
Sawfish and River Shark Recovery Plan	Objective 5: Reduce and, where possible, eliminate adverse impacts of habitat degradation and modification on sawfish and river shark species.	Action 5c: Identify risks to important sawfish and river shark habitat and measures needed to reduce those risks.	Refer Sections 6.8.5, 6.9.2 and 6.9.7. Not inconsistent assessment: The assessment of accidental release of chemicals/ hydrocarbons has considered the potential risks to sawfish and river shark.	Refer Section 7.1
	Objective 6: Reduce and, where possible, eliminate any adverse impacts of marine debris on sawfish and river shark species.	Action 6a: Assess the impacts of marine debris including ghost nets, fishing gear and plastics on sawfish and river shark species.	Refer Section 6.9.5. 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 GPGT Surveys Program.	N/A
Assessment summary The Sawfish and River Shark Recovery Plan has been considered during the assessment of impacts and risks and the GPGT Surveys Program is not considered to be inconsistent with the relevant actions of this plan.				

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Table 6-24: 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 6.9.5. 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 GPGT Surveys Program.	N/A
Assessment summary The Marine Debris Threat Abatement Plan has been considered during the assessment of impacts and risks and the GPGT Surveys Program is not considered to be inconsistent with the relevant actions of this plan.				

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6.11 First Nations cultural features and heritage values assessment

As described in Section 4.9.1, the identification of cultural features and heritage values of the environment as well as the social, economic and cultural features important to First Nation's people is integral to understanding the environment and any potential impacts and risks to the environment.

In line with Woodside's First Nations Communities Policy (Woodside 2022), Woodside seeks to avoid damage or disturbance to cultural heritage (including intangible heritage). If avoidance is not possible, Woodside will seek to minimise and mitigate any impacts, through consultation with First Nations communities and Traditional Custodians. Understanding that First Nations communities do not distinguish environment from culture, Woodside approaches the management of environmental species that hold culturally significant value through the environmental management measures outlined in Sections 6.8 and 6.9.

Management of cultural heritage (tangible and intangible) associated with the environmental species is addressed in the assessment below. Mitigation of intangible heritage can include any measure or control aimed at ensuring the viability of the cultural heritage and its intergenerational transmission. This can include reducing impacts and risks to environmental features that are associated with intangible cultural heritage (Commonwealth of Australia 2018, Australia International Council on Monuments and Sites 2013).

Only values and features of significance identified in Section 4.9.1 as being likely or possible to interact with the EMBA are addressed in the risk assessment below. Management of these risks ensures that our First Nations concerns and interests are adequately acknowledged and protected. Where general interests have been raised by First Nations groups/individuals, Woodside endeavours to maintain ongoing engagement and information sharing to prevent and mitigate any impacts not captured throughout consultation or anticipated through the assessment below.

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Description of source of impact or risk
Physical presence of vessels Several vessel types will be required to complete the activities associated with the GPGT Surveys Program (refer to Section 3.9). The physical presence and movement of survey vessels within the Operational Area has the potential to displace other marine users. Refer to Section 6.8.1 and 6.9.2 for more details. ***Light emission from vessels*** Survey vessels will have external lighting to support safe operations at night, as well as to communicate the presence and activities of survey vessels to other marine users (i.e. navigational lights). This lighting typically consists of bright white (i.e. metal halide, halogen, fluorescent) lights, and is not dissimilar to lighting used for other offshore activities, including fishing and shipping. Lighting is required for the safe operation of the survey vessels and cannot reasonably be eliminated. Light emissions from project vessel in any one area will be limited by the transient nature of the works. Refer to Section 6.8.5 for more details. ***Acoustic emissions from vessels*** There are various sources of underwater acoustic emissions during the GPGT Surveys Program, primarily associated with survey vessel operations, from the geophysical surveys and geotechnical equipment that have the potential to cause impacts to culturally significant marine species. The sound levels and frequencies generated by vessels varies with the size of the vessel, speed, engine type and the activity being undertaken. Large vessels typically produce higher sound levels at lower frequencies than small vessels, although significant variation may be found among vessels within the same group. Sound levels tend to be greatest when engaging the throttle or thrusters, such as use of DP or when vessels are operating under load, compared with slow moving or idling vessels. The greatest sound levels are likely to be associated with vessels using DP thrusters to maintain position on station. Refer to Section 6.8.3 for more details. ***Seabed disturbance*** As described in Section 4.9, the Operational Area overlaps a small portion (1.28%) of the Ancient Coastline at 125 m depth contour KEF and therefore there is potential for Indigenous cultural features to exist that could be impacted during seabed disturbance resulting from survey activities. The placement of equipment on the seabed may relocate small amounts of sediment, which could create slight and short-term impacts to unidentified cultural heritage features. While no cultural features have been identified in the Operational Area, data collected via geophysical surveys will be used to further identify potential cultural heritage features present on the seabed to inform future activities. Refer to Section 6.8.2 for more details. Dropped objects within the Ancient Landscape could impact cultural heritage associated with this area; however, this would also comprise a small area. ***Unplanned hydrocarbon release from vessel (basis of EMBA)*** The temporary presence of the survey vessels in the Operational Area may result in a navigational hazard for commercial shipping within the immediate area. This navigational hazard could result in a third-party vessel colliding with the survey vessels, which could result in a loss of containment. The EMBA is the largest spatial extent where unplanned events could have an environmental consequence on the surrounding environment. For this EP, the EMBA is the potential spatial extent of surface and in-water hydrocarbons at concentrations above ecological impact thresholds, in the highly unlikely event of the worst-case credible spill (150 m^3) modelled at two key locations. The EMBA therefore covers a larger area than the area that would be affected during any one single spill event. In the event of a spill, the EMBA would be much smaller and intermittent; e.g. plume travels away from the release location based on prevailing currents and winds directions.

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Cultural heritage key receptor impact assessment									
Value potentially impacted									
	Marine mammals	Marine reptiles	Fish	Seabirds	Corals	Benthic habitats	Shoreline habitats (e.g. mangroves)	Archaeological heritage and landscapes	Intangible values
Planned activity aspect *The potential environmental impact from the GPGT Surveys Program to receptors that have a cultural feature or heritage value, providing the context to related cumulative impact on the cultural feature or heritage value.*									
Impact	***Impact significance level***								
Physical presence: disturbance to the seabed from geotechnical surveys (Section 6.8.2)	N/A	N/A	N/A	N/A	N/A	Slight (E)	N/A	N/A	N/A
Routine acoustic emissions: generation of noise from geophysical and geotechnical survey equipment and survey vessels (Sections 6.8.3 and 6.8.4)	Slight (E)	Slight (E)	Slight (E)	N/A	N/A	N/A	N/A	N/A	N/A
Routine light emissions: external lighting on survey vessels (Section 6.8.5)	Slight (E)	Slight (E)	Slight (E)	Slight (E)	N/A	N/A	N/A	N/A	N/A
Routine atmospheric and greenhouse gas emissions from fuel use (Section 6.8.6)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Routine and non-routine discharges to the marine environment from survey vessels (Section 6.8.7)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

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Cultural heritage key receptor impact assessment									
Value potentially impacted									
	Marine mammals	Marine reptiles	Fish	Seabirds	Corals	Benthic habitats	Shoreline habitats (e.g. mangroves)	Archaeological heritage and landscapes	Intangible values
Unplanned activity aspect *The potential environmental risk from the GPGT Surveys Program to species that have a cultural feature or heritage value, providing the context related cumulative risk on the cultural feature or heritage value.*									
Risk	***Risk rating***								
Accidental hydrocarbon release: vessel collision (Section 6.9.2)	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Low	N/A
Physical presence: vessel interaction with marine fauna (Section 6.9.3)	Low	Low	Low	N/A	N/A	N/A	N/A	N/A	N/A
physical presence: disturbance to seabed from dropped objects and equipment loss (Section 6.9.4)	N/A	N/A	N/A	N/A	N/A	Low	N/A	N/A	N/A
Unplanned discharges: loss of solid hazardous and non-hazardous wastes/ equipment and deck and subsea spills from geotechnical and geophysical equipment (Sections 6.9.5 and 6.9.7)	Low	Low	Low	Low	Low	Low	Low	N/A	N/A
Physical presence: introduction of invasive marine species (Section 6.9.8)	Low	Low	Low	Low	Low	Low	Low	N/A	N/A

Impact and consequence assessment
Cultural features and heritage value(s) potentially impacted
Archaeological heritage and landscapes
Places that are identified in Section 4.9.1.4 for their value as archaeological sites are assumed to be at risk where there is potential for impact to the tangible or scientific elements of that place. This could include physical damage or disturbance to the archaeological integrity of a place.

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Coastal/island archaeological sites (fish traps and petroglyphs)

No coastal areas or islands exist within the Operational Area. A review of the DPLH's Aboriginal Heritage Inquiry System identified 4 lodged Aboriginal Sites and 43 registered Aboriginal Sites were identified within the EMBA. These locations do exist within the EMBA boundary; however, given the EMBA is driven by an unplanned marine hydrocarbon release there is no anticipated impact pathway from this activity to onshore archaeological sites above highest astronomical tide.

Archaeological sites may exist in intertidal landscapes within the EMBA and may be exposed to hydrocarbons from an unplanned release, however there is no anticipated impact pathway from the presence of hydrocarbon on archaeological values, as this is not expected to impact the fabric or context of sites on an exposed shoreline site. Impacts to the heritage value of fish traps from hydrocarbons in an unplanned spill may occur indirectly through impacts to fish. However, it is expected that continued use of fish traps beyond their archaeological value will be preserved where fish species and distribution are maintained at a population level. With regard to fish, refer to species specific assessment below for further information, in addition to the impact and risk assessment in Sections 6.8 and 6.9 respectively.

Submerged archaeological sites

No archaeological sites have been identified beyond terrestrial or intertidal areas, with the exception of two sites at Murujuga in Cape Bruguieres channel and Flying Foam Passage (Benjamin *et al.* 2020, Benjamin *et al.* 2023), which are outside of the EMBA. Additionally, volcanic rock which may contain petroglyphs do not occur within the Operational Area. There is the potential for submerged archaeological sites on the Ancient Landscape. Planned assessments using existing data of the Operational Area, detailed in Section 4.9, will be undertaken to confirm the likelihood of submerged archaeological sites prior to the activities.

Submerged archaeological sites (locations undefined) may exist on the Ancient Landscape within the broader EMBA. However, given the EMBA is driven by an unplanned hydrocarbon it is not expected to impact the seabed or archaeological material on or within it. Therefore, there is no anticipated impact pathway to submerged archaeological sites in the broader EMBA from the GPGT Surveys Program.

Murujuga Cultural Landscape

Murujuga (Burrup Peninsula), including the Murujuga National Park and World Heritage Listing is described in Section 4.9.1. The Traditional Owners of Murujuga have a deep cultural and spiritual connection to the rock art of the Burrup Peninsula, which provides a record of Aboriginal lore, dreamtime stories, customs, and local knowledge of the land and its resources (MAC 2019).

Safeguarding the Murujuga Cultural Landscape and its relevant OUV are considered under a number of relevant management plans (See Section 4.9.1.8) and supported under existing regulatory frameworks**Error! Reference source not found.**.

Intangible values associated with Murujuga Cultural Landscape are preserved through the ongoing connection the Traditional Owners maintain with the landscape. Woodside maintains an ongoing relationship with cultural authority of the MCL to ensure these values are uninterrupted by the GPGT Surveys Program. Additionally, Woodside actively provides funding to the Murujuga Land and Sea Unit to assist in its ongoing management of Country and Sea Country associated with the MCL.

There is no overlap between the Operational Area and the boundary of the Murujuga Cultural Landscape World Heritage Property. There is also no anticipated impact pathway MCL and therefore, its OUV are expected to be maintained.

Intangible heritage

Intangible values that are identified in Section 0 are assumed to be at risk where there is potential for impact to the spiritual connections, features and/or places associated with the value. Impacts to intangible heritage can be individualised; the assessment below does not account for this variability but aims assess widespread impacts to general intangible values.

Access to Country

Impacts to access to Country may be classified as temporary (e.g. where exclusion zones exist around activities for safety reasons) or permanent (e.g. where infrastructure obstructs access or navigation). Impacts to access to Country can only occur in areas that were traditionally accessed by Traditional Custodians. As described in Section 4.9.1.4, this is anticipated to be focussed on areas adjacent to the coast.

Ceremonial sites

Activities that prevent the performance of ceremony at these sites will directly impact its values.

Connection to Country

Where people are displaced or disrupted (e.g. during colonisation) or where there is a loss of technical skills or environmental knowledge this may damage connection to Country (McDonald and Phillips 2021).

Creation/dreaming sites, sacred sites, ancestral beings

Activities that physically alter landscape features may be assumed to potentially impact values of creation/dreaming sites, sacred sites or ancestral beings.

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Cultural obligations to care for Country

Environmental impacts may be assumed to impact rights and obligations to care for Sea Country. Exclusion of Traditional Custodians from Sea Country (e.g. by restricting access) or decision-making processes (e.g. by not conducting ongoing consultation) are other potential sources of impact.

Kinship systems and totemic species

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 Aboriginal Corporation 2004). It is therefore inferred that the management of totemic or kinship species applies at the species/population level and not to individual plants and animals.

Knowledge of Country/customary law and transfer of knowledge

Direct impact to communities practicing these skills will inherently occur when relevant aspects of the environment disappear, are displaced or suffer a reduction in population. Therefore, the transmission of these skills is expected to be impacted where there are impacts at the species/population level. Limitations on access to sites or disruption/ relocation of First Nations communities may have implications for the preservation of First Nations knowledge.

Resource collection

Direct impact to communities using these resources will inherently occur when the resource disappears, is displaced or suffers a reduction in population. Therefore, marine species (as resources) will be impacted where there is an impact at the species/population level.

Songlines

Songlines can become lost, fragmented, or broken when there is a loss of Country or forced removal from Country (Neale and Kelly 2020). Physical sites that have been identified as comprising a component of a songline are important to protect to prevent the fragmenting or breaking apart of songlines and loss of sacred cultural knowledge. It is noted that oil and gas infrastructure exists in many areas of the NWS, and that songlines are still acknowledged and recognised. It is inferred that if there were to be any impacts to surviving songlines these would be significantly more likely to be described as qualitative (i.e. 'weaken' a songline) rather than binary or absolute (i.e. destroy a songline).

Marine ecosystems and species

Marine ecosystems may hold both cultural and environmental value (see Section 4.8), with cultural and environmental values intrinsically linked (Malgana Aboriginal Corporation 2021, MAC 2022 as cited in Woodside 2023). 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.

Benthic habitats (coral, seagrass)

Through consultation, First Nations groups identified benthic habitats as valuable for their ecological values, including corals attracting fish and seagrass providing shelters for fauna, as well as an important habitat for dugongs. Additionally, coral is valued by Murujuga Aboriginal Corporation for its aesthetic values.

In terms of risk, as described in Sections 6.8 and 6.9, impacts are expected to be very localised. A change in habitat may occur due to a change in water or sediment quality following an unplanned hydrocarbon release. Given hydrocarbon characteristics, rapid weathering, localised impacts, as well as the response strategies planned to be deployed, an unplanned release is not expected to result in a level of exposure to coral and seagrass that would cause an adverse impact on marine ecosystem functioning or integrity results. As such, cultural values and intangible cultural heritage associated with benthic habitats are expected to be maintained.

Fish and cephalopods

Fish and squid have been identified through consultation and existing literature as an important resource, particularly as food sources. Direct impact to communities using these resources will inherently occur when the resource disappears, is displaced or suffers a reduction in population. Therefore, these species (as resources) are likely to be impacted where there is an impact at the species/population level.

Through consultation, fish were identified as important agents in the management of the broader ecosystem. It may be assumed that inter-generational transmission of cultural knowledge relating to fish may be impacted where changes to population or behaviour results in reduced sightings (e.g. through population decline). This transfer of knowledge may be integral to managing a group's intangible cultural heritage (UNESCO 2003). Intangible cultural heritage associated with fish, including inter-generational knowledge regarding fishing techniques and migratory patterns, can be managed by reducing impacts to fish in nearshore marine environments to which this cultural knowledge is intrinsically connected.

There are increase ceremonies/rituals for species to enhance or maintain fish populations. Thalu are places where these increase ceremonies are performed. All mentions of active ceremonial sites in the reviewed literature were confined to onshore locations, though the values may extend offshore where, for example, the thalu relates to marine species populations. As thalu ceremonies are performed to maintain and increase populations of marine species, it is inferred that management applies at the species/population level and not to individuals.

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As described in the relevant environmental impact and risk assessments in Sections 6.8 and6.9respectively, the potential impacts from the GPGT Surveys Program on fish[45] are not considered to be ecologically significant at a population level. As such, cultural values and intangible cultural heritage associated with these species are expected to be maintained.

Marine mammals (whale, dolphins, dugongs)

There are also increase ceremonies/rituals for species of animals and plants important to First Nations, to enhance or maintain populations. As thalu ceremonies are performed to maintain and increase populations of marine species, it is inferred that management applies at the species/population level and not to individuals; for example, the thalu site on Murujuga which "brings in whales to beach" will continue to serve its purpose so long as whales continue to migrate through Mermaid Sound. Reviewed literature (DBCA and MAC 2019) also includes information that is marked as information that cannot be copied, reproduced or used without consent. The values described in the literature are environmental in nature, apply to marine mammal behaviours at a population level and are managed through existing environmental controls in Sections 6.8 and 6.9.

Related intangible cultural heritage may include the transmission of cultural knowledge about whales and whale behaviour, including birthing areas, whale communication and migratory patterns. Such cultural knowledge may be associated with various cultural functions and activities that support the social and economic life of a community (Fijn 2021). Whale symbology expressed through stories, music and dance can reflect a group's connections with the sea, as well as marine fauna, which then comprise a group's cultural values (Ardler 2021, Bursill *et al. 2007*, Cressey 1998). Whales also speak to a broader connection that exists between First Nations people and their surrounding environment. Beyond mythology and symbolism, whales can be connected with various economic and social functions associated with everyday life. Cultural knowledge of whales, whale migration, behaviour and the related marine environment may all be important in ensuring the continuation of these socio-economic functions and other related activities that remain valuable to First Nations people (Fijn 2021). No impacts to communities' ability to perform or transmit stories, music or dance are anticipated from the GPGT Surveys Program. Where timing or performance is linked to sighting or engaging with these species, impacts may occur where numbers or migration behaviours are impacted at a population level.

First Nations groups have expressed interest about whale migratory routes and studies. Inter-generational transmission of cultural knowledge (including songlines) relating to marine mammals may be impacted where changes to population or behaviour at a population level results in reduced sightings (e.g. through population decline, changes to 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 relevant environmental impact and risk assessments in Sections 6.8 and 6.9 respectively, potential impacts to cetaceans from planned activities are limited to behavioural impact, which may include temporary and localised deviations from migratory pathways for cetaceans. However, no permanent impacts preventing cetaceans from entering or occupying the areas have been identified. These impacts and risks are not considered to be ecologically significant at a population level and hence are not expected to impact the value of marine mammals, including the transmission of cultural knowledge. As such, cultural values and intangible cultural heritage associated with these species are expected to be maintained.

Marine reptiles (turtles)

Turtles and their eggs have been identified through consultation and existing literature as an important resource, particularly as food sources. Direct impact to communities using these resources will inherently occur when the resource disappears, is displaced or suffers a reduction in population. Therefore, these species (as resources) are likely to be impacted where there is an impact at the species/population level.

Intangible cultural heritage may also include the transmission of cultural knowledge about marine reptiles, such as nesting areas, hunting areas and migratory patterns. Cultural knowledge may also be conveyed through stories, such as the turtle being trapped in the sea as a result of its greed for berries, as recounted by Capewell (Capewell 2020). Such cultural knowledge may be associated with various cultural functions and activities that support the social and economic life of a community (Fijn 2021). First Nations groups have expressed an interest regarding turtle monitoring programs and migration patterns. Activities that impact turtle populations and their marine environment may have an indirect impact on some Aboriginal communities as this can limit access to cultural sites or deplete hunting areas that would threaten local food security (Delisle *et al.* 2017). Inter-generational transmission of cultural knowledge (including songlines) relating to marine reptiles may be impacted where changes to population or behaviour results in reduced sightings (e.g. through population decline, changes to migration routes or changes to migration seasonality). This transfer of knowledge may be integral to managing a group's intangible cultural heritage (UNESCO 2003).

As described in the relevant environmental impact and risk assessments in Sections 6.8 and 6.9 respectively, potential impacts to marine reptiles are likely to be restricted to temporary behavioural changes, which are not considered to be ecologically significant at a population level, and hence not expected to impact the value of marine reptiles, including the transmission of cultural knowledge or use as a resource. As such, cultural values and intangible cultural heritage associated with these species are expected to be maintained.

[45] Squid and octopus are considered to be impacted through similar impact pathways as fish, and hence the conclusion represented here are considered appropriate for cephalopods.

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Seabirds

Seabirds have been identified through literature as a culturally significant species (Malgana Aboriginal Corporation 2021), as well as a resource (seabird eggs; Smyth 2007). Direct impact to communities using these resources will inherently occur when the resource disappears, is displaced or suffers a reduction in population. Therefore, these species (as resources) are likely to be impacted where there is an impact at the species/population level. Intangible cultural heritage may also include the transmission of cultural knowledge about seabirds, such as nesting areas, hunting areas and migratory patterns. Such cultural knowledge may be associated with various cultural functions and activities that support the social and economic life of a community (Fijn 2021) Inter-generational transmission of cultural knowledge relating to seabirds may be impacted where changes to population or behaviour results in reduced sightings (e.g. through population decline, changes to migration routes or changes to migration seasonality). This transfer of knowledge may be integral to managing a group's intangible cultural heritage (UNESCO 2003).

As described in the relevant environmental impact assessments in Sections 6.8 and 6.9 the potential impacts from the GPGT Surveys Program on seabirds is assessed as not causing harm at a population level. As such, cultural values and intangible cultural heritage associated with these species are expected to be maintained.

Shoreline habitats (mangroves)

Through consultation, First Nations groups identified 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 (the collective term for the Traditional Custodians who look after Murujuga Country).

Mangrove habitats do exist within the EMBA, however, there are no planned impacts to mangroves from the GPGT Surveys Program. In terms of risk, as described in Section 6.9, impacts may occur following an unplanned hydrocarbon release in a localised area if the release location occur in the vicinity of mangroves. As the impact would be localised it is not expected to impact cultural values and intangible cultural heritage associated with shoreline habitats are expected to be maintained.

Conclusion

The impact and risk assessment for cultural features and heritage values has determined that the planned activities are unlikely to result in an impact greater than negligible (F) and unplanned activities are assessed to have a residual risk rating of moderate (or lower). Woodside will continue to consider new heritage information as it becomes available (see C 14.1).

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[46]***	***Benefit in impact reduction***	***Proportionality***	***Control adopted***
Review of existing survey data by a suitably qualified maritime archaeologist to inform areas for laydown and/or installation of equipment to avoid or where not possible, minimise physical impacts to cultural heritage areas or prospective areas.	F: Yes. CS: Minimal costs associated with review of data and avoidance or minimisation options.	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 2024).	Benefits outweigh cost/sacrifice.	C 14.1
Unexpected finds of potential UCH sites/ features, including First Nations UCH, are managed in accordance with an Unexpected Finds Procedure set out in Section 7.2.4.	F: Yes. CS: Cost of implementation.	Allows management of Unexpected Finds in accordance with legislative requirements, (including Underwater Cultural Heritage Guidance for Offshore Developments and the Guidelines to Protect Underwater Cultural Heritage under the *Underwater Cultural Heritage Act 2018* (Cth), expert advice and community expectations.	Benefits outweigh cost/sacrifice.	C 14.2

[46] *Qualitative measure.*

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[46]***	***Benefit in impact reduction***	***Proportionality***	***Control adopted***
Report any potential underwater cultural heritage finds to relevant stakeholders and authorities in accordance with the Unexpected Finds Procedure, *Underwater Cultural Heritage Act 2018* (Cth) and the *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* (Cth) (ATSIHP Act).	F: Yes. CS: Minimal costs associated with reporting process.	Meets legislative requirements and community expectations.	Benefit outweighs cost/sacrifice.	C 14.3
Relevant vessel crew will be advised in an induction of the potential to encounter UCH and requirement to follow the Unexpected Finds Procedure (Section 7.2.4).	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.	C 14.4
Apply a 'living heritage[47]' management approach. Woodside seeks advice and incorporates Traditional Custodian cultural knowledges across our activities. Cultural safety considerations are factored for our workforce and the Traditional Custodian community.	F: Yes. CS: Minimal.	Implementation of the 'living heritage' approach pays acknowledgement and respect to Traditional Custodian communities. It supports the transfer of cultural knowledges and is an effective strategy to manage intangible cultural values.	Benefits outweigh cost/sacrifice.	C 15.1
The environmental impacts and risks of the activity will continue to be managed to as low as reasonably practicable and an acceptable level for cultural features and heritage values.	F: Yes. CS: Substantial costs.	Implementation of activities and associated controls to ALARP and an acceptable level supports the maintenance of cultural features and heritage values.	Benefits outweigh cost/sacrifice.	C 15.2

[47] *Living heritage supports community and individual identity. Intangible cultural heritage is 'living heritage' that is inherited from ancestors and passed on to their descendants. It is comprised of many influences, including oral traditions, art, social practices, rituals and ceremonies, cultural knowledge and practices. It is transmitted from generation to generation and evolves in response to the environment. Woodside applies a 'living heritage' approach to its cultural heritage management. This includes ensuring that Traditional Custodians are given voice to identify interests, transmit information and express concerns. Woodside works with Traditional Custodians to support and follow appropriate cultural protocols, including calling to Country, conducting smoking ceremonies (in areas where this custom is appropriate) and undertaking cultural awareness. Woodside will collaborate and provide relevant information it holds to groups such as Heritage Management Committees where they are established.*

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[46]***	***Benefit in impact reduction***	***Proportionality***	***Control adopted***
Use of cultural heritage monitors on vessels to oversee implementation of controls protecting cultural values.	F: No. CS: Not considered – control not feasible.	Primary installation vessels are constrained regarding persons on board, with no ability to facilitate additional personnel	Not considered – control not feasible.	No
Project inductions to all relevant marine crew, prior to the individual commencing the activity, will include information on cultural features and heritage values, including tangible and intangible cultural heritage.	F: Yes. CS: Minimal.	Ensures workforce is suitably aware of cultural features and heritage values in the area they are operating.	Benefits outweigh cost/sacrifice.	C 15.3
Activities under the GPGT Surveys Program will be carried out in accordance with any protection declarations relevant to the Operational Area, under Sections 9, 10 and 12 of the ATSIHP Act.	F: Yes. CS: Costs associated with implementation.	Implementation of the control ensures any impacts to significant Aboriginal areas and significant Aboriginal objects protected by Ministerial declaration, are acceptable under the standards of the ATSIHP Act.	Control based on legislative requirements – must be adopted.	C 15.4
Should it be identified that relevant cultural authorities may be affected in the unlikely event of a spill, Woodside will engage with those parties as appropriate and in alignment with the First Strike Plan.	F: Yes. CS: Minimal.	Engaging with relevant cultural authorities that may be impacted by a spill will allow the Traditional Custodians to identify areas of concern.	Benefits outweigh cost/sacrifice.	See Appendix H
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 2.3.4.2) and Woodside's criteria for demonstrating ALARP (Section 2.4.1), Woodside considers the adopted controls appropriate to manage potential impacts and risks associated with cultural features and heritage values. As no reasonably practicable additional/alternative controls were identified that would further reduce the impacts and risks without disproportionate sacrifice, the impacts and risks are considered ALARP.				

Demonstration of acceptability
The impact and risk assessment has determined that, given the adopted controls, planned activities are unlikely to result in an impact no greater than negligible (F)[48] and unplanned activities are assessed to have a residual risk rating of moderate (or lower). The GPGT Surveys Program and the EMBA are not expected to have a significant impact (e.g. changes in population levels) on MNES, including marine fauna with a First Nations connection with or traditional use in nearshore areas, as defined in Section 4.9.1. While the activity will occur on the Ancient Landscape, Woodside:

[48] *Noting that as the receptor sensitivity is high the impact significance level is Slight (E).*

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Demonstration of acceptability

- facilitates a process of undertaking desktop assessments by qualified professionals, using remote sensing techniques, to identify known or potential underwater cultural heritage where new seabed disturbance occurs and an unexpected finds procedure (refer to Section 7.2.4) will be implemented (C 14.1). Therefore, the activity is not inconsistent with *Underwater Cultural Heritage Guidance for Offshore Developments* and the *Guidelines to assessing and managing impacts to Underwater Cultural Heritage in Australian waters* under the *UCH* Act

Murujuga Cultural Landscape World Heritage Property

Woodside recognises and supports the ongoing management of heritage values under listings Murujuga Cultural Landscape World Heritage Listing, Murujuga National Park and Dampier Archipelago (Including Burrup Peninsula) National Heritage Place. Woodside also recognises that the management plans give effect to the duties and obligations of Australia under the World Heritage Convention and help facilitate the protection, conservation, presentation or transmission to future generations of the World Heritage values of the property. Consequently, by being not inconsistent with the management plans Woodside demonstrates that its action is not inconsistent with Australian World Heritage management principles and therefore the World Heritage Convention.

The Murujuga Cultural Landscape Strategic Management Framework (Government of Western Australia, 2022) establishes the management structure for the recently inscribed Murujuga Cultural Landscape World Heritage Property. Existing laws and regulations, joint management agreements, management plans and complementary policies, strategies and programs in place for Murujuga will remain active and support the Listing. These currently include:

- the Murujuga Cultural Landscape Strategic Management Framework
- Murujuga National Park Management Plan (2013, as amended in 2023)
- Murujuga Cultural Management Plan (2016)
  - Protect, conserve and present the potential Outstanding Universal Value of the property.
  - Take appropriate scientific, technical, legal, administrative and financial measures necessary for achieving
  - Actively manage the Murujuga Land and Sea Country to keep Country healthy and safe. It was identified that to achieve this Murujuga Land and Sea Unit (Ranger Unit with MAC) will:
    - monitor and protect rock art − have access to all information about the effects of industry on Murujuga Country
  - Promote effective, integrated and cooperative management between Murujuga National Park and adjacent land managers.

Based on EPO 15 and the relevant adopted controls, planned activities proposed under the GPGT Survey Program are not inconsistent with the management objectives under which these values are protected and conserved. Furthermore, by complying with existing regulatory frameworks, adopting relevant controls, it has been demonstrated that the GPGT Survey Program is not inconsistent with the relevant Murujuga Cultural Landscape management plans and thereby the World Heritage management principles.

Ministerial Statement 1233 (North West Shelf Project Extension Proposal) Condition section 4 set out Cultural Heritage Outcomes and Objectives to be achieved including (but not limited to):

- allowing traditional owner and custodian access to enable traditional activities and connection to culturally significant heritage areas within the development envelopes
- avoid where possible, and otherwise minimise direct impacts to social, cultural, heritage and archaeological values within the development envelopes.

Conditions require implementation of the North West Shelf Project Extension Cultural Heritage Management Plan (2021), including further revision in consultation with Murujuga Key Stakeholders. The plan is required to include elements (not limited to); a framework for ongoing consultation, and operational environmental management activities, monitoring, targets, management actions and reporting relevant to cultural heritage.

These conditions support the management and recognition of Murujuga Cultural Landscape OUV related to the NWS Operations. The NWS CHMP (2021) provides management provisions and actions including provide access for Traditional Owners to Aboriginal cultural heritage sites within the Proposal development envelope when requested [MA2] and the adoption of technologies to prevent impacts to terrestrial and nearshore vegetation of heritage and conservation value [MA4].

In addition, Woodside has engaged with Traditional Custodians adjacent to the EMBA to understand the cultural features and heritage values that may occur and potential impacts from the activity. Woodside has meaningful long-term relationships with relevant First Nations people 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. Controls, such as the 'living heritage' management approach (C15.1) have been developed to enable Woodside to manage cultural values which may be identified at any time during Woodside's activities via ongoing dialogue with Traditional Custodians.

Further opportunities to reduce the impacts have been investigated above. The potential impacts and risks are considered acceptable if the adopted controls are implemented. Therefore, Woodside considers the adopted controls

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Demonstration of acceptability
appropriate to manage the impacts and risks to cultural features and heritage values to a level that is acceptable, if ALARP.

EPOs, EPS and MC			
EPO	***Controls***	***PS***	***MC***
EPO 14 No adverse impact to unexpected finds of Underwater Cultural Heritage without a permit.[49]	C 14.1 Review of existing survey data by a suitably qualified maritime archaeologist to inform areas for laydown and/or installation of equipment to avoid or where not possible, minimise physical impacts to cultural heritage areas or prospective areas.	PS 14.1.1 Existing survey data reviewed by a suitably qualified maritime archaeologist to inform areas for survey activities and/or positioning of equipment (e.g. geotechnical).	MC 14.1.1 Records demonstrate review of existing archaeological data completed prior to commencement of activities.
	C 14.2 Unexpected finds of potential Underwater Cultural Heritage[50] sites/features, including first nations UCH are managed in accordance with the Unexpected Finds Procedure set out in Section 7.2.4.	PS 14.2.1 In the event that an underwater cultural heritage site or feature is identified implement the Unexpected Finds Procedure set out in Section 7.2.4.	MC 14.2.1 No non-compliance with the Unexpected Finds Procedure.
	C 14.3 Report any potential UCH finds to relevant stakeholders and authorities in accordance with the Unexpected Finds Procedure, *Underwater Cultural Heritage Act 2018* (Cth) and the ATSIHP Act.	PS 14.3.1 Report any finds of potential UCH in accordance with the Unexpected Finds Procedure (Section 7.2.4) including to: • DCCEEW underwater archaeology section • Australasian Underwater Cultural Heritage Database via DCCEEW.	MC 14.3.1 Records of potential UCH finds reported to relevant authorities and stakeholders.
	C 14.4 Relevant vessel crew and ROV operators will be advised in an induction of the potential to encounter UCH, and of their requirement to follow the Unexpected Finds Procedure.	PS 14.4.1 Relevant vessel crew (including ROV operators) are made aware of the requirements of the Unexpected Finds Procedure through an induction.	MC 14.4.4 Records demonstrate vessel crew are made aware of potential to encounter UCH.

[49] *Permit for Entry into a Protected Zone or to Impact Underwater Cultural Heritage would be acquired under the Underwater Cultural Heritage Act 2018* (Cth).

[50] *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 Underwater Cultural Heritage Act 2018* (Cth).

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EPOs, EPS and MC			
EPO	***Controls***	***PS***	***MC***
EPO 15 Woodside will actively support Traditional Custodians' capacity for ongoing engagement and consultation on environment plans for the purpose of avoiding impacts to cultural heritage values.	C 15.1 Apply a 'living heritage' management approach. Woodside seeks advice and incorporates Traditional Custodian cultural knowledge across our activities. Cultural safety considerations are factored for our workforce and the Traditional Custodian community.	PS 15.1.1 Woodside will continue to give voice to Traditional Custodians to identify interests, transmit information and express concern through ongoing consultation as identified in Section 5.7.	MC 15.1.1 Records demonstrate Change Management and Management of Knowledge processes have been followed where new controls or management measures identified.
		PS 15.1.2 Woodside will assess and, where deemed practicable, implement appropriate cultural protocols where requested by Traditional Custodians.	MC 15.1.2 Records demonstrate Woodside implemented cultural protocols as requested.
	C 15.2 The environmental impacts and risks of the activity will continue to be managed to as low as reasonably practicable and an acceptable level for cultural features and heritage values.	PS 15.2.1 Consideration of cultural values/new information, through the life of the EP, and the development of avoidance or mitigation strategies in collaboration with Traditional Custodians if impacts to cultural values are identified. Where avoidance is not possible, impact minimisation will be prioritised and demonstrated through a written options analysis/ALARP to ensure an acceptable level of impact. This will be documented through Woodside's Management of Change and Management of Knowledge processes.	MC 15.2.1 Records demonstrate Management of Change and Management of Knowledge processes have been followed where new controls or management measures identified.
	C 15.3 Project inductions to all relevant marine crew, prior to the individual commencing the activity, will include information on cultural features and heritage values, including tangible and intangible cultural heritage.	PS 15.3.1 All relevant marine crew have completed project inductions that include information on cultural values, including tangible and intangible cultural heritage for awareness.	MC 15.3.1 Records demonstrate all relevant marine crew have completed inductions that include cultural material.

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EPOs, EPS and MC			
EPO	***Controls***	***PS***	***MC***
	C 15.4 Activities under the GPGT Surveys Program will be carried out in accordance with any protection declarations relevant to the Operational Area, under Sections 9, 10 and 12 of the ATSIHP Act.	PS 15.4.1 Where an object or Significant Aboriginal Area is protected by a declaration under Section 12 or Sections 9/10 respectively of the ATSIHP Act, no work inconsistent with that declaration will be conducted for the duration of that declaration.	MC 15.4.1 No non-compliances with any protection declarations relevant to the Operational Area, under Sections 9, 10 and 12 of the ATSIHP Act.
	C 15.5 Implement the Petroleum Activities Program in a manner that is not inconsistent with the objectives of the Murujuga National Park Management Plan 78, through execution of the Conservation Agreement and Deep Gorge Joint Statement.	**PS 15.5.1** Comply with relevant commitments and obligations under the Conservation Agreement and Deep Gorge Joint Statement	**MC 15.5.1** Records demonstrate compliance with relevant commitments and obligations under, the Conservation Agreement and 'Deep Gorge' Joint Statement.

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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 GPGT Surveys Program 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 GPGT Surveys Program is managed in accordance with this Implementation Strategy and the WMS (Section 1.7).

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 Environmental consideration during selection, assessment and approval of chemicals

As part of Woodside's chemical approval process, chemicals required by the GPGT Surveys Program are selected and approved in accordance with the Woodside Chemical Selection and Assessment Environment Guideline. This guideline is used to demonstrate that the potential impacts of the chemicals selected are acceptable and ALARP, and meet Woodside's corporate requirements (as outlined in Woodside's Environment Management Standard, which requires chemicals to be selected with the lowest practicable environmental impacts and risks, subject to technical constraints).

Chemicals proposed to be selected as part for the GPGT Surveys Program will be managed in accordance with the requirements set out by the Australian Government under the Industrial Chemicals Environmental Standard (IChEMS). The IChEMS is a key component of several National reforms to improve approaches to how industrial chemicals are used, produced, imported and managed. Industrial chemicals will be listed on the IChEMS Register in one of 7 schedules according to their environmental risk.

Chemicals proposed for selection in this activity will be assessed against those listed in the IChEMS register under one of the seven schedules according to their environmental risk. The selection and management of any chemical will adhere to the specific risk management measures, storage, use and handling requirements outlined in the corresponding schedule.

7.2.2 Environmental selection criteria

The chemical assessment process follows the principles outlined in the Offshore Chemical Notification Scheme (OCNS), which manages chemical use and discharge in the United Kingdom (UK) and the Netherlands. 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.

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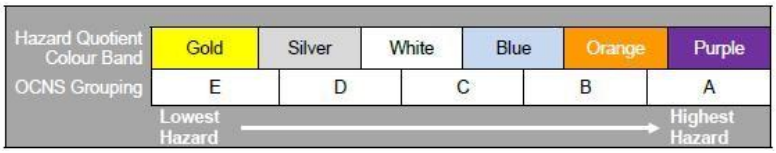


Figure 7-1: Offshore Chemical Notification Scheme ranking

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 Mines, Petroleum and Exploration (DMPE) 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 6-1). 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 grouping based on ecotoxicity results

Initial grouping	A	B	C	D	E
Results of aquatic toxicity data (ppm)	<1	>1 to 10	>10 to 100	>100 to 1000	>1000
Results for sediment toxicity data (ppm)	<10	>10 to 100	>100 to 1000	>1000 to 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 DMPE 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

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- 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 DMPE 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.

7.2.3 Woodside invasive marine species risk assessment process

7.2.3.1 Objective and scope

To minimise the risk of introducing invasive marine species (IMS) as a result of the GPGT Surveys Program, 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)[51]
- 'new build' vessels or immersible equipment launched less than 14 days before mobilisation

[51] *The IMSMA is defined as all nearshore waters around Australia, extending from the lowest astronomical tide mark to 12 nautical miles 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.*

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- locally sourced vessels or immersible equipment from within the Western Locally Sourced Zone[52]. Vessels, or immersible equipment are defined as locally sourced when the same supply facilities/port have been used since their last IMS inspection, full hull clean in dry dock or application of antifouling coating (AFC).

7.2.3.2 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 (IMO 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 area. 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 nautical miles 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,

[52] 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).

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Factors	Details
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 three risk categories:

- ‘Low’ – Low risk of introducing IMS of concern and hence no additional management required, or management options have been applied to reduce the risk.
- ‘Uncertain’ – Risk of introducing IMS is not apparent and as such the precautionary approach is adopted, and additional management options may be required.
- ‘High’ – High risk of introducing IMS means additional management options are required before this vessel mobilises to the Operational Area.

Following the allocation of a ‘low’ risk rating for a vessel or immersible equipment, the information provided by the vessel operator for the purposes of risk assessment must be confirmed before mobilisation. For vessels or equipment classified as posing an ‘uncertain’ or ‘high’ theoretical risk, a range of management options are presented to reduce this theoretical risk to an acceptable level and achieve a low risk status. These management options have been developed with the intention of reducing IMS risk to levels that are ALARP. It is a flexible approach that allows for a range of management actions to be tailored for a specific vessel movement. These will be assessed on a case-by-case basis and may include:

- having a suitably qualified and experienced IMS inspector inspect (desktop, in-water or dry dock) to verify risk status; where practicable, the inspection shall occur within seven days (but not more than 14 days) before final departure to the Operational Area
- applying in-water or dry dock cleaning of the hull and other niche areas, typically applied where the risk assessment outcome is High risk driven by the age of the AFC on the vessel and its time spent in similar climatic region ports

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- 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 Woodside, 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, survey vessels and immersible equipment are required to be a low risk of introducing IMS.

7.2.4 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*, Woodside's Principal Heritage Advisor must notify the Minister responsible for the Act, the 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.

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7.2.5 Frontline Offshore Seabird Management Plan

Survey vessels will implement Woodside's Frontline Offshore Seabird Management Plan (SBMP), which aligns with recommendations in the National Light Pollution Guidelines for Wildlife (Commonwealth of Australia 2023) (see C 5.1). When implemented, the SBMP addresses seabird interaction reporting and management for offshore/inshore activities within the NWMR, specifically where the activity is located within a nocturnal seabird species BIA.

The purpose of the SBMP is to manage interactions with seabirds offshore to ensure any impacts and risks are reduced to ALARP and an acceptable level. The plan also provides frontline workers with guidance to manage seabird interactions and potential impacts resulting from these interactions identified as occurring as a result of Woodside's activities, as demonstrated in Figure 7-2.

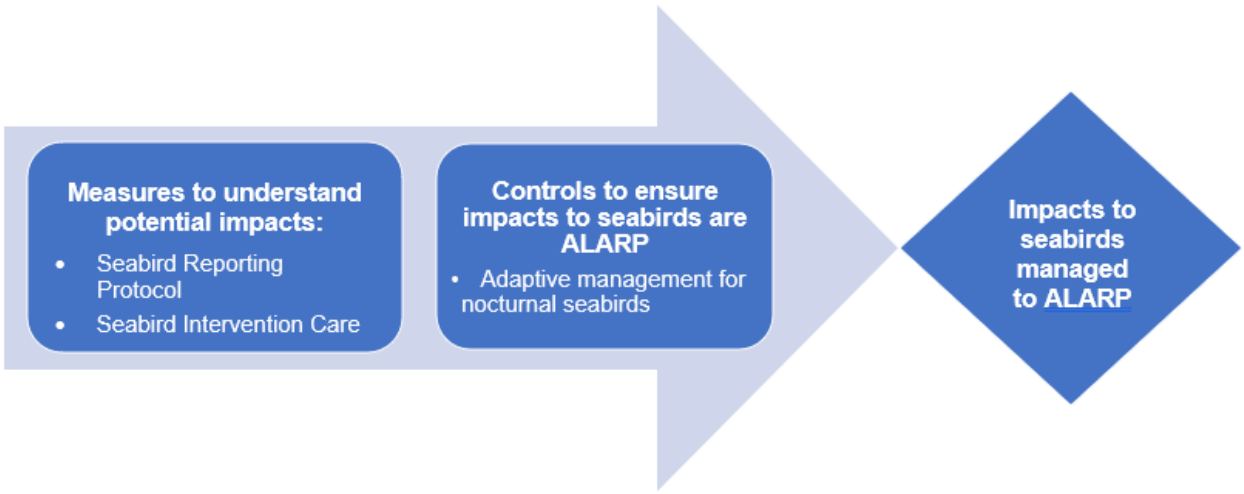


Figure 7-2: Schematic for Seabird Management Plan to manage seabird impacts to as low as reasonably practicable

The SBMP adaptive management framework has been established to manage the uncertainty of the potential impacts of artificial night at light on nocturnal seabirds. Where interactions[53] with nocturnal seabirds are identified, adaptive management controls under the SBMP may be triggered in a tiered approach.

This may include an initial assessment of:

- seabird species important habitat proximity, life cycle seasonality, and periods of heightened sensitivity such as fledgling exodus
- overlap of seabird interactions and inclement weather (for example, post-cyclonic metocean conditions are known to increase seabird groundings)

and the possible consideration of controls and mitigation actions, for example:

- extinguish outdoor/deck lights not necessary for safety and navigation at night
- use block-out-blinds on portholes and windows not necessary for safety and/or navigation.

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 the Oil Pollution First Strike Plan (Appendix H) and the Woodside Incident Management Handbook. It is the responsibility of Woodside and contractors to implement the Woodside Corporate Health, Safety and Environment Policy (Appendix A) in their areas of responsibility and to ensure that the personnel are suitably trained and competent in their respective roles.

[53] *Interaction is defined as a death, injury, entanglement or impact to seabird; or a grounding of a nocturnal seabird.*

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Table 7-4: Roles and responsibilities

Title (role)	Environmental responsibilities
Office-based personnel	
Woodside Survey Operations Project Manager	Verify relevant Environmental Approvals for the activities exist before commencing activity. Monitor and manage the activity so it is performed as per the relevant standards and commitments in this EP. 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. Ensure all project and support vessel crew members complete a Project (Including HSE) induction. Verify that contractors meet environmental related contractual obligations. Liaise with contractors to ensure communication and understanding of environment requirements as outlined in this 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. Track compliance with performance outcomes and performance standards as per the requirements of this EP.
Woodside Environmental Adviser	Prepare environmental component of relevant Induction Package. Review compliance with performance outcomes and performance standards as per the requirements of this EP. Ensure relevant Environmental Approvals for the activities exist before commencing activity. Input to environmental component of relevant Induction Package. Assist with the review, investigation and reporting of environmental incidents as required. Assist environmental monitoring and inspections/audits are performed as per the requirements of this EP as required. 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. Provide advice to relevant Woodside personnel and contractors to help them understand their environment responsibilities. Support the Survey Operations Project Manager in ensuring communications and understanding of environment requirements as outlined in this EP. Provide environmental support for activities through regular engagement with the Woodside Site Representative.
Woodside Corporate Affairs Adviser	Prepare and implement the Consultation Plan for the GPGT Surveys Program. Report on consultation. Continuously liaise and provide notification as required as outlined in the EP.
Woodside Marine Assurance Superintendent	Source and conduct relevant audit and inspection to confirm vessels comply with relevant Marine Orders and Woodside Marine Charters Instructions requirements.

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Title (role)	Environmental responsibilities
Woodside Corporate Incident Management Team (CIMT) Incident Commander	On receiving notification of an incident: • 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.
Vessel-based personnel	
Vessel Master	Ensure the vessel management system and procedures are implemented. 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 Party Chief and Woodside Site Representative. Ensure corrective actions for incidents or breaches are developed, communicated to the Woodside Site Representative, and tracked to closeout in a timely manner. Ensure closeout of actions is communicated to the Woodside Site Representative.
Party Chief/ Manager	Understand and manage environmental aspects of the survey operations per this EP and approval conditions. Provide copies of documents, records, reports and certifications (as requested by Woodside) in a timely manner to assist in compliance reporting. Ensure any environmental incidents or breaches of EPOs or PSs detailed in this EP, are reported immediately to the Woodside Site Representative and Woodside Survey Operations Project Manager.
Woodside Site Representative	Ensure project personnel adhere to the requirements of this EP so the EPOs are met, and the PSs detailed in this EP are implemented during survey operations. Ensure environmental incidents or breaches of outcomes or standards are reported as per the Woodside event notification requirements. Corrective actions for incidents and breaches must be developed, tracked and closed out in a timely manner. Ensure periodic environmental inspections are completed. Monitor and close out corrective actions (Environmental Compliance Action Register) identified during environmental monitoring or audits/inspections. Ensure any environmental incidents or breaches of EPOs or PSs detailed in this EP, are reported immediately to the Woodside Survey Operations Project Manager. Review contractors' procedures, input into Toolbox Talks and JSAs. Provide environmental support for activities through regular engagement with Woodside Environmental Adviser.

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 GPGT Surveys Program as part of the pre-mobilisation process. The assessment determines whether there is a clearly defined organisational structure that sets out the roles and

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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 EPSs using measurement criteria
- incident reporting.

7.4.3 Activities program-specific environmental awareness

Before commencing the subsea campaigns associated with the GPGT Surveys Program, a pre-activity meeting will be held 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. During these meetings, recent environmental incidents are reviewed and awareness material presented.

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 GPGT Surveys Program against the EPOs, EPSs and MC, 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 repository for compliance information relevant to each greenhouse gas activity.

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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 EPOs, Controls and EPSs detailed in this EP.

Internal auditing will be performed to cover each key project activity as summarised below.

7.5.2.1 Vessel activities

No vessel activities are associated with the GPGT Surveys Program other than those directly associated with survey activities, described in Section 7.5.2.2.

7.5.2.2 Survey activities

The following internal auditing will be performed for the survey activities:

- Pre-mobilisation inspection/audit report will be conducted by a relevant person (before commencing). The scope of the audits is risk-based and specific to the relevant activity, but will generally focus on aspects relating to ensuring appropriate understanding of environmental commitments and the operational readiness of the activity scope, including appropriate environmental controls in place. All primary vessels associated with the GPGT Survey Program will be audited by Woodside.
- At least one operational compliance audit relevant to applicable EP commitments will be conducted by a Woodside Environment Adviser for the subsea campaign. The audit may be conducted offshore or office-based, subject to the duration of the activity and logistics of performing the audit offshore for short duration scopes.
- Vessel-based HSE inspections will be conducted fortnightly by vessel HSE personnel. Each inspection will focus on a specific risk area relevant to the project activity and a formal report will be issued (e.g. bunkering controls, chemical and discharge management, cetacean reporting).

The internal audits and reviews, combined with the ongoing monitoring described in this EP, and collection of evidence for MC are used to assess EPOs and EPSs.

As part of Woodside's Environmental Management System (EMS) and/or assurances processes, activities may also be periodically selected for environmental audits as per Woodside's internal auditing process. Audit, inspection and review findings relevant to continuous improvement of environmental performance are tracked through the ECAR.

Non-conformances identified will be reported and/or tracked in accordance with this EP.

7.5.2.3 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.

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The process is multi-faceted and encompasses the marine assurance activities of:

- offshore vessel management system assessment (OVMSA)
- dynamic position (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.

7.5.2.4 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

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- 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 EPSs 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 relevant Environment teams, regularly reviews of the effectiveness of the EP Implementation Strategy are undertaken at a frequency commensurate with activity duration and risk. This review may consider:

- Geophysical and geotechnical survey key performance indicators (KPIs)
- Effectiveness of 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
- formal and informal industry benchmarking
- cross-asset learnings
- engineering and technical authorities discipline communications and sharing.

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7.5.4.3 Review of impacts, risks and controls across the life of the Environment Plan

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 an acceptable level. Information learned from previous activities conducted under this EP will be considered. Controls that 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

Knowledge relevant to the existing environment is reviewed 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.
- 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 newly identified impacts and risks

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 Management of change and revision

7.8.1 Environment Plan management of change

Management of changes are managed in accordance with Woodside's Environmental Approval Requirements Australia Commonwealth Guideline. Management of changes relevant to this EP, concerning the scope of the activity 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

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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.

7.8.2 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 the EP, including OPEP, needs to be resubmitted. 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.

7.9 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 refer 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.

7.10 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 process 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

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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.

Woodside has established and maintains a publicly available, up to date and interactive map to provide stakeholders with updated information on activities being conducted as part of the GPGT Surveys Program particularly during SIMOPS. The interactive map is available on Woodside's website.

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 supports ongoing engagement with Traditional Custodians, which complies with Woodside policies, strategies and procedures and is directly informed by feedback from Traditional Custodians.

It provides a mechanism for ongoing dialogue so Traditional Custodians can, on an ongoing basis, provide Woodside with feedback relating to the Petroleum Activity and in relation to caring for and managing Country, including Sea Country. The approach will be tailored to each Traditional Custodian group and may include, as agreed with relevant Traditional Custodians:

- **Error! Reference source not found.**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.

Error! Reference source not found. At the time of EP submission, activities as part of ongoing consultation regarding the activity are planned with Traditional Custodians. 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.

Table 7-5: Ongoing consultation engagements

Report/information	Recipient	Purpose	Frequency	Content
Emails/meetings	Relevant cultural authorities.	Identification, assessment and consideration of cultural values relevant to the Operational Area and EMBA	Ongoing	Assessment of cultural values. Any relevant new information on cultural values will be assessed using the EP Management of Knowledge (refer to Section 7.7) and Management of Change (refer to Section 7.8) processes.
Notification (email)	AFMA DPIRD	Standard practice	At least 10 days prior to commencement and following completion of activities	PS 1.2 (Section 6.8.1). Date of activity start.
Notification (email)	AHO	As requested by AMSA and AHO	No less than 4 weeks prior to commencement	PS 1.2 (Section 6.8.1). Date of activity start.

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Report/information	Recipient	Purpose	Frequency	Content
Updates (email)		during consultation	As required	Changes to planned activities.
Notification (email)	DoD	Standard practice	No less than 5 weeks prior to commencement	PS 1.2 (Section 6.8.1). Date of activity start
Notification (email)	NOPSEMA, DMPE	Standard practice per regulations	At least 10 days prior to commencement and following completion of activities	As per Regulation 54.
Notification (email)	AMSA's Response Centre (ARC)	As requested by AMSA during consultation	At least 24 to 48 hours before operations commence	PS 1.3 (Section 6.8.1). Date of activity start.
Update (email)			Provide updates to the AHO and ARC should there be changes to the activity	Changes to planned activities.
Notification (email)	Australasian Underwater Cultural Heritage Database Any other stakeholders as required in the Unexpected Finds Procedure (see Section 7.2.4)	Report any unexpected finds of potential underwater cultural heritage	If triggered by Unexpected Finds Procedure (see Section 7.2.4)	Refer to Unexpected Finds Procedure (see Section 7.2.4).
Notification (email)	WAFIC Recfishwest Tuna Australia Santos Chevron Telstra	As requested during consultation and/or organisation	At least 10 days prior to commencement and after completion of activities	PS 1.4 (Section 6.8.1). Date of activity start and end.
Notification (email), Contact by survey team	Telstra	As requested during consultation	At least 4 weeks prior to the commencement of any activities that may result in seabed contact within 500 metres of any Telstra seabed cables.	P.S. 2.7 (Section 6.8.2) Date of activity start.
Notification (email)	All relevant persons to the proposed activity	Notification of significant change	As appropriate	Notification of significant change.

7.11 Reporting

To meet the EPOs and EPSs outlined in this EP, Woodside reports at a number of levels, as outlined in the next sections.

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7.11.1 Routine reporting (internal)

7.11.1.1 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.

7.11.1.2 Regular health, safety and environment meetings

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.

7.11.1.3 Performance reporting

Monthly and quarterly performance reports are developed and reviewed by the Function and Business Unit Leadership Teams. 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.

7.11.2 Routine reporting (external)

7.11.2.1 Start and end notifications of the Geophysical and Geotechnical Surveys Program

In accordance with Regulation 54, Woodside will notify NOPSEMA of the start of the GPGT Surveys Program at least 10 days before the activity commences and will notify NOPSEMA within 10 days of completing the activity.

7.11.2.2 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 GPGT Surveys Program for previous month (if applicable)
Environmental Performance Report	NOPSEMA	Annually, with the first report submitted within 12 months of the commencement of the GPGT Surveys Program 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

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7.11.2.3 End of the Environment Plan

The EP will end when Woodside notifies NOPSEMA that the GPGT Surveys Program 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.

7.11.3 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.

7.11.4 Incident reporting (external) – Reportable and recordable

7.11.4.1 Reportable incidents

Definition

A reportable incident is defined under Regulation 5 of the Environment Regulations as:

> *'an incident relating to the activity that has caused, or has the potential to cause, moderate to significant environmental damage'.*

A reportable incident for the GPGT Surveys Program 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 GPGT Surveys Program has not identified any risks with a potential consequence level of C+ for environment. All incidents with actual or potential environmental consequences will be investigated fully. Where an actual or potential environment consequence of C+ is identified, this incident will still be classified as a reportable incident and appropriate notifications completed.

Any such incidents represent potential events that 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 two hours of the incident or of its detection by Woodside
- provide a written record of the reported incident to NOPSEMA, the National Offshore Petroleum Titles Administrator and the department of the responsible State Minister (DMPE) as soon as practicable after orally reporting the incident
- complete a written report for all reportable incidents using a format consistent with the NOPSEMA Form FM0831 – Reportable Environmental Incident (Appendix E), which must be submitted to NOPSEMA as soon as possible (ASAP), but within three 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 DMPE, within seven days of the written report being provided to NOPSEMA.

AMSA will be notified of oil spill incidents ASAP after their occurrence, and DCCEEW notified if MNES are to be affected by the oil spill incident.

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7.11.4.2 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.

7.11.4.3 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 Area.

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 in the Hydrocarbon Spill Australia Regulatory Framework[54] 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.

[54] *In accordance with Regulation 56 of the Environmental Regulations, references to the Woodside Hydrocarbon Spill Australia Regulatory Framework within this EP refer to Appendix K of the North West Shelf Phase 1 Plug and Abandonment and TPA03 Well Intervention Environment Plan, which is available on NOPSEMA's website using the following link: https://docs.nopsema.gov.au/A1282745*

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Table 7-7: External incident reporting requirements

Event	Responsibility	Notifiable party	Notification requirements	Contact	Contact detail
Any marine incidents during GPGT Surveys Program	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)
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 AFTN: YSARYCYX
Any oil pollution incident that 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

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Event	Responsibility	Notifiable party	Notification requirements	Contact	Contact detail
Within 2 hours of becoming aware of a marine oil pollution incident (MOP) that occurs in or may impact state waters	Corporate Incident Management Team (CIMT) Incident Commander (IC) or delegate	Department of Transport and Major Infrastructure (DTMI)	Verbally notify DTMI's Maritime Environmental Emergency Response (MEER) Unit Duty Officer that a spill has occurred and, if required, request use of equipment stored in Karratha. Follow up with a written Marine Pollution Report (POLREP) as soon as practicable following verbal notification. Additionally, DTMI to be notified if spill is likely to extend into WA State waters. Request DTMI to provide Liaison to Woodside Incident Management Team (IMT).	DTMI MEER Unit Duty Officer	Phone: 08 9480 9924

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7.12 Emergency preparedness and response

7.12.1 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	Regulations 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 OPEP has the following components: • Woodside's oil pollution emergency plan has the following components: • Hydrocarbon Spill Australia Regulatory Framework[55] • 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	Regulations 22(8), 22(12), 22(13), 22(14)	EP: Section 7.12.6 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)	Hydrocarbon Spill Australia Regulatory Framework[55]

7.12.2 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. After mapping training to Woodside identified competencies, training was then mapped to positions based on their required competencies (Table 7-9).

[55] *In accordance with Regulation 56 of the Environmental Regulations, references to the Woodside Hydrocarbon Spill Australia Regulatory Framework within this EP refer to Appendix K of the North West Shelf Phase 1 Plug and Abandonment and TPA03 Well Intervention Environment Plan, which is available on NOPSEMA's website using the following link: https://docs.nopsema.gov.au/A1282745*

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Table 7-9: Emergency response training requirements

IMT position	Minimum competency
Corporate Incident Management Team (CIMT) Incident Commander and Deputy Incident Commander	IMT Fundamentals (internal course) or equivalent ICS100/200 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 Lead	IMT Fundamentals course ICS 100/200 IMOII or equivalent spill response specialist level with an OSRO Participation in L2 activation, exercise or skills maintenance
Note on competency/equivalency	
In 2023, Woodside reviewed its 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 CIMT 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 completing 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 Hydrocarbon Spills Preparedness Dashboard reflects the competencies required for each oil spill role (IMT/operational).	

7.12.3 Emergency response preparation

The Emergency Operations Centre, based in Woodside's head office, is the onshore coordination point for an offshore emergency. The Emergency Operations Centre is staffed by an appropriately skilled team available on call 24 hours a day. The purpose of this team is to coordinate incidents, maintain the safety of personnel, minimise damage to the environment and facilities, and liaise with external agencies. Woodside's Incident Command Structure is included in the Oil Pollution First Strike Plan and response arrangements are further detailed in the Hydrocarbon Spill Australia Regulatory Framework[56]. Roles and responsibilities for emergency response are detailed in the Woodside Incident Management Handbook.

Woodside will have an Emergency Response Plan (ERP) in place relevant to the GPGT Surveys Program. The ERP provides procedural guidance specific to the asset and location of operations to control, coordinate and respond to an emergency or incident. The ERP will contain instructions for vessel emergency, medical emergency, search and rescue, reportable incidents, incident notification, contact information and activation of the contractor's emergency centre and Woodside Communication Centre.

In 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 survey vessels will have onboard equipment for responding to emergencies, including medical, firefighting and hydrocarbon spill response equipment.

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7.12.4 Oil and other hazardous materials spill

A significant hydrocarbon spill during the GPGT Surveys Program is unlikely, but should such an event occur, it has the potential to cause serious environmental and reputational damage if not managed properly. The Hydrocarbon Spill Australia Regulatory Framework[56] document, supported by the GPGT Surveys Program's Oil Pollution First Strike Plan (Appendix H), which provides tactical response guidance to the activity/area, and the Oil Spill Preparedness and Response Mitigation Assessment (Appendix G), cover spill response for this GPGT Surveys Program. The Crisis & Emergency Management Team manages Woodside's hydrocarbon spill response equipment stockpile. Woodside also maintains a suite a contracts for access to additional specialise response equipment and trained personnel as required via Australian and international spill response organisations and labour supply companies. In the event of a major spill, Woodside will enact first strike response actions, in liaison with the relevant Control Agency, as detailed in the activity-specific Oil Pollution First Strike Plan.

Vessels will have shipboard oil pollution emergency plans (SOPEPs) in accordance with the requirements of MARPOL 73/78 Annex I. These plans outline responsibilities, specify procedures and identify resources available in the event of a hydrocarbon or chemical spill from vessel activities. The GPGT Surveys Program'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 GPGT Surveys Program, as detailed in Appendix G.

7.12.5 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.

7.12.6 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. 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.

The activity-specific Angel CCS GPGT Survey Oil Pollution First Strike Plan will be tested in alignment with Table 7-10. This ensures personnel are familiar with spill response procedures, reporting requirements and roles/responsibilities.

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Table 7-10: Testing of response capability

Response category	Scope	Response testing frequency	Response testing objective
Level 1 response	Exercises are vessel-specific	At least one Level 1 First Strike drill must be conducted during 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 vessel-specific	Level 2 Emergency Management exercises are relevant to activities with an operational duration of one month or greater. At least one Emergency Management exercise per vessel per campaign must be conducted within the first month of commencing the activity and then at every 6-month hire period thereafter, where applicable based on duration.	Test both the facility IMT response and that of the CIMT following handover of incident control
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

7.12.7 Testing of hydrocarbon spill response arrangements

Woodside is required to test hydrocarbon spill response arrangements as per Regulations 22(12), 22(13) and 22(14) in the Environment Regulations. Woodside's arrangements for spill response are common across Australian operating assets and activities to ensure controls are consistent. The overall objective of testing these arrangements is to ensure that Woodside maintains an ability to respond to a hydrocarbon spill, specifically to:

- ensure relevant responders, contractors and key personnel understand and practise their assigned roles and responsibilities
- test response arrangements and actions to validate response plans
- ensure lessons learned are incorporated into Woodside processes and procedures and improvements made where required.

If new response arrangements are introduced, or existing arrangements significantly amended, additional testing is undertaken accordingly. Additional activities or activity locations are not anticipated to occur; however, if they do, testing of relevant response arrangements will be undertaken as soon as practicable.

In addition to the testing of response capability described in Table 7-10, up to eight formal exercises are planned annually, pan-Woodside, to specifically test arrangements for responding to a hydrocarbon spill to the marine environment.

7.12.8 Testing of arrangements schedule

Woodside's Testing of Arrangements Schedule (Figure 7-3) aligns with international good practice for spill preparedness and response management; the testing is compatible with the International Petroleum Industry Environmental Conservation Association (IPIECA) Good Practice Guide and the Australian Institute for Disaster Resilience Australian Emergency Management Arrangements Handbook. If a spill occurs, enacting these arrangements will underpin Woodside's ability to implement a response across its petroleum activities.

The hydrocarbon spill arrangements shown in the rows of the schedule are tested against Woodside's regulatory commitments. Each arrangement has a support agency/company and an area to be tested (e.g. capability, equipment and personnel). For example, an arrangement could be to test Woodside's personnel

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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 three-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).

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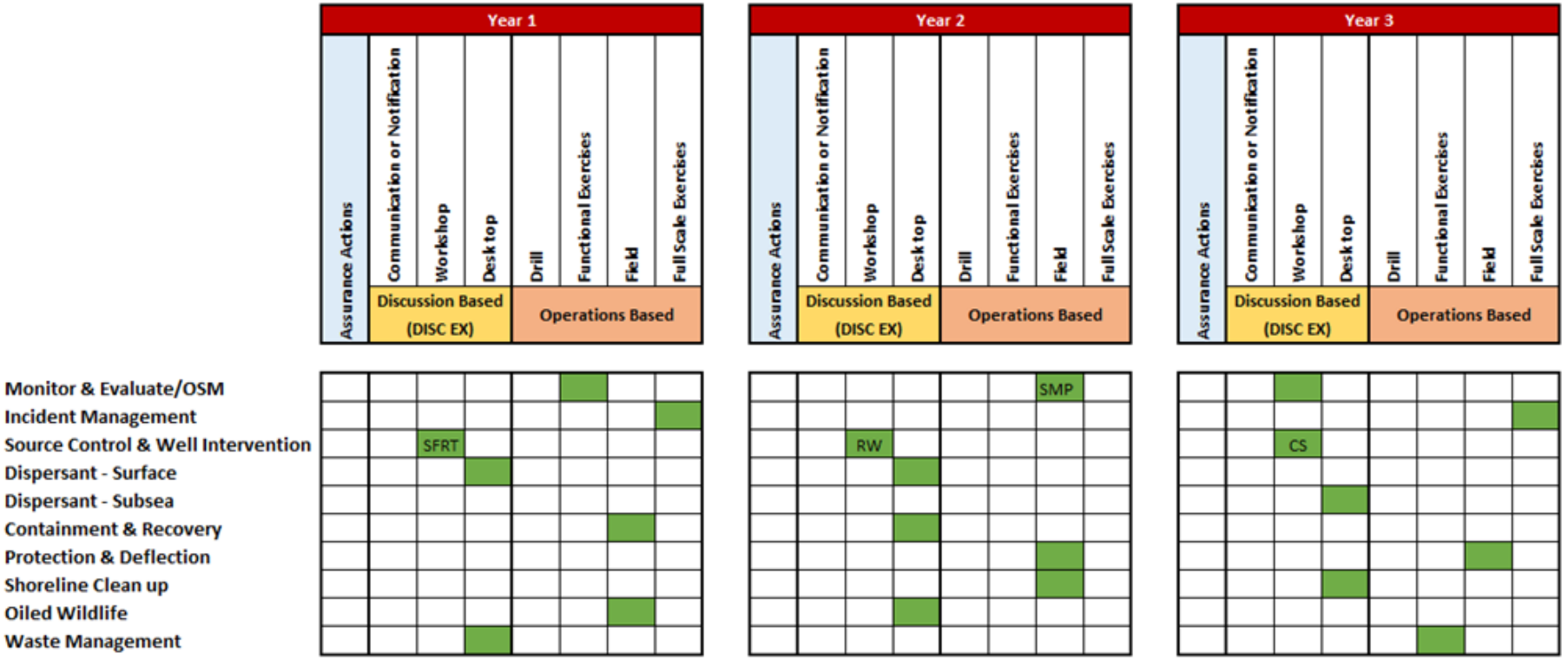


Figure 7-3: Indicative three-yearly testing of arrangements schedule

Note: Schedule is subject to change; additional detail is included in live document.

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7.12.9 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.

The survey vessels 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 GPGT Surveys Program, 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
ABN	Australian Business Number
ACN	Australian Company Number
AFC	antifouling coating
AHO	Australian Hydrographic Office
ALARP	as low as reasonably practicable
AMP	Australian Marine Park
AMSA	Australian Maritime Safety Authority
Angel CCS JV	Angel Carbon Capture and Storage Joint Venture
ARC	AMSA's Response Centre
AS	Australian Standard
ASAP	as soon as possible
ATSB	Australian Transport Safety Bureau
ATSIHP Act	*Aboriginal and Torres Strait Islander Heritage Protection Act 1984*
AusSAR	Australian Search and Rescue
AUV	autonomous underwater vehicle
BCF	bioconcentration factor
BIA	biologically important area
BOM	Bureau of Meteorology
BP	before present
CCS	carbon capture and storage
CEFAS	Centre for Environment, Fisheries and Aquaculture Science
CFA	Commonwealth Fisheries Association
CIMT	Corporate Incident Management Team
CMID	Common Marine Inspection Document
CMMS	Computerised Maintenance Management System
CMT	Crisis Management Team
CO	carbon monoxide
CO2	carbon dioxide
CPT/PCPT/CPTu	piezocone penetrometer testing
CS	cost/sacrifice
CTD	conductivity-temperature-depth profiler
CV	company values
DAFF	Department of Agriculture, Fisheries and Forestry
DAWE	Department of Agriculture, Water and the Environment
DCCEEW	Commonwealth Department of Climate Change, Energy, Environment and Water
DMPE	Western Australian Department of Mines, Petroleum and Energy

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Term	Definition
DNP	Director of National Parks
DTMI	Western Australian Department of Transport and Major Infrastructure
DP	dynamic positioning
DPIRD	Department of Primary Industries and Regional Development
DPLH	Department of Planning, Lands and Heritage
ECAR	Environmental Compliance Action Register
EMBA	environment that may be affected
EMS	Environmental Management System
ENVID	environment identification
Environment Regulations	Commonwealth Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023
EP	Environment Plan
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
F	feasibility
F-Pil	flatback turtle Pilbara
GHG	greenhouse gas
GNSS	Global Navigation Satellite Systems
G-NWS	Green turtle North West Shelf
GP	good industry practice
GPGT	geophysical and geotechnical
GWA	Goodwyn Alpha
HAZID	historic hazard identification
HF	high frequency
HOCNF	Harmonised Offshore Chemical Notification Format
HQ	hazard quotient
HSE	health, safety and environment
H-WA	hawksbill turtle Western Australia
IAP	Incident Action Plan
IC	Incident Commander
CIMT	Corporate Incident Management Team
ICLDP	Incident and Crisis Leadership Development Program
ICS	Incident Command System
ID	identity/identification
ILUA	Indigenous Land Use Agreement
IMCA	International Maritime Contractors Association

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Term	Definition
IMMR	inspection, maintenance, monitoring and repair
IMO	International Maritime Organization
IMS	invasive marine species
IMSMA	IMS Management Area
IMT	Incident Management Team
ISO	International Organization for Standardization
IUCN	International Union for Conservation of Nature
KEF	Key Ecological Feature
KPI	key performance indicator
LAT	lowest astronomical tide
LCS	legislation, codes and standards
LF	low frequency
LH-WA	loggerhead turtle Western Australia
LNG	liquefied natural gas
MAE	major accident event
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)
MBES	multibeam echo sounder
MC	measurement criteria
MFO	marine fauna observer
MGO	marine gas oil
MNES	matters of national environmental significance
MOC	management of change
MODU	mobile offshore drilling unit
MOPO	Manual of Permitted Operations
MPA	Marine Protected Area
N/A	not applicable
NGER Act	National Greenhouse and Energy Reporting Act 2007 (Cth)
NHP	National Heritage Place
NM	nautical miles
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NOPSEMA	National Offshore Petroleum Safety and Environmental Management Authority
NOx	oxides of nitrogen
NTA	*Native Title Act 1993*
NWMR	North-west Marine Region
NWS	North West Shelf
NYFL	Ngarluma Yindjibarndi Foundation Ltd

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Term	Definition
NZ	New Zealand
OCIMF	Oil Companies International Marine Forum
OCNS	Offshore Chemical Notification Scheme
OIW	oil in water
OPEP	Oil Pollution Emergency Plan
OPGGS Act	Commonwealth *Offshore Petroleum and Greenhouse Gas Storage Act 2006*
OSREC	Oil Spill Response Skills Enhancement Course
OSRO	Oil Spill Response Organisation
OUV	outstanding universal value
OVID	Offshore Vessel Inspection Database
OVMSA	Offshore Vessel Management System Assessment
PAM	passive acoustic monitoring
PBC	Prescribed Body Corporate
PCPT	piezocone penetration testing
PJ	professional judgement
PK	peak pressure
PM10	particulate matter less than 10 microns
PMST	Protected Matters Search Tool
PPA	Pilbara Ports Authority
ppb	parts per billion
PS	performance standard
PSM	process safety management
PSRA	process safety risk assessment
PSZ	Petroleum Safety Zone
PTS	permanent threshold shift
QA/QC	quality assurance, quality control
RATSIB	Representative Aboriginal/Torres Strait Islander Body
RBA	risk-based analysis
RCC	Regional Coordination Centre
rms	root mean square
ROV	remotely operated vehicle
SAP-PM	Woodside's CMMS
SBMP	Seabird Management Plan
SBP	sub-bottom profiler
SEL	sound exposure level
SIMAP	Spill Impact Mapping and Analysis Program
SIMOPS	simultaneous operations
SO_2	sulphur dioxide
SOPEP	Ship Oil Pollution Emergency Plan

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Term	Definition
SPL	sound pressure level
SSS	side scan sonar
SV	societal value
The Regulations	Commonwealth Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023
TAP	Threat Abatement Plan
TSS	total suspended solids
TTS	temporary threshold shift
UCH	underwater cultural heritage
UK	United Kingdom
USBL	ultra-short baseline
VHF	very high frequency
VOCs	non-methane volatile organic compounds
WA	Western Australia
WAFIC	WA Australian Fishing Industry Council
WALGA	WA Local Government Association
WHA	World Heritage Area
WLS	Woodside Learning Services
WMS	Woodside Management System
WOMP	Well Operations Management Plan

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APPENDIX A WOODSIDE ENVIRONMENT AND BIODIVERSITY, CLIMATE AND RISK MANAGEMENT POLICIES

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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.

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’.

APPENDIX B RELEVANT REQUIREMENTS

Commonwealth legislation	Summary
Aboriginal and Torres Strait Islander Heritage Protection Act 1984	This Act seeks "to preserve and protect places, areas and objects of particular significance" to Aboriginal people. Under the Section 9 and 10 provisions of the Act, the Minister for the Environment may declare significant Aboriginal areas temporarily or permanently protected if they are considered under threat. Similar declarations regarding Aboriginal objects can be made under Section 12. Under Section 22 of the Act, the contravention of any of these declarations is an offence. Additionally, the discovery of any Aboriginal remains must be reported to the Minister under Section 20. Damage or interference with Aboriginal objects or places is not an offence under the 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 managing air navigation.
Australian Maritime Safety Authority Act 1990	This Act establishes a legal framework for AMSA, which represents the Australian Government and international forums in the development, implementation and enforcement of international standards, including those governing ship safety and marine environment protection. AMSA is responsible for administering the Marine Orders in Commonwealth waters.
Aquatic Resources Management Act 2016	The *Aquatic Resources Management Act 2016* aims to conserve aquatic ecosystems, ensure sustainable development of fishing and aquaculture, and balance economic, social, and cultural benefits among fishery resource user groups.
Australian Radiation Protection and Nuclear Safety Act 1998	This Act relates to protecting the health and safety of people, and protecting the environment from the harmful effects of radiation.
Biosecurity Act 2015 *Quarantine Regulations 2000* *Biosecurity Regulation 2016* *Australian Ballast Water Management Requirements 2022* *Biosecurity Amendment (Biofouling Management) Regulations 2021*	This Act provides the Commonwealth with powers to take quarantine measures, and implement necessary related programs, to prevent introducing any plant, animal, organism or matter that could contain anything that could threaten Australia's native flora and fauna or natural environment. The Commonwealth's powers include entry, seizure, detention and disposal. This Act includes mandatory controls on using seawater as ballast in ships and declaring sea vessels voyaging out of and into Commonwealth waters. The Regulations stipulate that all information regarding the voyage of the vessel and the ballast water is declared correctly to the quarantine officers. The Biofouling Management Regulations requires ships to report information about biofouling management and

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Commonwealth legislation	Summary
	the voyage history of the ship in the past 12 months through a prearrival report.
Environment Protection and Biodiversity Conservation Act 1999 *Environment Protection and Biodiversity Conservation Regulations 2000*	This Act protects MNES. 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 Minister for the Environment and Water.
Environment Protection (Sea Dumping) Act 1981 *Environment Protection (Sea Dumping) Regulations 1983*	This Act provides for protecting the environment by regulating dumping of matter into the sea, incineration of waste at sea, and placement of artificial reefs.
Fisheries Management Act 1991	The *Fisheries Management Act 1991* is pursued by the Minister and Australian Fisheries Management Authority (AFMA). The Act objectives include the establishment of efficient, cost-effective fisheries management that ensure ecologically sustainable practice, maximin economic return, maintained accountability, and compliance to government cost-recovery targets.
Fish Resources Management Act 1994	The *Fish Resources Management Act 1994* relates to the management of fish resources, including the development and management of fisheries and aquaculture and the conservation of fish and other aquatic resources and their habitats, and for related purposes.
Hazardous Waste (Regulation of Exports and Imports) Act 1989 (Cth)	The Act regulates the export, import, and transit of hazardous waste to ensure it is managed in an environmentally sound manner, protecting human health and the environment both within and outside Australia. It implements Australia's obligations under the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal.
Industrial Chemicals Environment Management (Register) Act 2021	This Act provides for the Minister to make one or more scheduling decisions for a relevant industrial chemical and to vary or revoke such a decision.
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 restricting the use of certain chemicals that 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 implementing National Environment Protection Measures to protect, restore and enhance the quality of the environment in Australia and ensure the community has access to relevant and meaningful information about pollution. The National Environment Protection Council has made National Environment Protection Measures relating to ambient air quality, 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 National Greenhouse and Energy Reporting Scheme for reporting GHG emissions and energy consumption and production by corporations in Australia.

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Commonwealth legislation	Summary
Native Title Act 1993	The *Native Title Act 1993* establishes processes to recognise and protect Native Title, and the rights afforded to Native Title holders and registered Native Title claimants in relation to thirdparty land use addresses Native Title rights and interests, which may include rights and interests in heritage. This Act does not apply where Native Title has not been determined to exist.
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 SOLAS. This Act is the primary legislation that regulates ship and seafarer safety and 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 2024*	This Act is the principal Act governing offshore petroleum exploration and production in Commonwealth waters. Specific environmental, resource management and safety obligations are set out in the listed regulations.
Ozone Protection and Synthetic Greenhouse Gas Management Act 1989 *Ozone Protection and Synthetic Greenhouse Gas Management Regulations 1995*	This Act provides for protecting ozone in the atmosphere by controlling and ultimately reducing the manufacture, import and export of ozone-depleting substances and synthetic GHGs, and replacing them with suitable alternatives. The Act will only apply to Woodside if it manufactures, imports or exports ozonedepleting substances.
Protection of the Sea (Powers of Intervention) Act 1981	This Act authorises the Commonwealth to take measures to protect the sea from pollution by oil and other noxious substances discharged from ships. It provides legal immunity for persons acting under an AMSA direction.
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*	This Act relates to protecting the sea from pollution by oil and other harmful substances discharged from ships. Under this Act, discharge of oil or other harmful substances from ships into the sea is an offence. There is also a requirement to keep records of the ships dealing with such substances. The Act applies to all Australian ships, regardless of their location. It applies to foreign ships operating between 3 NM off the coast out to the end of the Australian Exclusive Economic Zone (200 NM). It also applies within the 3 NM of the coast where the State/Northern Territory does not have complementary legislation.

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Commonwealth legislation	Summary
MARPOL Convention	All the Marine Orders listed, except for Marine Order 95, are enacted under both the Navigation Act and the Protection of the Sea (Prevention of Pollution from Ships) Act. The *Maritime Legislation Amendment (Prevention of Air Pollution from Ships) Act 2007* is an amendment to the *Protection of the Sea (Prevention of Pollution from Ships) Act 1983*. This amended Act provides for protecting the sea from pollution by oil and other harmful substances discharged from ships.
Protection of the Sea (Harmful Antifouling Systems) Act 2006 *Marine Order 98: Marine pollution – anti-fouling systems*	This Act relates to protecting the sea from the effects of harmful anti-fouling systems. It prohibits applying or reapplying 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 has been ratified by Australia and is implemented in Commonwealth law.
Underwater Cultural Heritage Act 2018 Underwater Cultural Heritage Guidance for Offshore Developments Guidelines to Protect Underwater Cultural Heritage	The Act prescribes penalties for damaging protected Underwater Cultural Heritage without a permit under Section 30 or in contravention of a permit under Section 28. Protected Underwater Cultural Heritage is prescribed in Section 16 to automatically include the remains and associated artefacts of any vessel or aircraft that has been in Australian waters for 75 years, whether known or unknown. 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*.

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APPENDIX C WOODSIDE MASTER EXISTING ENVIRONMENT

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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; 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 five-year basis. Key updates are captured in a 'change register'. Material risk may trigger updates within the five-year review period, as per the OPGGS (E) Regulations. Key updates may include 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)

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Table 1-1: Description of the marine bioregions

Marine Bioregion	Description
North-west (DSEWPAC, 2012a)	The NWMR includes all Commonwealth waters (from three nautical miles (NM) from the Territorial Sea Baseline to the 200 NM Exclusive Economic Zone (EEZ) boundary) extending from the WA/Northern Territory 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.

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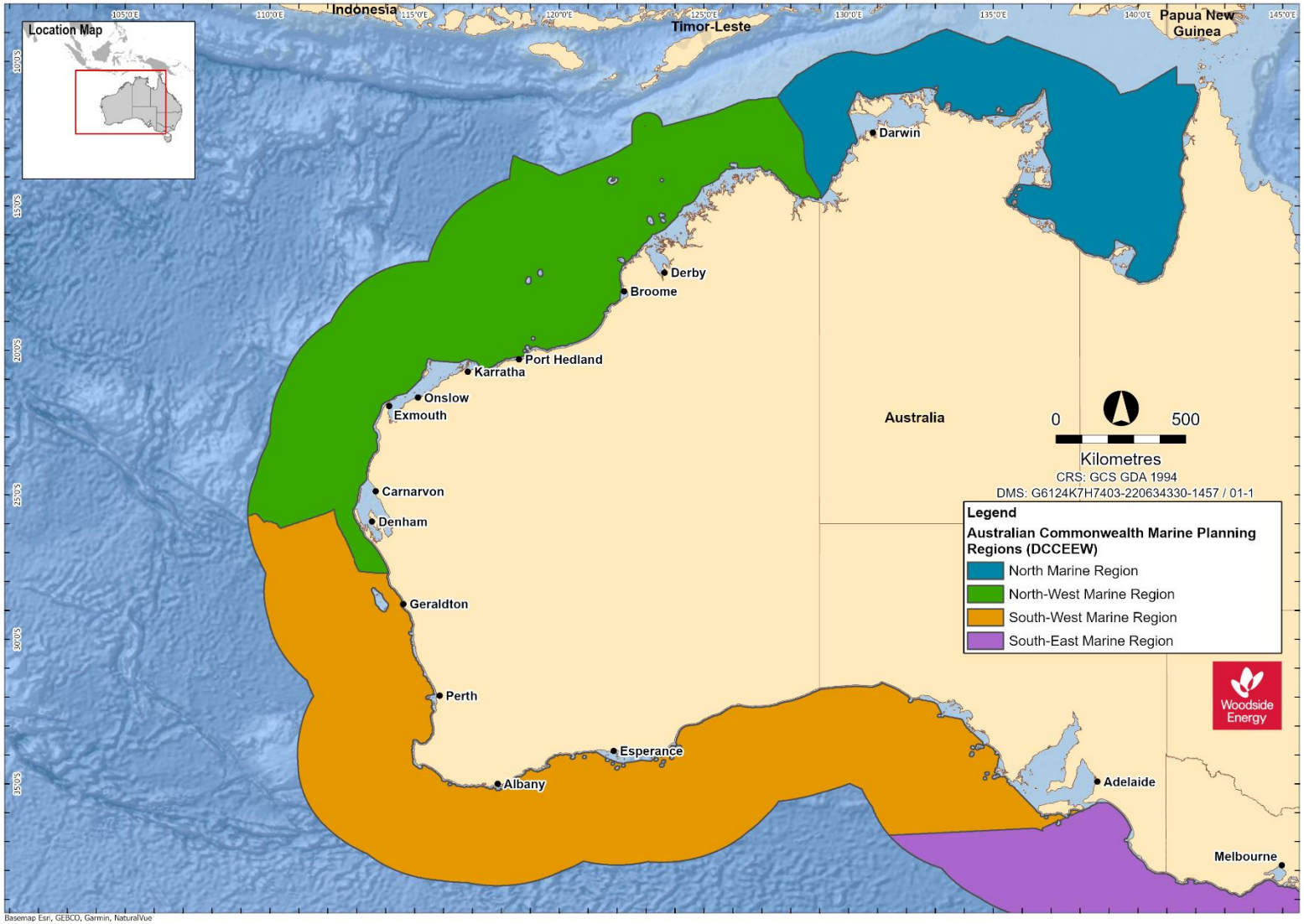


Figure 1-1: Marine bioregions: NWMR, SWMR, NMR and South-East (as defined under the EPBC Act, refer to (DCCEEW, 2021b)

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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.

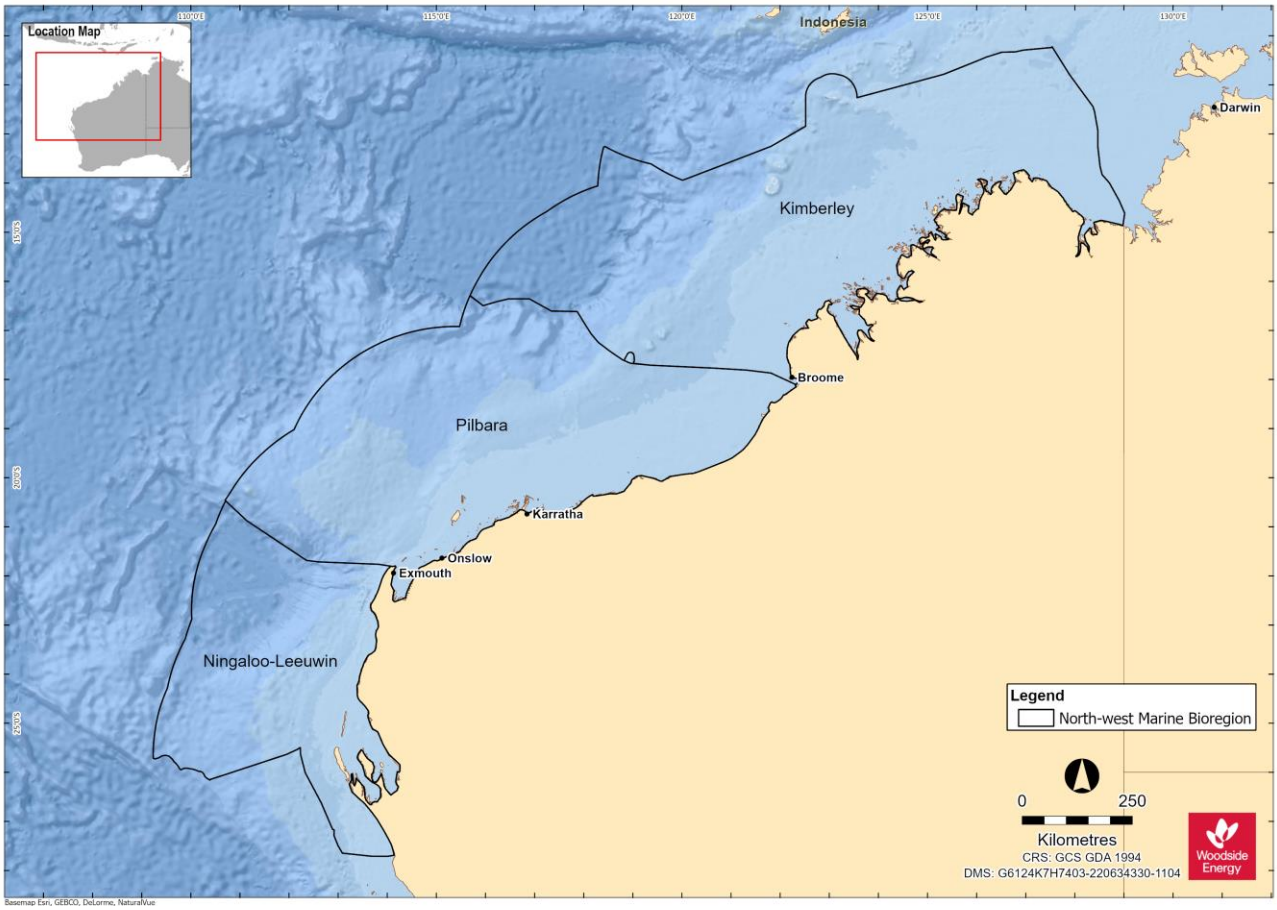
Table 2-1: Key physical characteristics of the NWMR, SWMR and NMR

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 (NWMR)

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.

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Note: Woodside areas align with the marine systems as described in DEWHA (2007a)

Figure 2-1: The marine systems of the NWMR (data source: DEWHA, 2007a)

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Table 2-2: Key characteristics of the marine systems of the NWMR

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.

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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 2-2. 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.
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 2-5**,** 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).

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Receptor	Description
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. 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).

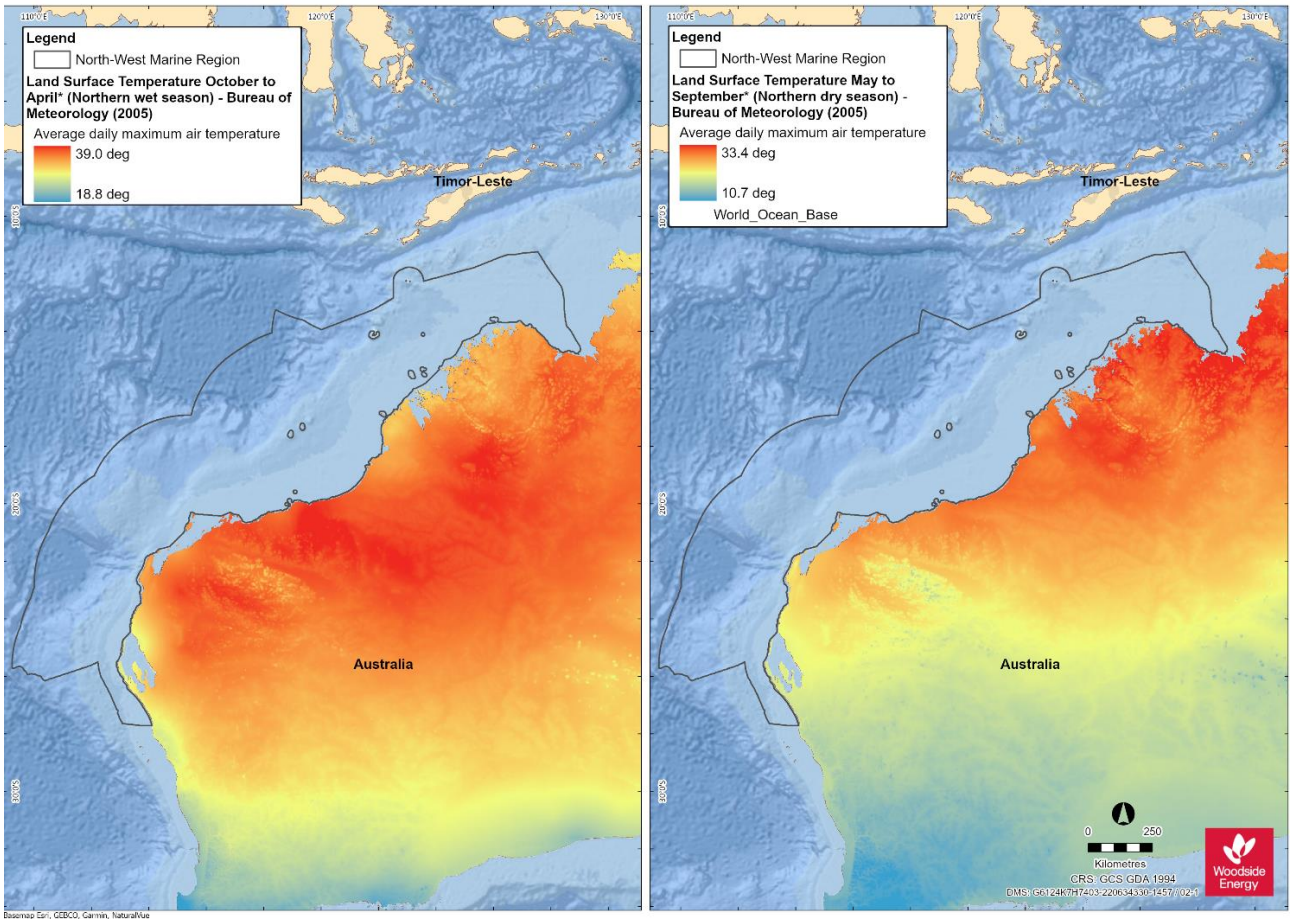


Figure 2-2: Average daily maximum air temperature for land surface adjacent to NWMR: (a) summer (northern wet season) and (b) winter (northern dry season)

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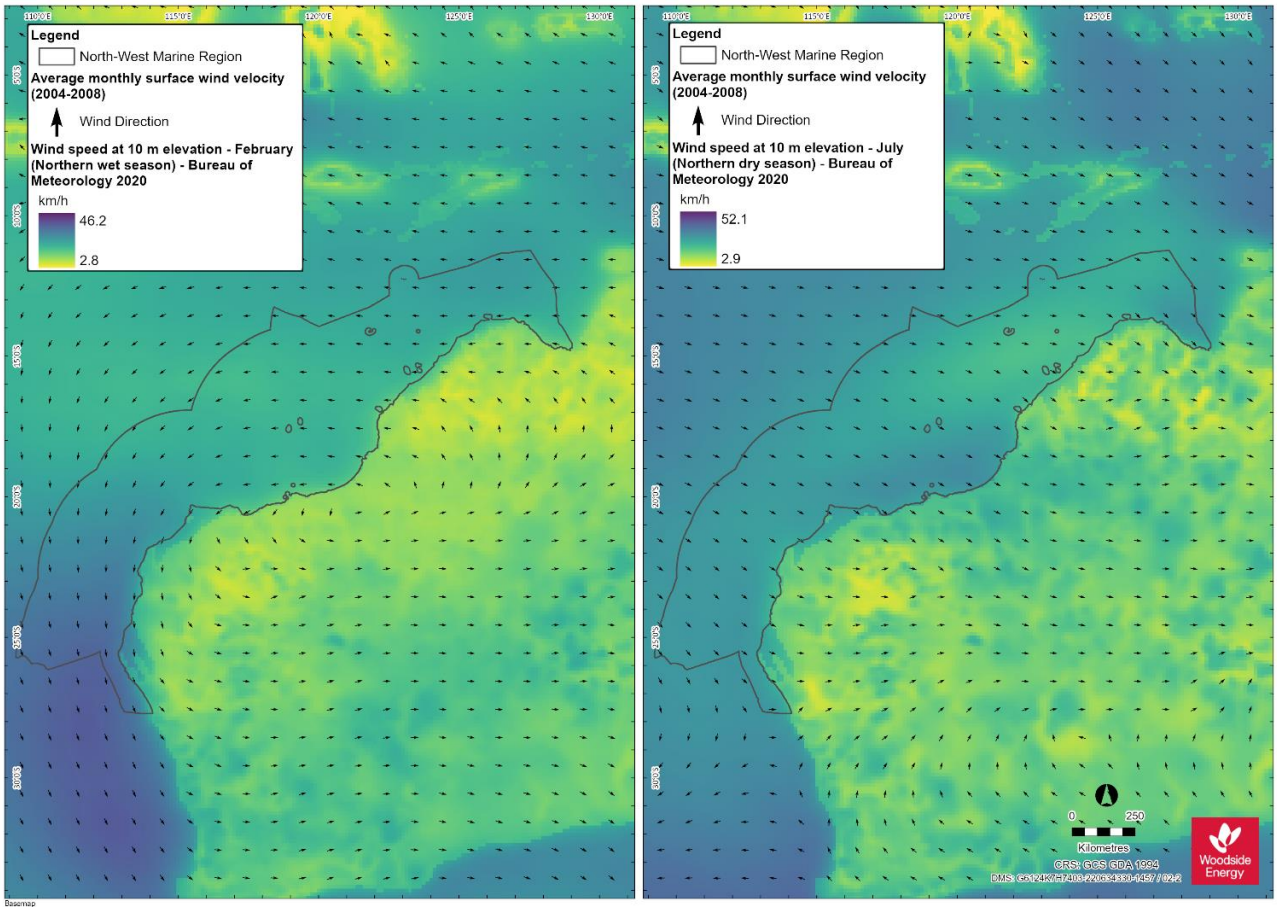


Figure 2-3: Average monthly surface wind direction and velocity for NWMR: (a) summer (February, northern wet season) and (b) winter (July, northern dry season)

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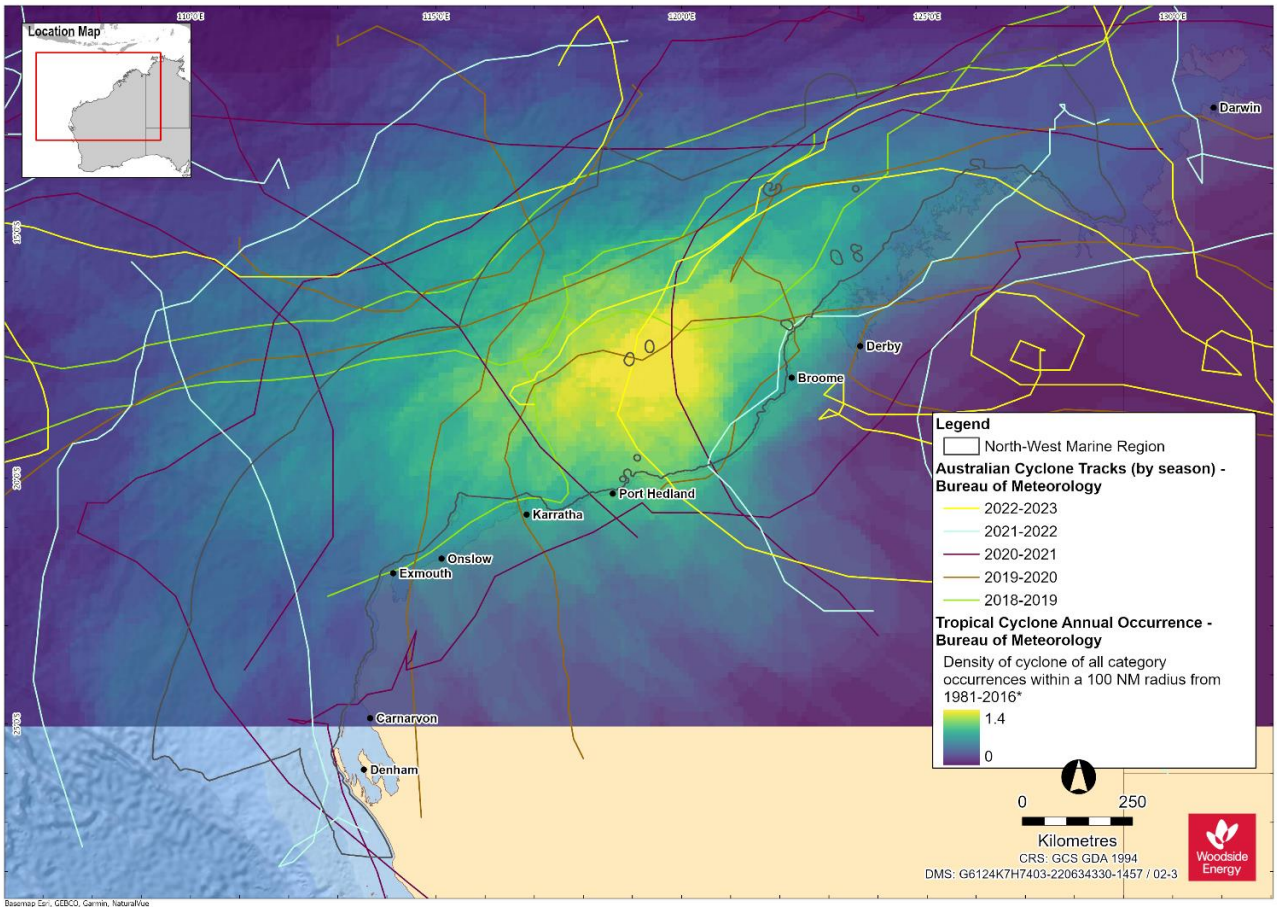


Figure 2-4: Tropical cyclone annual occurrence and cyclone tracks for NWMR

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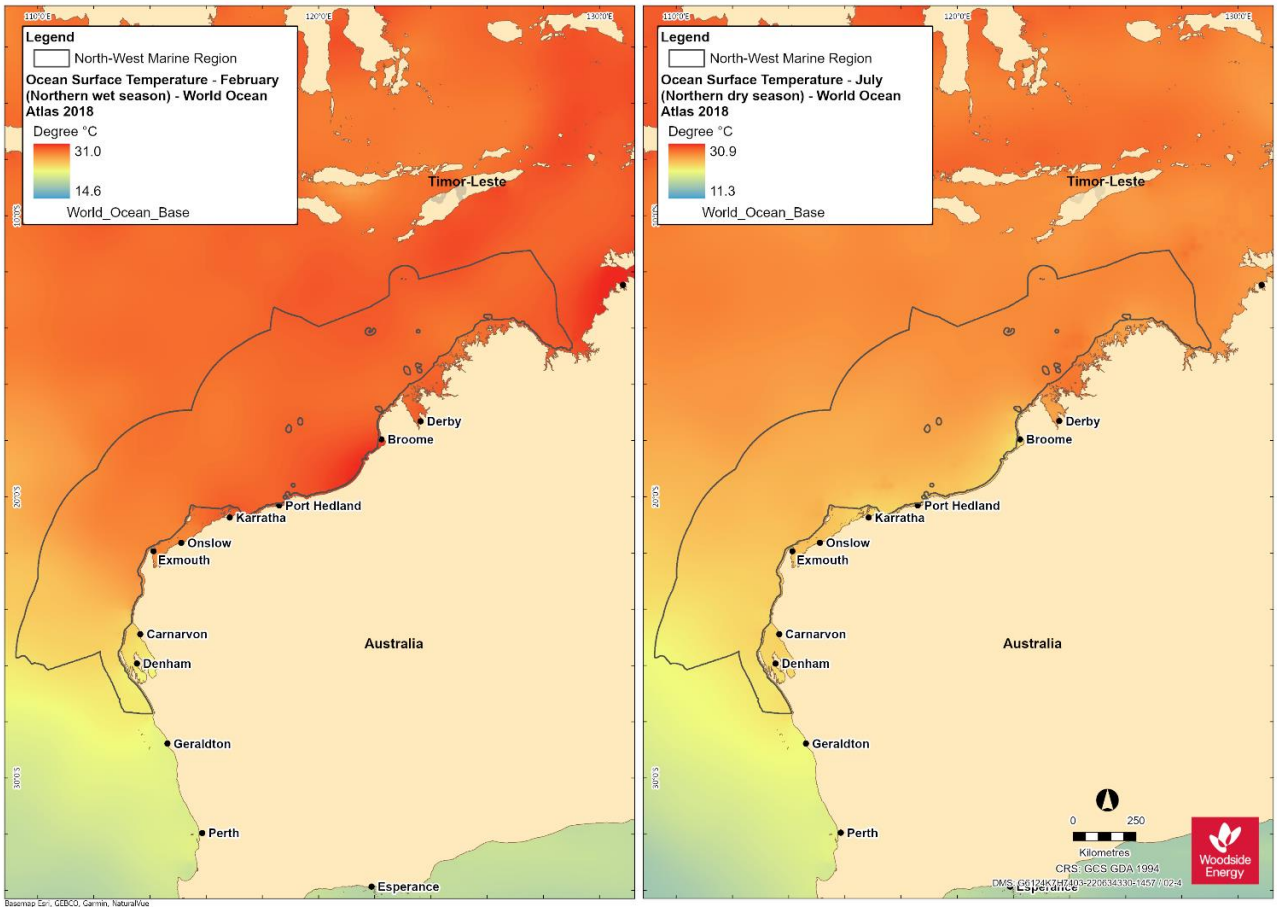


Figure 2-5: Ocean surface temperature for NWMR: (a) summer (February, northern wet season) and (b) winter (July, northern dry season) (data source: Locarnini et al., 2018 in World Ocean Atlas, 2018)

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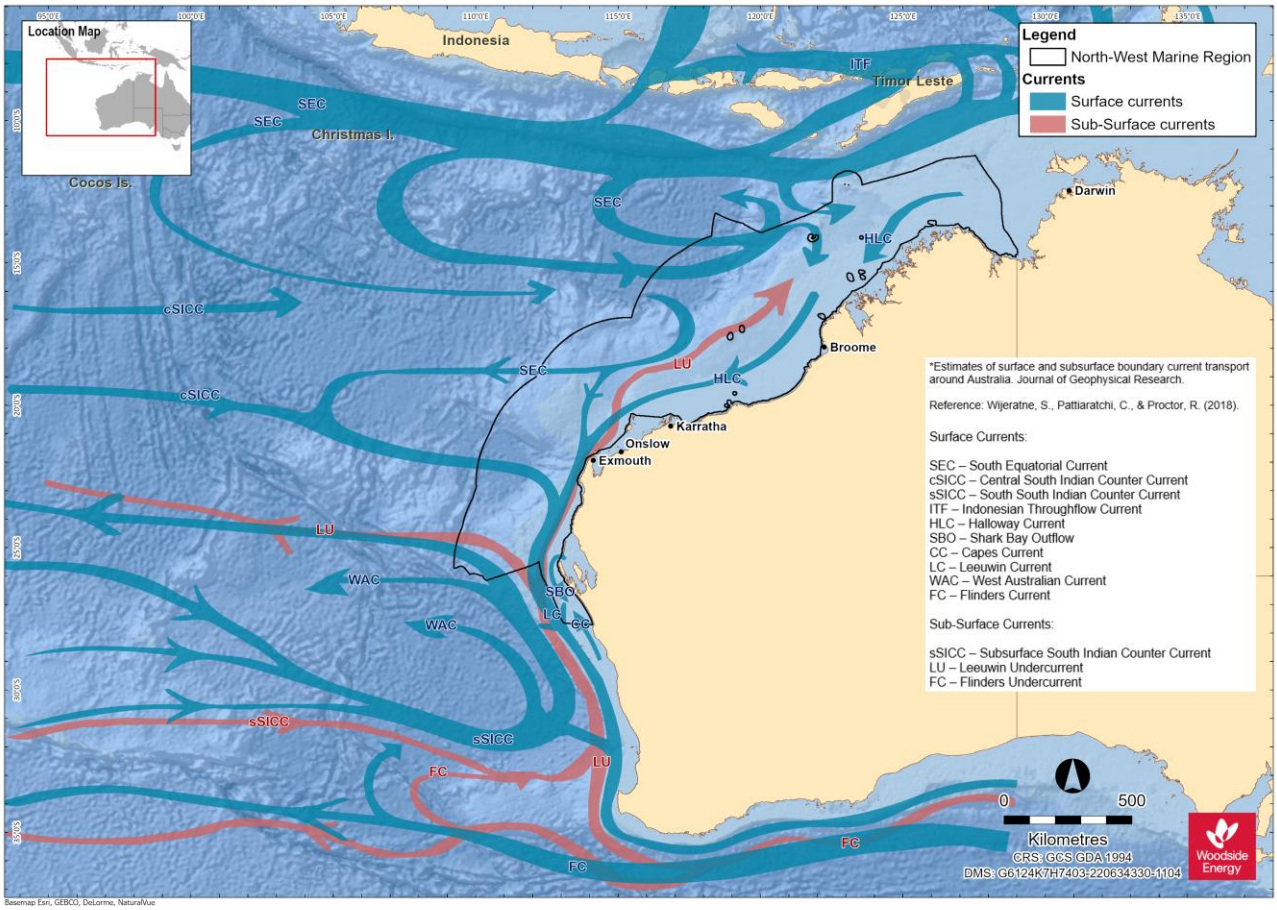


Figure 2-6: Ocean surface and sub-surface currents of the NWMR and wider region (data source: adopted from Wijeratne et al., 2018)

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2.3.1 Browse

Table 2-4: Summary meteorology and oceanography for Browse (refer to Appendix B 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 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; Condie et al*.,* 2006).

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2.3.3 North-west Cape

Table 2-6: Summary meteorology and oceanography for the North-west Cape (refer to Appendix B for supporting metocean figures and data sources) 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 5 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

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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).

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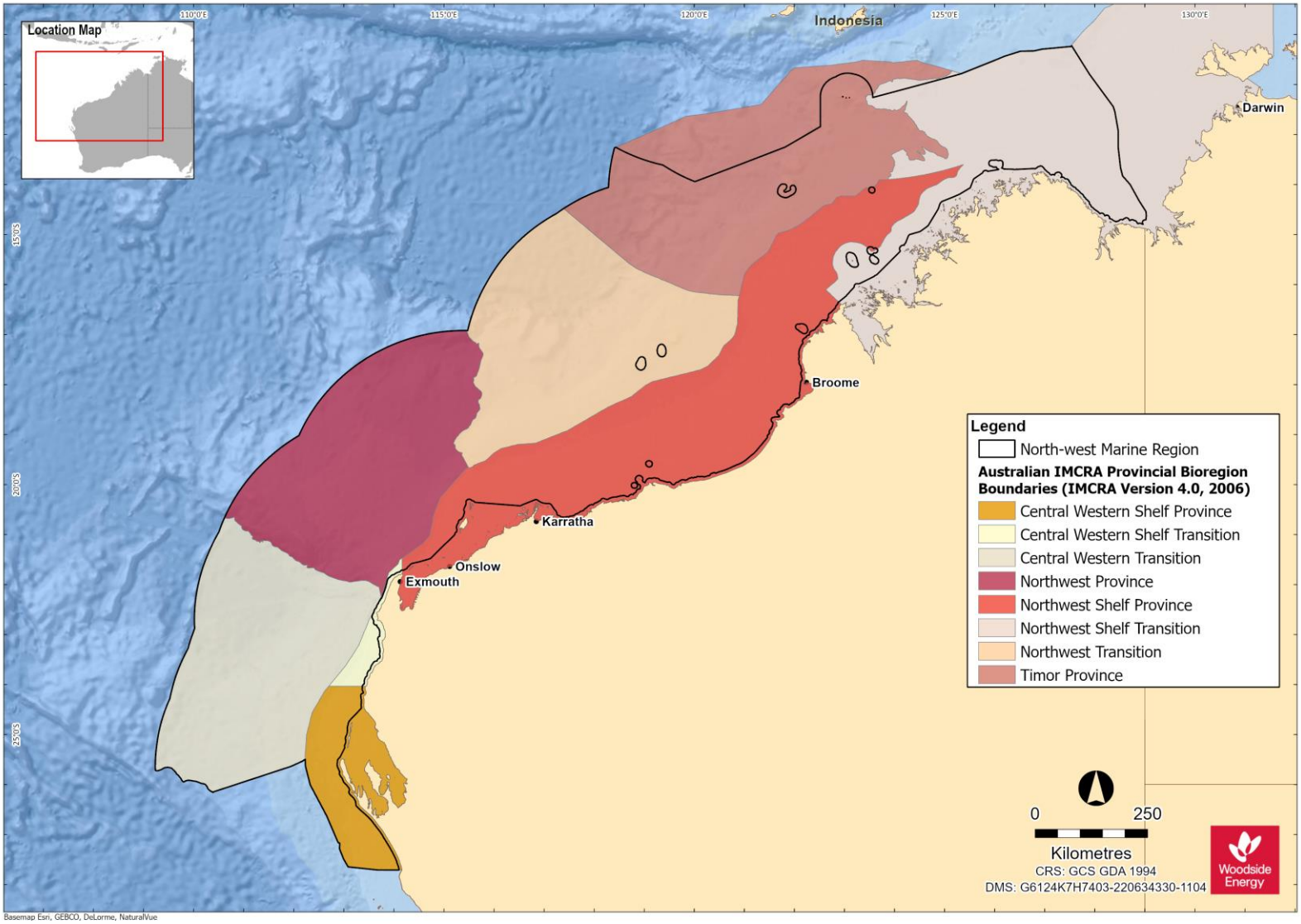


Figure 2-7: The eight Integrated Marine and Coastal Regionalisation of Australia (IMCRA) v4.0 provincial bioregions of the NWMR (GA, 2024)

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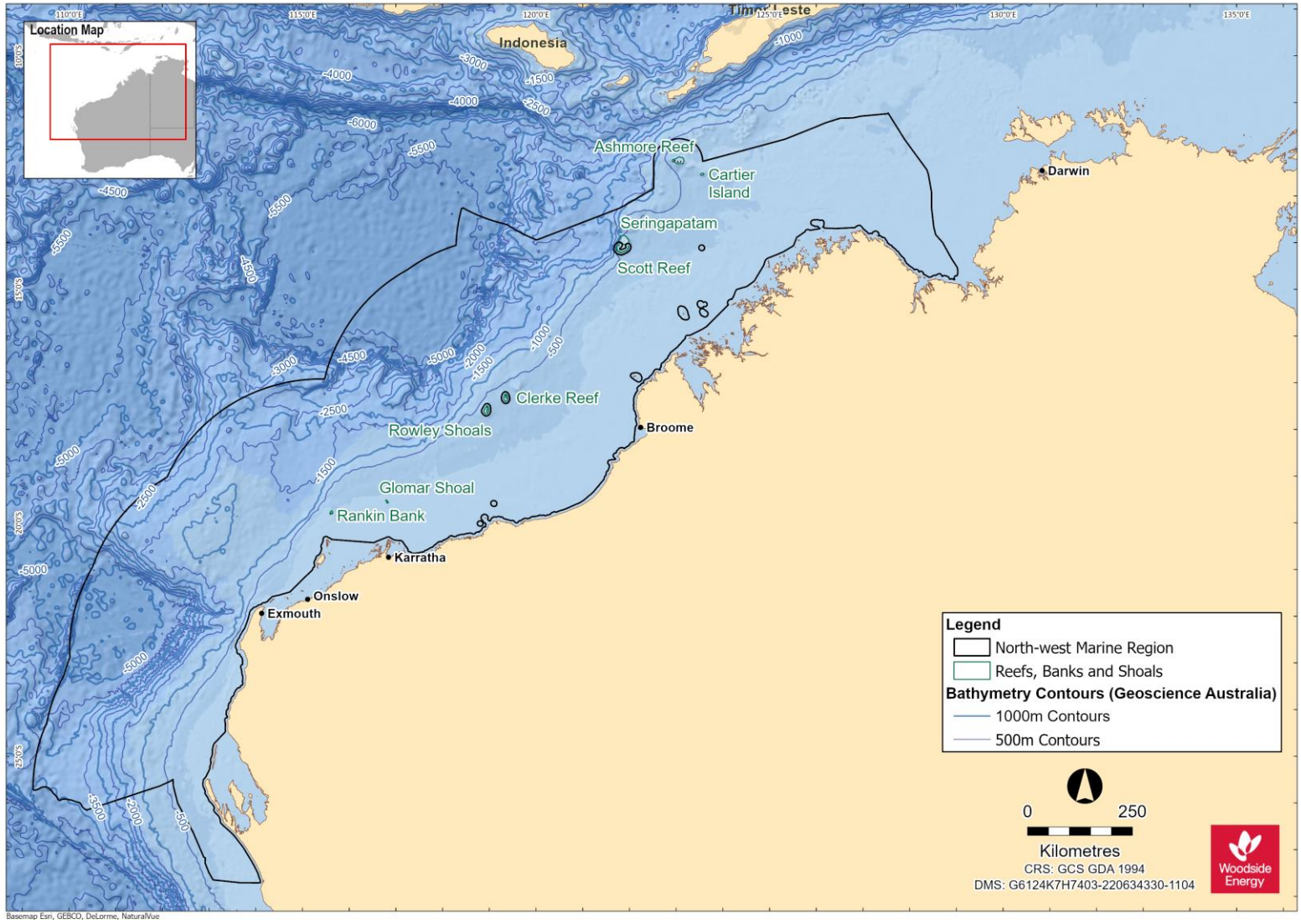


Figure 2-8: Bathymetry of the NWMR (data source: Geoscience Australia)

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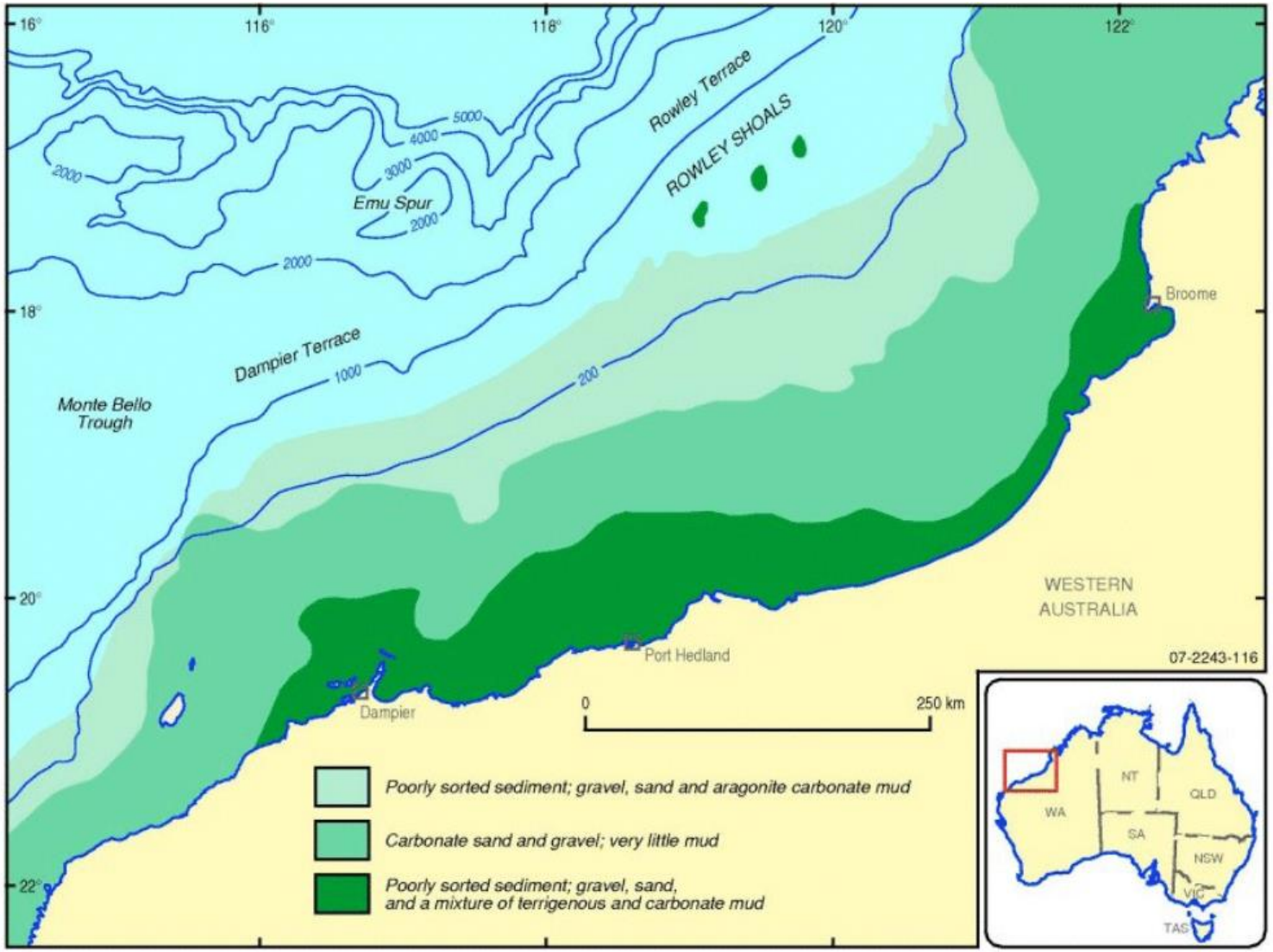


Figure 2-9: Overview of the seabed sediments of the NWMR (data source: Baker et al., 2008)

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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).

Additional information on these MNES is provided in subsequent sections (referenced in Table 3-1, Table 3-2 and Table 3-3).

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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 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)	Section 5 to Section 9
Listed Migratory Species	97	Refer NWMR PMST report (Appendix A)	Section 5 to Section 9

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Table 3-2: Summary of MNES identified by the EPBC Act PMST within and potentially occurring within the SWMR

MNES	Number	Description	Section of this Document
World Heritage Properties	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
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 KEFs AMPs Australian Whale Sanctuary Extended Continental Shelf	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 Floristic Province of Western Australia 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)	N/A
Listed Migratory Species	89	Refer SWMR PMST report (Appendix A)	N/A

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Table 3-3: Summary of MNES identified by the EPBC Act PMST within and potentially occurring within the NMR

MNES	Number	Description	Section of this Document
World Heritage Properties	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 KEFs AMPs Australian Whale Sanctuary Extended Continental Shelf	Section 11
Listed Threatened Ecological Communities	0	N/A	N/A
Listed Threatened Species	82	Refer NMR PMST report (Appendix A)	N/A
Listed Migratory Species	82	Refer NMR PMST report (Appendix A)	N/A

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3.2 Part 13 Statutory Instruments for EPBC Act Listed Threatened and Migratory Species in the NWMR, South-west Marine Region (SWMR) and North Marine Region (NMR)

A screening process was conducted to identify which EPBC Act listed threatened and migratory species, and associated Part 13 statutory instruments, are relevant in the context of the assessment of impacts and risks associated with petroleum activities in each of the Woodside activity areas. The screening criteria included:

- overlap among the Woodside activity areas with habitat critical for survival (e.g. marine turtles) 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)
- 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).

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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)

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Species	EPBC Act Part 13 Statutory Instrument
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)
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, 2023e)
Curlew sandpiper	Conservation Advice *Calidris ferruginea* curlew sandpiper (DCCEEW, 2023f)
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)

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Species	EPBC Act Part 13 Statutory Instrument
Red knot, knot	Conservation Advice *Calidris canutus* Red knot (DCCEEW, 2024f)
Greater sand plover	Conservation Advice *Charadrius leschenaultii* Greater sand plover (DCCEEW, 2023g)
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)
Terek sandpiper	Conservation Advice for *Xenus cinereus* (terek sandpiper) (DCCEEW, 2024m)
Grey plover	Conservation Advice for *Pluvialis squatarola* (grey plover) (DCCEEW, 2024n)

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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

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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.

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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 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

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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 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 Montebello Islands, 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).

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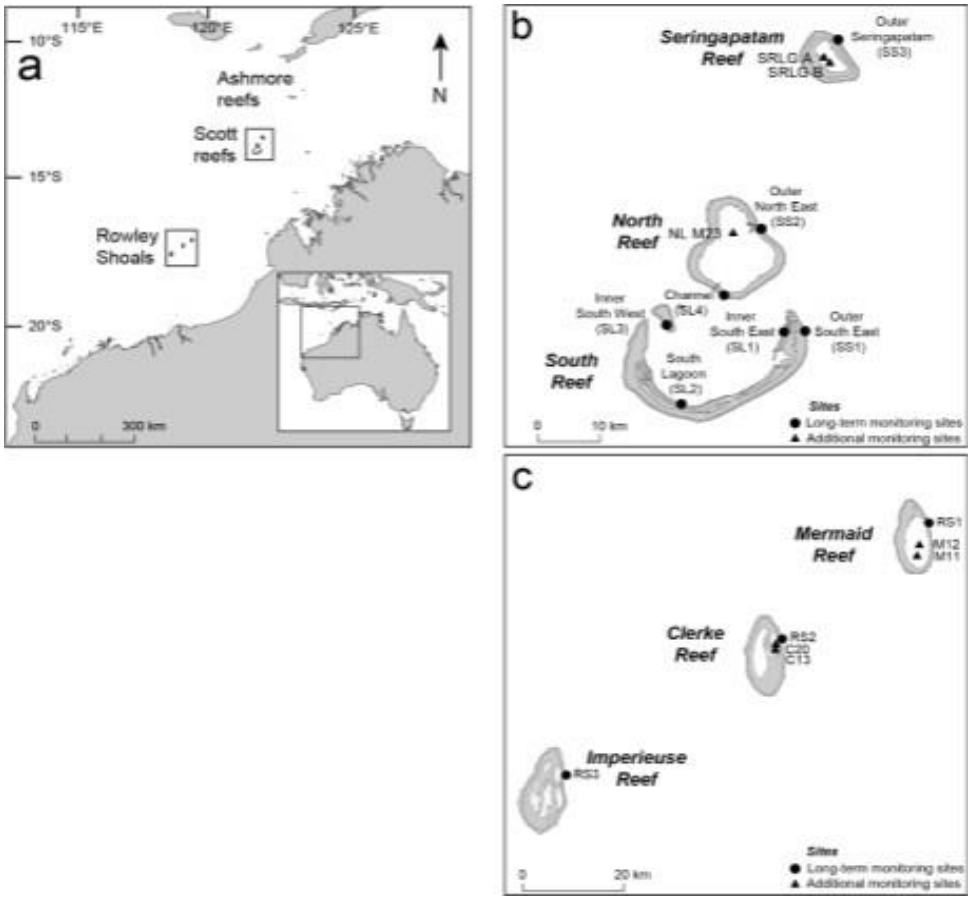


Figure 4-1: The position of Scott Reef, Ashmore and the Rowley Shoals off North-western Australia and location of permanent long-term monitoring sites (source: Gilmour et al., 2023)

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 to 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 to 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

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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 to 40 km apart. Each atoll covers an area approximately 80 to 90 km² 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 to 2019), the mean cover of hard and soft corals at the reef slope was 46% and ranged between 26% and 58%. Decreases in coral cover were primarily due to frequent storms and cyclones. Between 2005 and 2008, three cyclones and moderate heat stress caused a mean reduction in coral cover (52% to 42%) at the reef slope habitat across the Rowley Shoals. Coral bleaching was low (<10%) in January 2016 except for minor to moderate (11 to 30%) bleaching at two lagoon sites at Mermaid Reef. A prolonged heat stress period (45 days) in May 2020 caused the worst coral bleaching on record (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) is listed and described in Section 11 and includes the Commonwealth Marine Parks of Ashmore Reef, Cartier Island, Kimberley and Mermaid Reef, and the 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.

4.4.3.1 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

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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).

4.4.3.2 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 to 80 m benthic cover was low (about 2%) and at depths greater than 80 m benthic cover was barely present (Abdul Wahab et al., 2018).

A total of 170 fish species were identified at Glomar Shoal and fish abundance and diversity of the demersal fish communities of Glomar Shoal were found to vary with seabed habitat type; sand, hard coral and sponge coverage influenced fish communities, with higher abundance and diversity of fish associated with shallow hard coral habitats. (Abdul Wahab et al., 2018). In general, the fish abundance and diversity of Glomar Shoal are considered comparable with other reefs and the submerged shoals and banks in the region, although less diverse and abundant than fish assemblages at Rankin Bank (Abdul Wahab et al., 2018).

Glomar Shoal is recognised as a KEF within NWMR, refer to Table 10-1. Protected Area status (Australian Marine Parks and State Marine Parks and Reserves) is described in Section 11 and includes the Commonwealth Marine Park of Montebello, and the State Marine Parks of Montebello Islands and Barrow Island and the Barrow Island marine management area.

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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, 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 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 4000 km² of the bay and the 1.030 km² 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

[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/
[4] https://www.csiro.au/en/research/environmental-impacts/climate-change/state-of-the-climate

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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 (Miller et al., 2015).

Commonwealth waters adjacent to Ningaloo Reef is recognised as a KEF within NWMR, refer to Table 10-1. Protected Area status (Australian Marine Parks and State Marine Parks and Reserves) is described in Section 11 and includes the Commonwealth Marine Parks of Ningaloo and Shark Bay, and the State Marine Parks of Ningaloo Reef, the Muiron Islands marine management area, 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 such as Ningaloo), 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,) influencing the habitat.

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.

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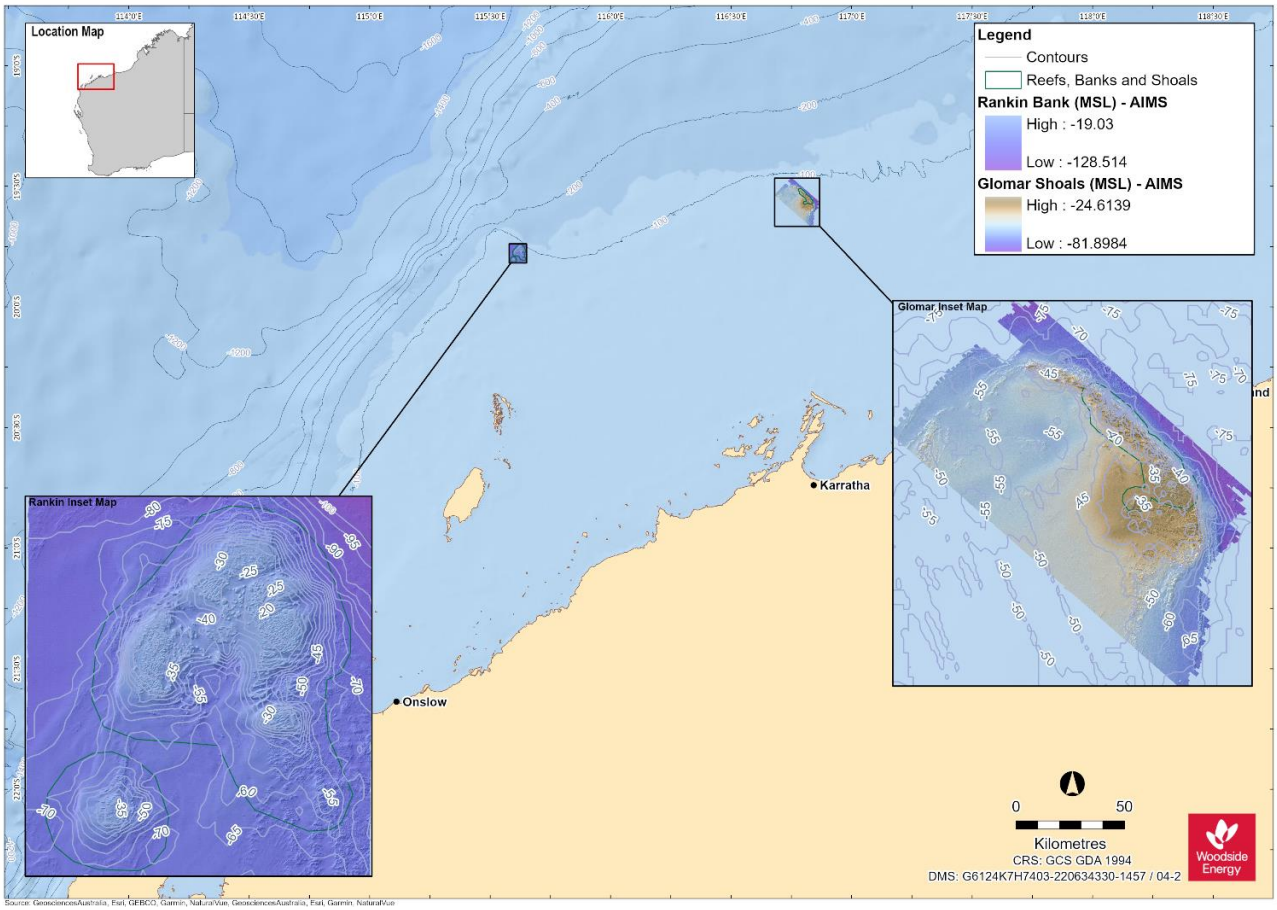


Figure 4-2: Habitat maps of Rankin Bank and Glomar Shoal (source: AIMS, 2014)

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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**

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Habitat/Community	Browse	NWS / Scarborough	North-west Cape	Reference
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 systems such as Scott Reef	Glomar Shoal Rankin Bank Ancient coastline at 125 m depth contour KEF	Cape Range canyon system	**Section 4.4.1** **Section 10** **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**

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Habitat/Community	Browse	NWS / Scarborough	North-west Cape	Reference
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	
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**

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Table 4-2: Habitats within the SWMR

Habitat/Community	Location
Offshore	
Soft sediment with infauna	Most of the SWMR seafloor is composed of soft unconsolidated sediments, but due to large variations in bathymetry there are marked differences in sedimentary composition and benthic assemblage structure across the region. Despite the prevalence of these habitats in the SWMR, very little is known about the composition or distribution of the region's sedimentary infauna (DEWHA, 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 to 120 m depth contour KEF Diamantina Fracture Zone Naturaliste Plateau
Coral reef	To date, studies and understanding of the corals within the SWMR have concentrated on the shallow water areas in State waters. Within the deeper Commonwealth waters of the SWMR little is known of the distribution of corals.
Filter feeders/ heterotrophic	Filter feeder epifauna such as sponges, ascidians, soft corals and gorgonians are animals that feed by actively filtering suspended matter and food particles from water by passing the water over specialised filtration structures (DEWR, 2007). Filter feeders generally inhabit deeper habitat (below the photic zone) that have strong currents and hard substratum.
	Ancient coastline at 90 to 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

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Habitat/Community	Location
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 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

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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

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Habitat/Community	Location
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
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

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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.

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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	

[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)

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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	
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

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).

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5.2 Protected Sharks, Sawfishes and Rays in the NWMR

The EPBC Act Protected Matters search (Appendix A) 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 (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).

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 NWS 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 to 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, broadening their diet as larger sharks to include marine mammals (Last and Stevens, 2009).	There are no known aggregation sites for white sharks in the NWMR, and this species is most often found south of North-west Cape, in low densities (DSEWPAC, 2012a). Given the migratory nature of the species, it most likely has a broad distribution within the NWMR. No BIAs identified for NWMR.

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Species	Preferred Habitat and Diet	Habitat Location
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 0–1752 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.

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Species	Preferred Habitat and Diet	Habitat Location
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). Diet: Shoaling fishes, such as mullet, as well as molluscs and small crustaceans (Cliff and Wilson, 1994).	Shallow coastal waters of the Pilbara and Kimberly coasts (Last and Stevens, 2009).
Northern river shark	Preferred habitat[1]: Rivers, tidal sections of large tropical estuarine systems and macrotidal embayments, as well as inshore and offshore marine habitats (Pillans et al., 2009; Thorburn and Morgan, 2004). Adults have been recorded only in marine environments. Juveniles and sub-adults have been recorded in freshwater, estuarine and marine environments (Pillans et al., 2009). Depth range of up to 23 m (Kyne et al., 2021). Diet: 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).

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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.

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Table 5-5: Fish, whale shark and sawfish BIAs within the NWMR (source: AMSIS, accessed 14/08/2024)

	Woodside Activity Area			BIAs			
	Browse	NWS	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 (Mar–Jul) Foraging northward from Ningaloo along the 200 m isobath (Jul–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 (Jan–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 (Jan–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 Foraging in waters adjacent to Eighty Mile Beach

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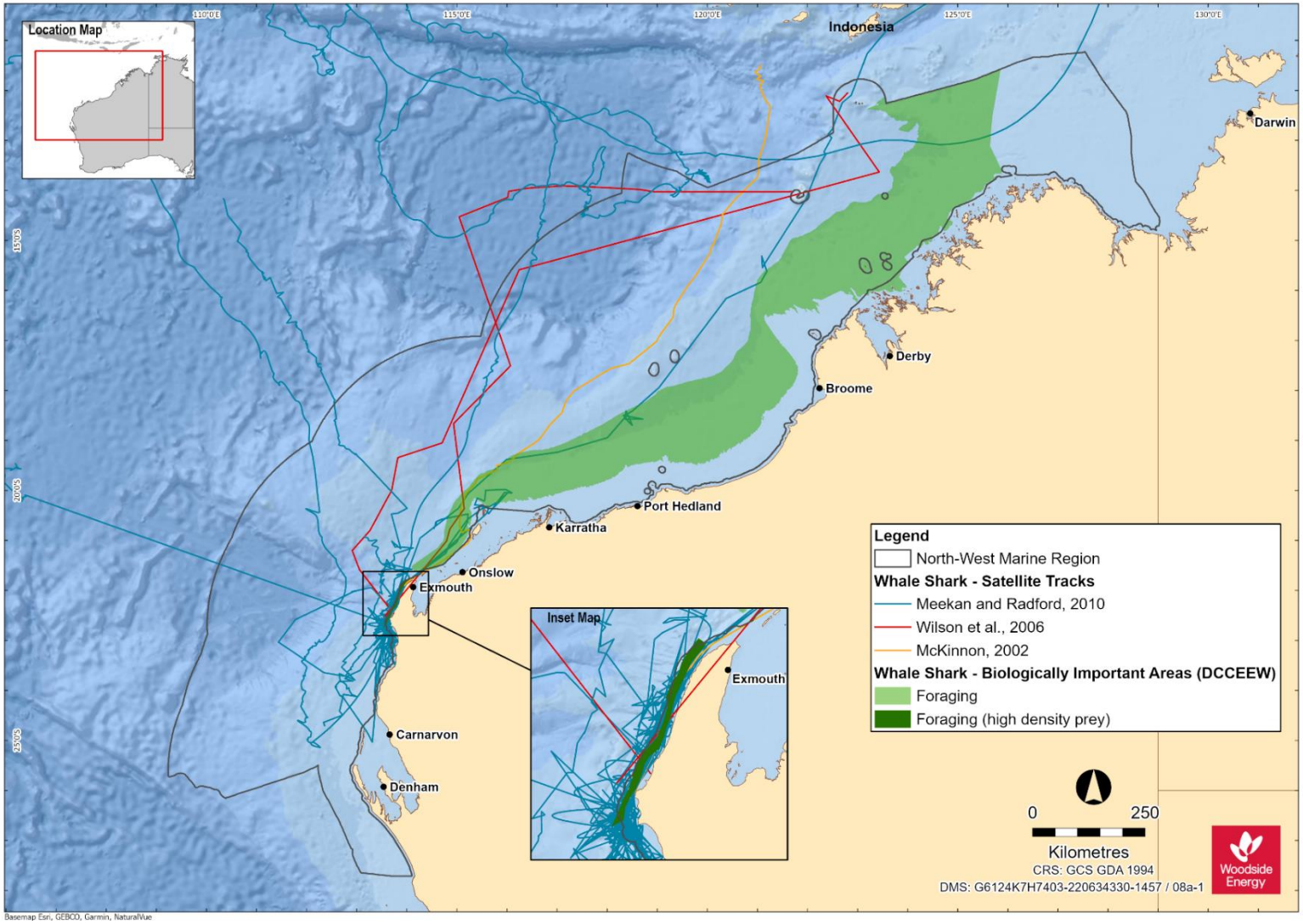


Figure 5-1: Whale shark biologically important areas (BIAs) for the NWMR and tagged whale shark satellite tracks (data source for BIAs: DCCEEW, 2024b)

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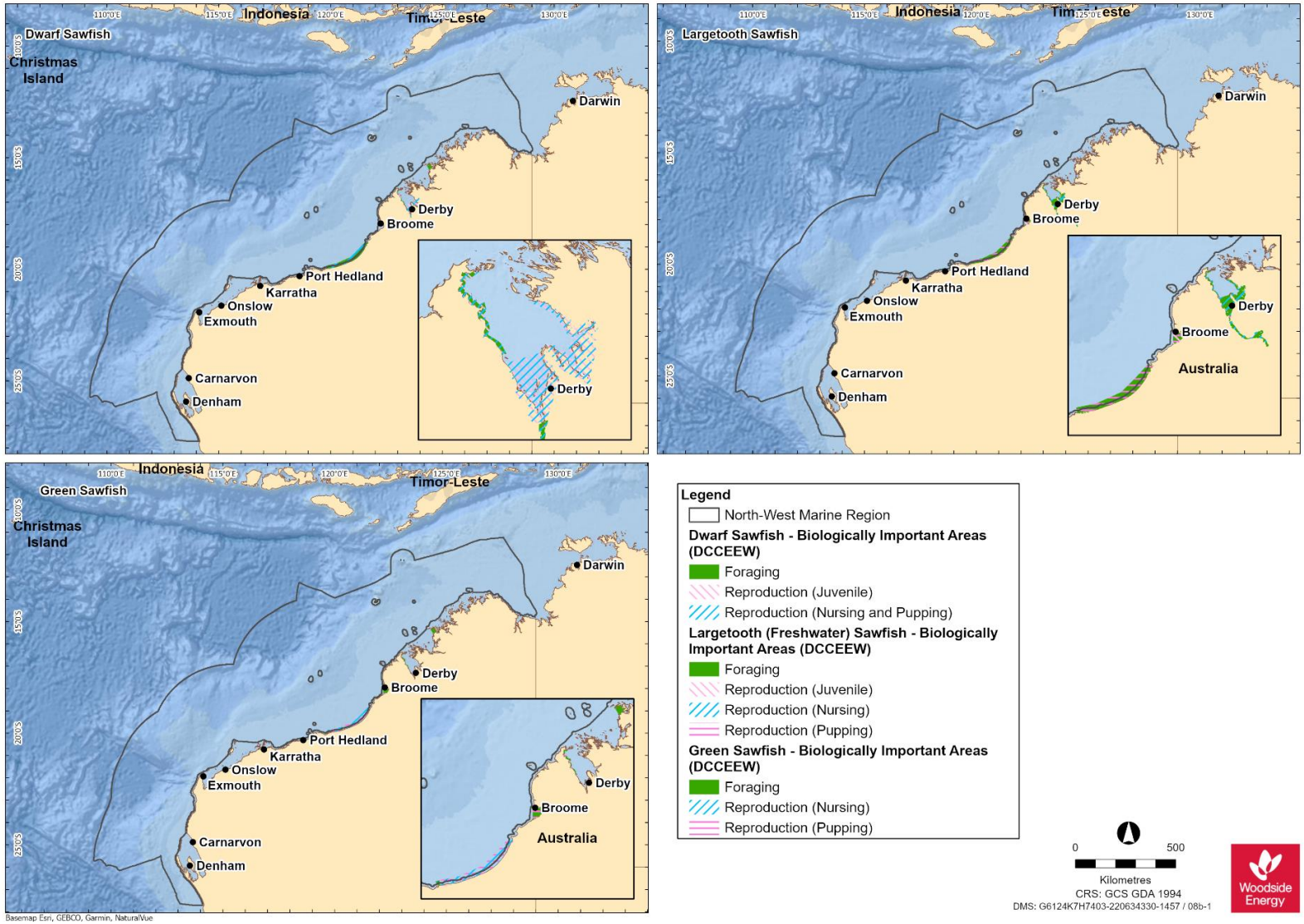


Figure 5-2: Sawfish BIAs for the NWMR (data source: DCCEEW, 2024b)

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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 1431 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 with only 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 125 m depth contour KEF within the NWMR is thought to support enhanced diversity. Drivers of fish species richness, biodiversity and assemblage composition have been assessed, finding that depth, seafloor complexity and habitat type explain richness and abundance of fish assemblages (Currey-Randall et al., 2021). This study also found 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).

5.4.1.1 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).

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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.

5.4.2 Browse

The proposed Browse activity area includes biologically important habitat for the whale shark and three sawfish species, being:

- 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)
- dwarf sawfish (pupping, nursing and foraging areas).

BIAs for the shark and sawfish species are outlined in Table 5-5 and Figure 5-1.

The proposed Browse activity area has partial overlap with the continental slope demersal fish communities KEF.

5.4.3 North West Shelf / Scarborough

The NWS / Scarborough activity area includes biologically important habitat for the whale shark and three sawfish species, being:

- 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)
- dwarf sawfish (pupping, nursing and foraging areas).

BIAs for the whale shark and sawfish species are outlined in Table 5-5 and Figure 5-1.

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).

5.4.4 North-west Cape

The North-west Cape activity area includes biologically important foraging habitat for the whale shark, being:

- foraging (high density) in Ningaloo Marine Park and adjacent Commonwealth waters (March–July) (Table 9-1)
- 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 5-1. The North-west Cape activity area coincides with part of the continental slope demersal fish communities KEF.

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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).

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).

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).

Twenty-eight listed sea snake species ‘may’ occur in the NMR, as reported in the Protected Matters report in Appendix A).

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.

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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 in 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	Endangered	N/A	Marine	N/A	Endangered	Conservation Advice for *Aipysurus fuscus* (dusky sea snake) (DCCEEW, 2024o)
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)

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6.2 Marine Turtles in the NMWR, SWMR and NMR Bioregions

According to the Protected Matters search (Appendix A) 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).

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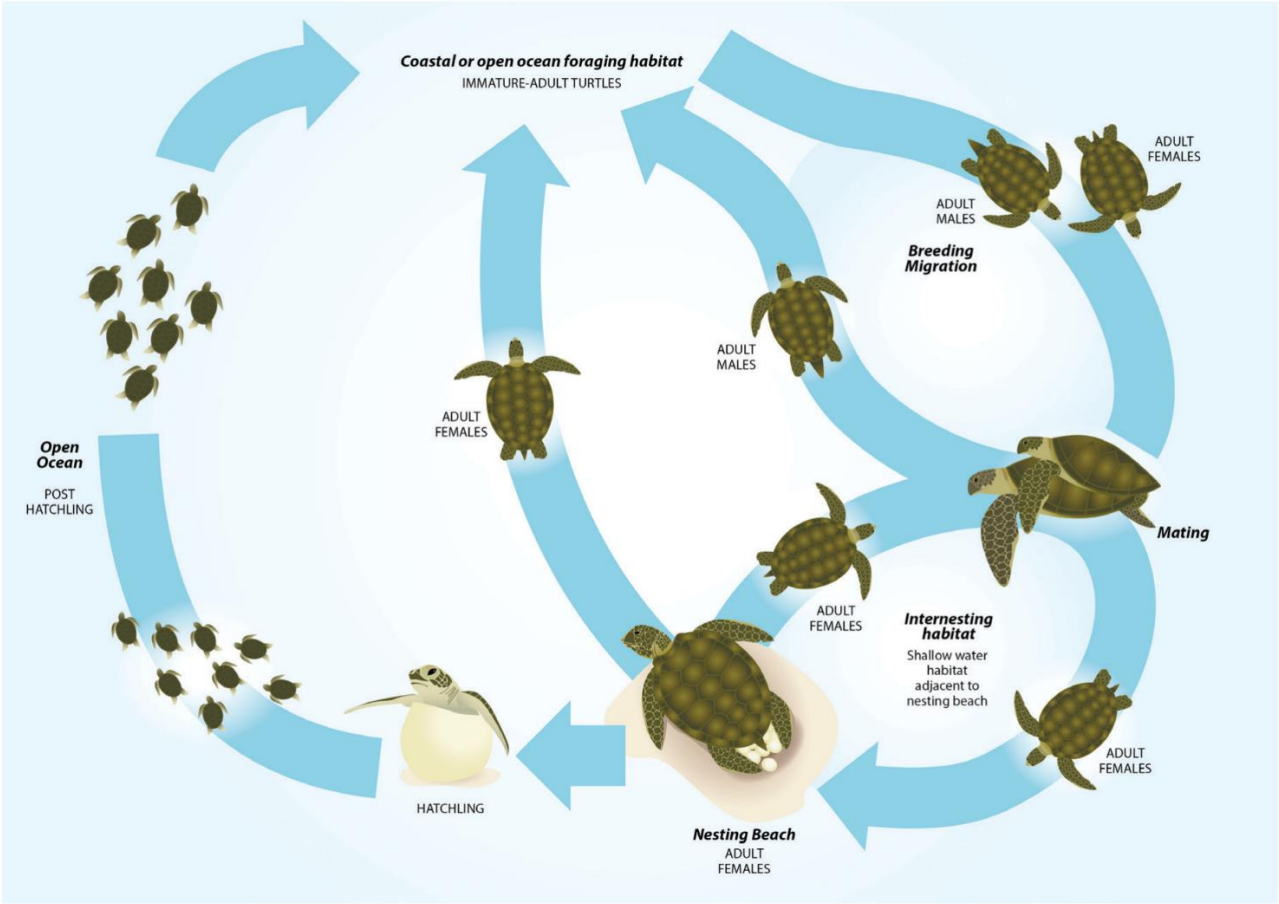


Figure 6-1: Generalised life cycle of marine turtles (Commonwealth of Australia, 2017)

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
- 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.

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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	

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Species	Woodside Activity Area			Habitat Critical to Survival			
	Browse	NWS/S	NWC	Nesting (*Major Rookery[1])	Internesting Buffer	Seasonality Nesting	Preferred Habitat[2]
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.
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	

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Species	Woodside Activity Area			Habitat Critical to Survival			
	Browse	NWS/S	NWC	Nesting (*Major Rookery[1])	Internesting Buffer	Seasonality Nesting	Preferred Habitat[2]
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	
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)*

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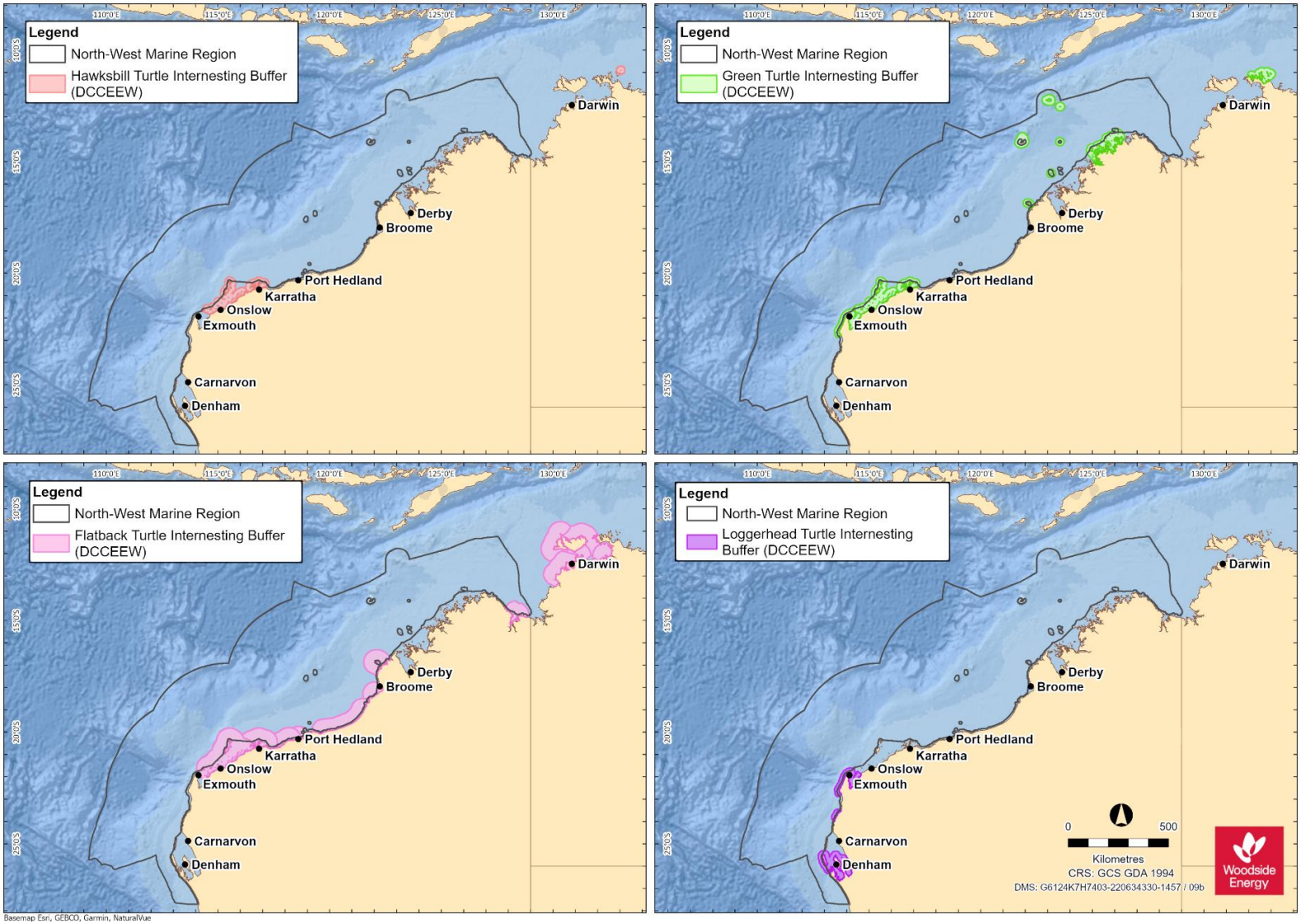


Figure 6-2: Marine turtle species habitat critical to survival (nesting beaches and internesting buffers) for the NWMR (data source: DCCEEW, 2024b)

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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.

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Table 6-3: Marine turtle BIAs within the NWMR

Species	Woodside Activity Area			BIAs				
	Browse	NWS/S	NWC	Mating	Nesting	Internesting	Foraging	Migration[10]
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,

[10] Migration BIA included in AMSIS (GA, 2024). General information for migratory behaviours also provided.

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Species	Woodside Activity Area			BIAs				
	Browse	NWS/S	NWC	Mating	Nesting	Internesting	Foraging	Migration[10]
							Foraging in waters adjacent to James Price Point	including the NT and Queensland.
Hawksbill turtle	✓	✓	✓	Montebello Islands Barrow Island Lowendal Island Group Dampier Archipelago (to the west of the Burrup Peninsula)	Lowendal Island Group Montebello Islands (including Ah Chong and South East islands) Rosemary Island Delambre Island Barrow Island Varanus Island and Thevenard Island Dampier Archipelago (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 hawksbill 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 stopping around Barrow Island. A migratory corridor was observed from

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Species	Woodside Activity Area			BIAs				
	Browse	NWS/S	NWC	Mating	Nesting	Internesting	Foraging	Migration[10]
								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	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

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Species	Woodside Activity Area			BIAs				
	Browse	NWS/S	NWC	Mating	Nesting	Internesting	Foraging	Migration[10]
					Beach) and 80 Mile Beach Lacepede Islands			turtle hatchlings found 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)

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Species	Woodside Activity Area			BIAs				
	Browse	**NWS/S**	**NWC**	**Mating**	**Nesting**	**Internesting**	**Foraging**	**Migration[10]**
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 Western Joseph Bonaparte Depression and Gulf • Dampier Archipelago (islands to the West of the Burrup Peninsula).	No migration BIA identified within the NWMR. Migration routes and distances between nesting beaches and foraging areas are not known for Australian olive ridley turtles

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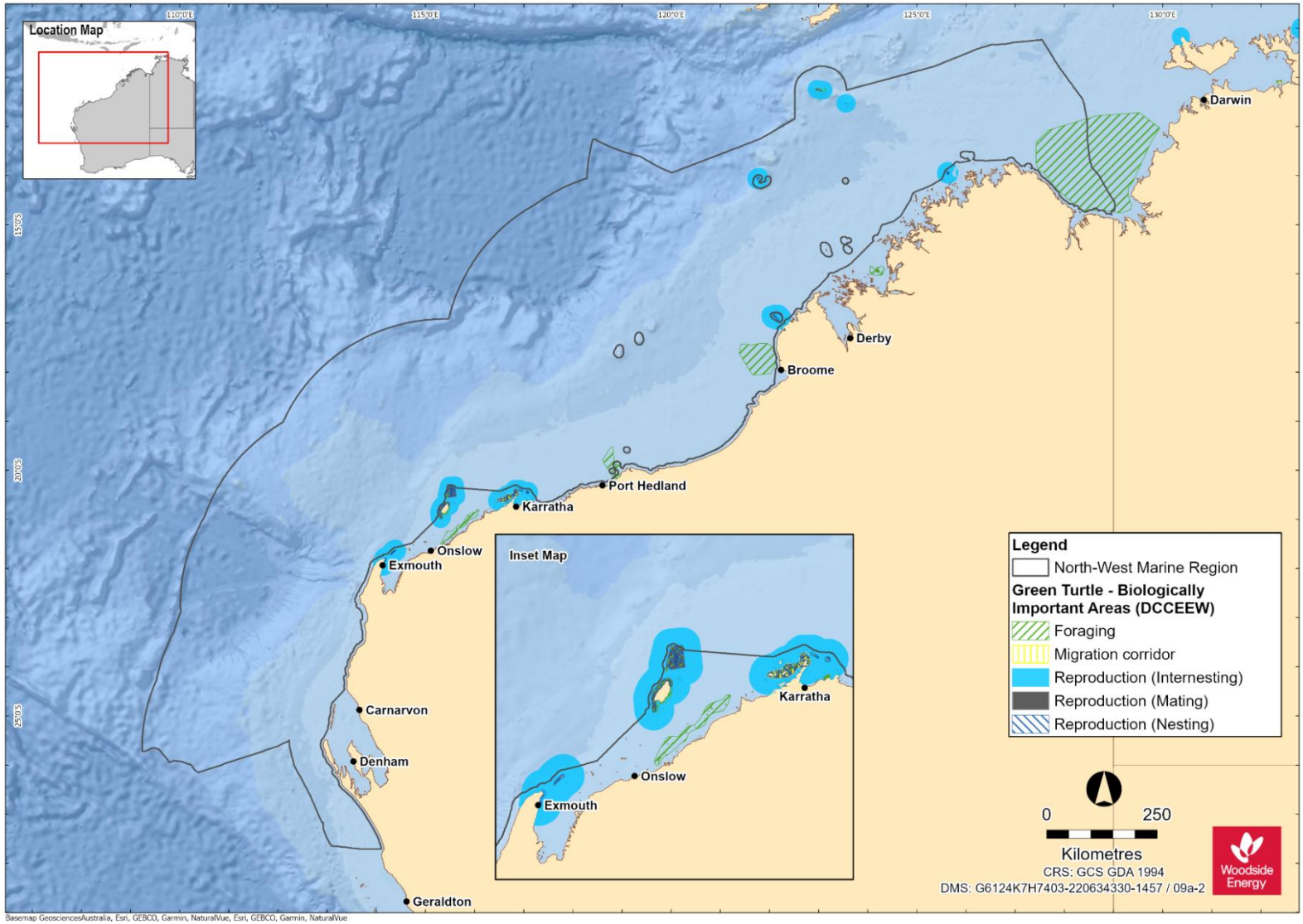


Figure 6-3: Green turtle BIAs within the NWMR (data source: DCCEEW, 2024b)

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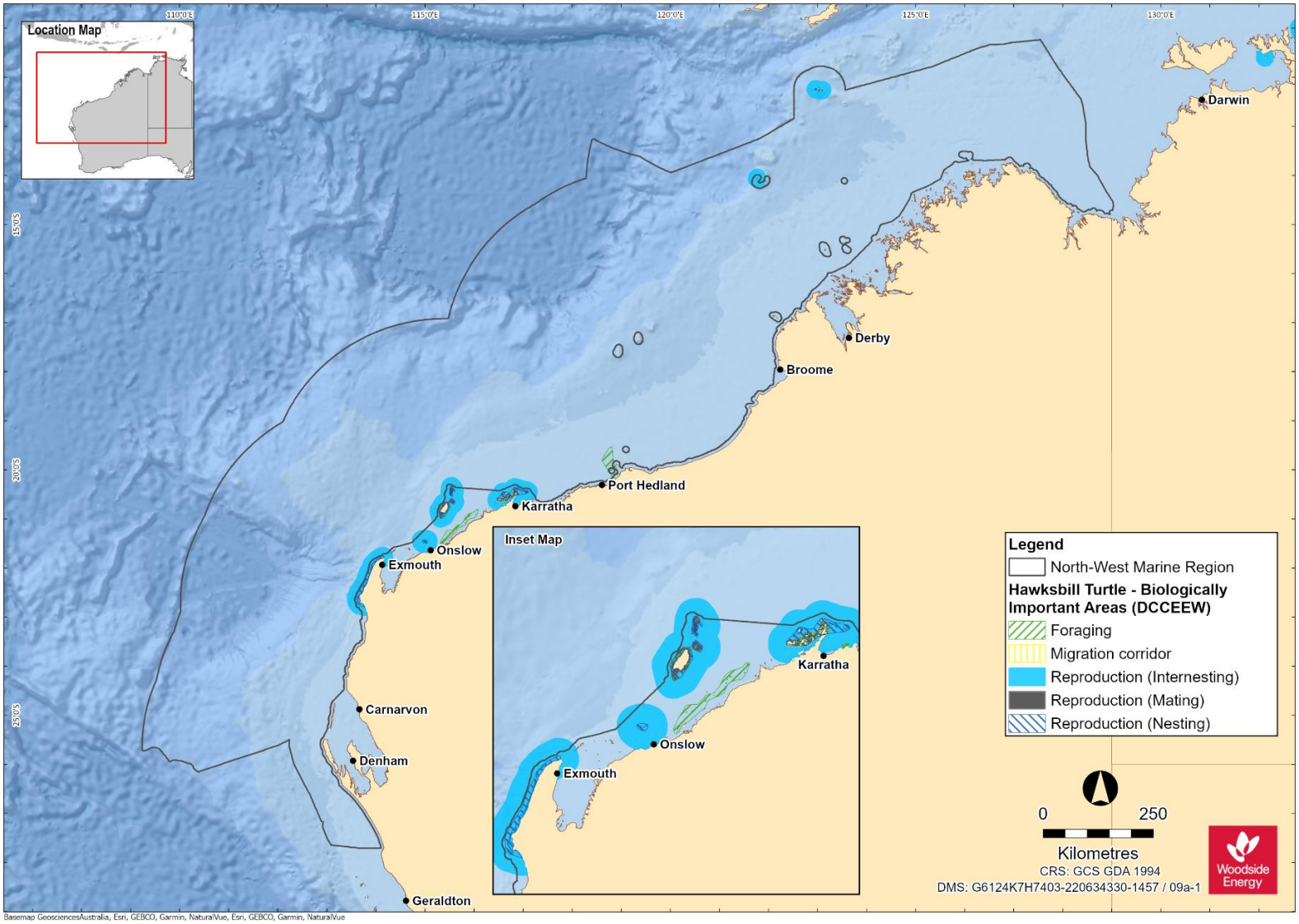


Figure 6-4: Hawksbill turtle BIAs within the NWMR (data source: DCCEEW, 2024b)

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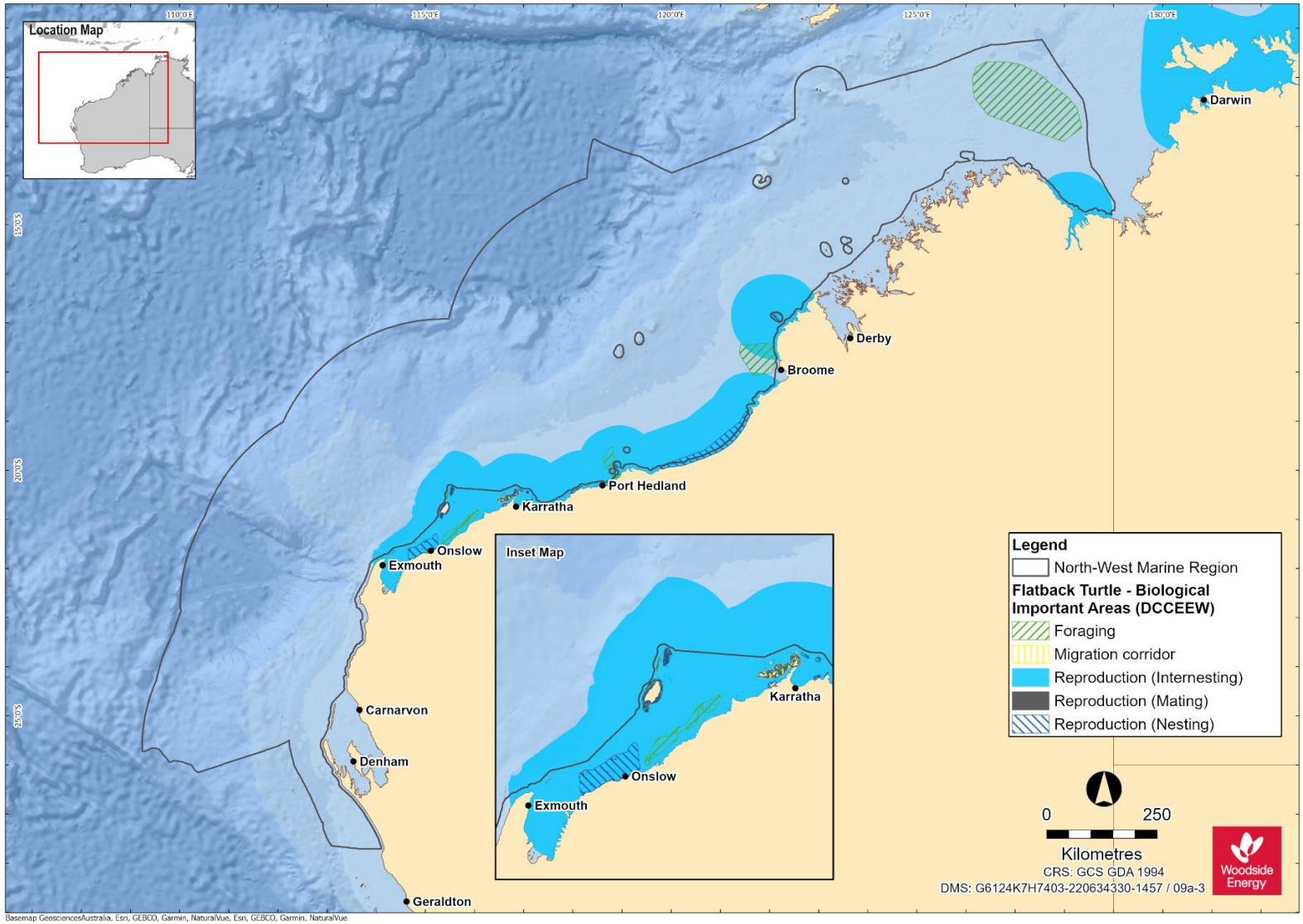


Figure 6-5: Flatback turtle BIAs within the NWMR (data source: DCCEEW, 2024b)

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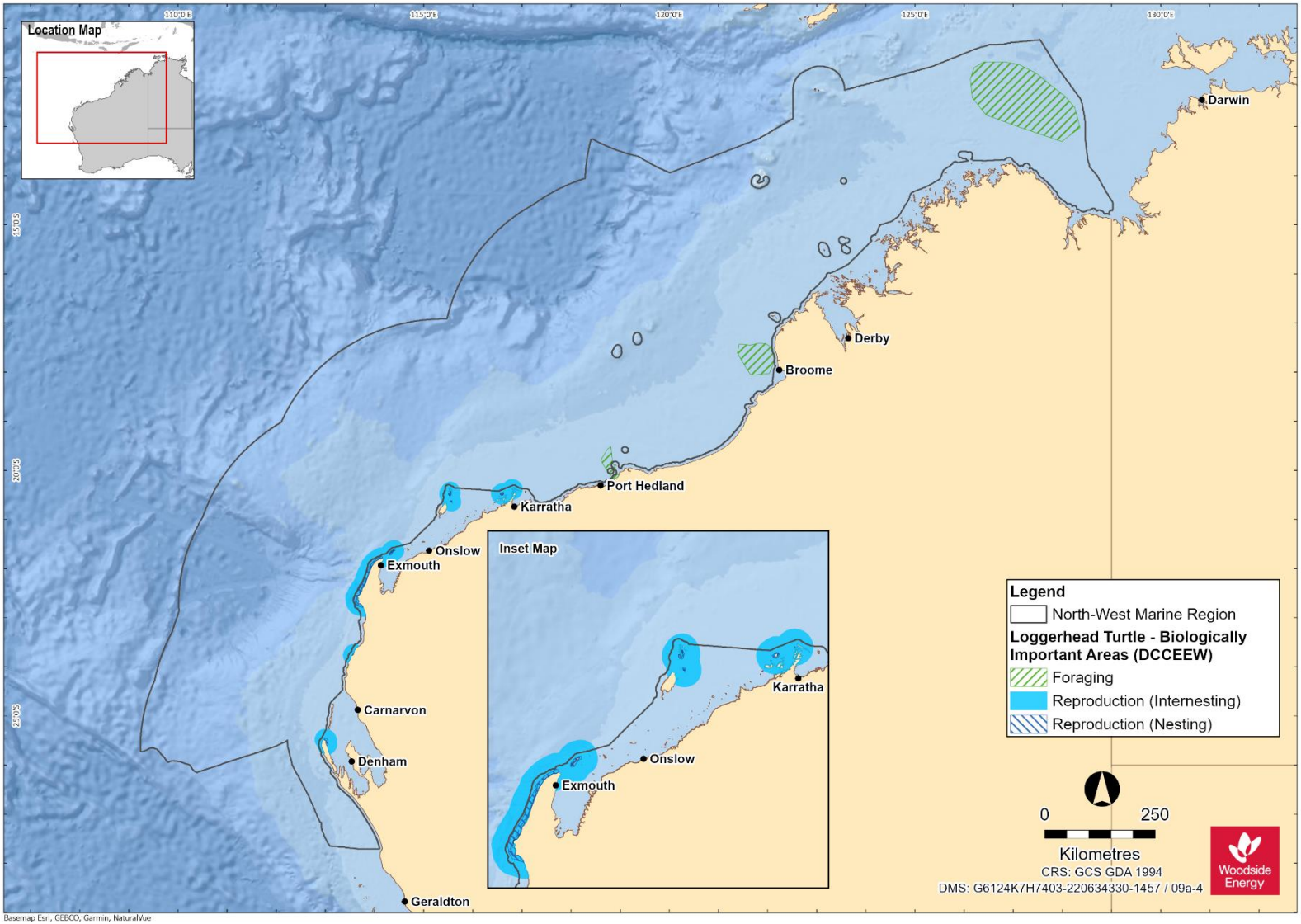


Figure 6-6: Loggerhead turtle BIAs within the NWMR (data source: DCCEEW, 2024b)

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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)
- 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.

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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).
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 3250 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.

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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
- 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.

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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 from November 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 to 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 from October 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. 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 from October 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).

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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
- the loggerhead turtle, Western Australia genetic stock.

Locations of habitat critical for each of the two species are outlined in Table 6-2, Figure 6-2 and Figure 6-3.

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 from November 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).

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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*)
- leaf-scaled sea snake (*Aipysurus foliosquama*).

The short-nosed sea snake, the leaf-scaled sea snake, and the dusky sea snake are listed threatened species (Critically Endangered or Endangered) under the EPBC Act (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 km² of coastal waters along the NWS, and the resulting habitat suitability maps enabled the identification of key locations of suitable habitat for these five species (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.

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Table 6-7: Information on threatened sea snake species within the NWMR

Species	Preferred Habitat and Diet	Habitat Location
Short-nosed sea snake	Preferred habitat: Primarily on reef flats or in shallow waters of outer reef edges to depths of 10 m (Minton et al., 1975). Typically, movement is restricted to within 50 m of reef flat habitat (Guinea and Whiting, 2005). Diet: Primarily fishes and eels.	The short-nosed sea snake has been recorded from Exmouth Gulf to the reefs of the Sahul Shelf, although most records come from Ashmore and Hibernia reefs (Guinea and Whiting, 2005). Key locations of suitable habitat: Ashmore Reef, Exmouth Gulf and coral habitat fringing the Muiron Islands and the Montebello Islands (Udyawer et al., 2020).
Leaf-scaled sea snake	Preferred habitat: The leaf-scaled sea snake occurs in shallow protected areas of reef flats, typically in water depth less than 10 m. Diet: Primarily shallow water coral-associated wrasse, gudgeons, clinids and eels (McCosker, 1975; Voris, 1972; Voris and Voris, 1983).	The leaf-scaled sea snake has only been recorded at Ashmore and Hibernia reefs (Guinea and Whiting, 2005), indicating it has a very limited distribution. Key locations of suitable habitat: Ashmore Reef, Shark Bay, Exmouth Gulf, Barrow Island and Montebello Islands (Udyawer et al., 2020).
Dusky sea snake	Preferred habitat: The dusky sea snake is a reef specialist that is only known to occur on complex hard coral reefs and shoals – both emergent and subsurface. Has only been recorded at depths of 0–20 m however may occur in deeper areas with less survey effort (DCCEEW, 2024o). Diet: Stomach content analyses have identified benthic gobies, wrasses and occasionally fish eggs (DCCEEW, 2024o).	The dusky sea snake has been recorded sparsely and patchily from reefs and shoals at the outer margin and mid-shelf of the Australian continental shelf, specifically at the Scott Reef complex (Scott Reef, North Scott Reef and Sandy Islet) and nearby Seringapatam Reef, Heywood Shoal, and at Ashmore Reef, Cartier Island and Hibernia Reef. The dusky sea snake has not been detected at Ashmore Reef, Cartier Island or Hibernia Reef since the early 2000s. The species may occur undetected at mid-shelf shoals which comprise the shallowest of sea mounts and banks that occur along a north-easterly crescent from south of Heywood Shoal, past Cartier Island, to Ashmore Reef (DCCEEW, 2024o).

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.

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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.

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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 in Appendix A)			*Biodiversity Conservation Act 2016* (WA)[11]	IUCN Red List of Threatened Species (non-statutory)[12]	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)

[11] Threatened and Priority Fauna List – April 2024 - https://www.dbca.wa.gov.au/management/threatened-species-and-communities (accessed on 13/08/2024)
[12] IUCN, 2024. The IUCN Red List of Threatened Species. Version 2024-1. https://www.iucnredlist.org (accessed on 13/08/2024)

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Species Name	Common Name	Environment Protection and Biodiversity Conservation Act 1999 (Cth) (as per PMST report in Appendix A)			*Biodiversity Conservation Act 2016* (WA)[11]	IUCN Red List of Threatened Species (non-statutory)[12]	EPBC Act Part 13 Statutory Instrument
		Threatened Status	Migratory Status	Listed	Conservation Status	Global Status	
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	Migratory	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
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

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Species Name	Common Name	Environment Protection and Biodiversity Conservation Act 1999 (Cth) (as per PMST report in Appendix A)			*Biodiversity Conservation Act 2016* (WA)[11]	IUCN Red List of Threatened Species (non-statutory)[12]	EPBC Act Part 13 Statutory Instrument
		Threatened Status	Migratory Status	Listed	Conservation Status	Global Status	
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)

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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). 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).

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.

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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 2000 to 3000 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., 2017) 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.

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Species	Key Information
	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; 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 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

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Species	Key Information
	Indian Ocean associated with the northbound migration. The 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 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 6000 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.

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Species	Key Information
Bryde's whale	The Bryde's whale is the least migratory of its genus and is restricted geographically from the equator to 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; 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 two to three 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 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 NM 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

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Species	Key Information
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 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.

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Species	Key Information
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 life history characteristics of Omura's whale resulting in an IUCN listing of Data Deficient. There are no identified BIAs for this species in the NWMR.

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Species	Key Information
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. Twenty-three 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 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.

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Species	Key Information
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 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 1546 in 2016 and 2690 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. It is also noted that findings reported by Brown et al., (2014) indicated there was evidence of hybridisation of the Australian snubfin and humpback dolphin populations in north-western Australia.

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Species	Key Information
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 3713 in 2015, 2638 in 2016 and 1635 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 found that during winter months, presence in coastal lagoons west of the North-west Cape 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 7-8 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 (Bayliss and Hutton, 2017). Dugong distribution is correlated with the seagrass habitats upon which it feeds, although water temperature has also been correlated with dugong movements and distribution (Preen et al., 1997; Preen, 2004). 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 Ningaloo and Shark Bay areas (Cleguer and Marsh, 2023). Refer Table 7-3 and Figure 7-9 for the location and type of BIAs for dugong in the NWMR.

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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.

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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; Watson et al,. 2021 cited in DCCEEW, 2024a). Reproductive areas have been identified as HCTS for the species, because:

- 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
- 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).

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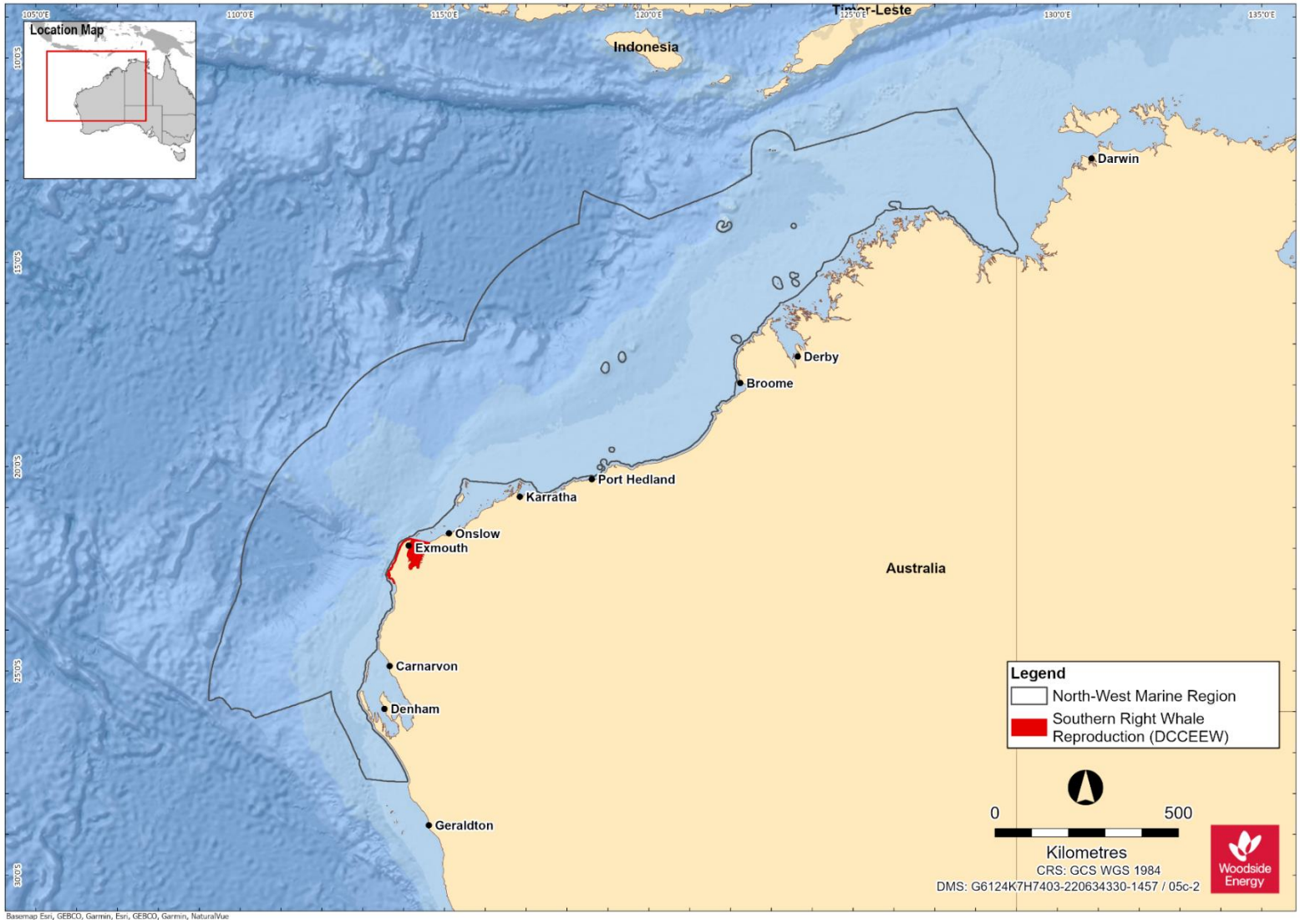


Figure 7-1: Habitat critical to the survival for the southern right whale in the NWMR (DCCEEW, 2024a)

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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.

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Table 7-3: Marine mammal BIAs within the NWMR

Species	Woodside Activity Area			BIAs				
	Browse	NWS/S	NWC	Resting	Foraging[13]	Reproduction		Migration
						Breeding	Calving	
Humpback whale[11]	✓	✓	✓	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[14] [15]	✓	✓	✓	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[16]	-	-	✓	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.

[13] 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.
[14] DSEWPAC (2012a).
[15] Commonwealth of Australia (2015a).
[16] Revised BIAs (October 2023) - https://www.dcceew.gov.au/environment/marine/bias.

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Species	Woodside Activity Area			BIAs				
	Browse	NWS/S	NWC	Resting	Foraging[13]	Reproduction		Migration
						Breeding	Calving	
Australian snubfin dolphin [11]	✓	✓	-	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.

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Species	Woodside Activity Area			BIAs				
	Browse	NWS/S	NWC	Resting	Foraging[13]	Reproduction		Migration
						Breeding	Calving	
Indo-Pacific humpback dolphin	✓	✓	-	No resting BIA identified within the NWMR	Roebuck Bay Willie Creek Prince Regent River King Sound (north) Yampi Sound Talbot Bay Walcott Inlet Doubtful Bay Deception Bay Augustus Island Maret Islands Bigge Island King Sound, southern sector Vansittart Bay, Anjo Peninsula	Roebuck Bay Willie Creek Prince Regent River King Sound (north) Yampi Sound Talbot Bay Walcott Inlet Doubtful Bay Deception Bay Augustus Island	Roebuck Bay Willie Creek Prince Regent River	No migration BIA identified within the NWMR.
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[11]	✓	✓	✓	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.

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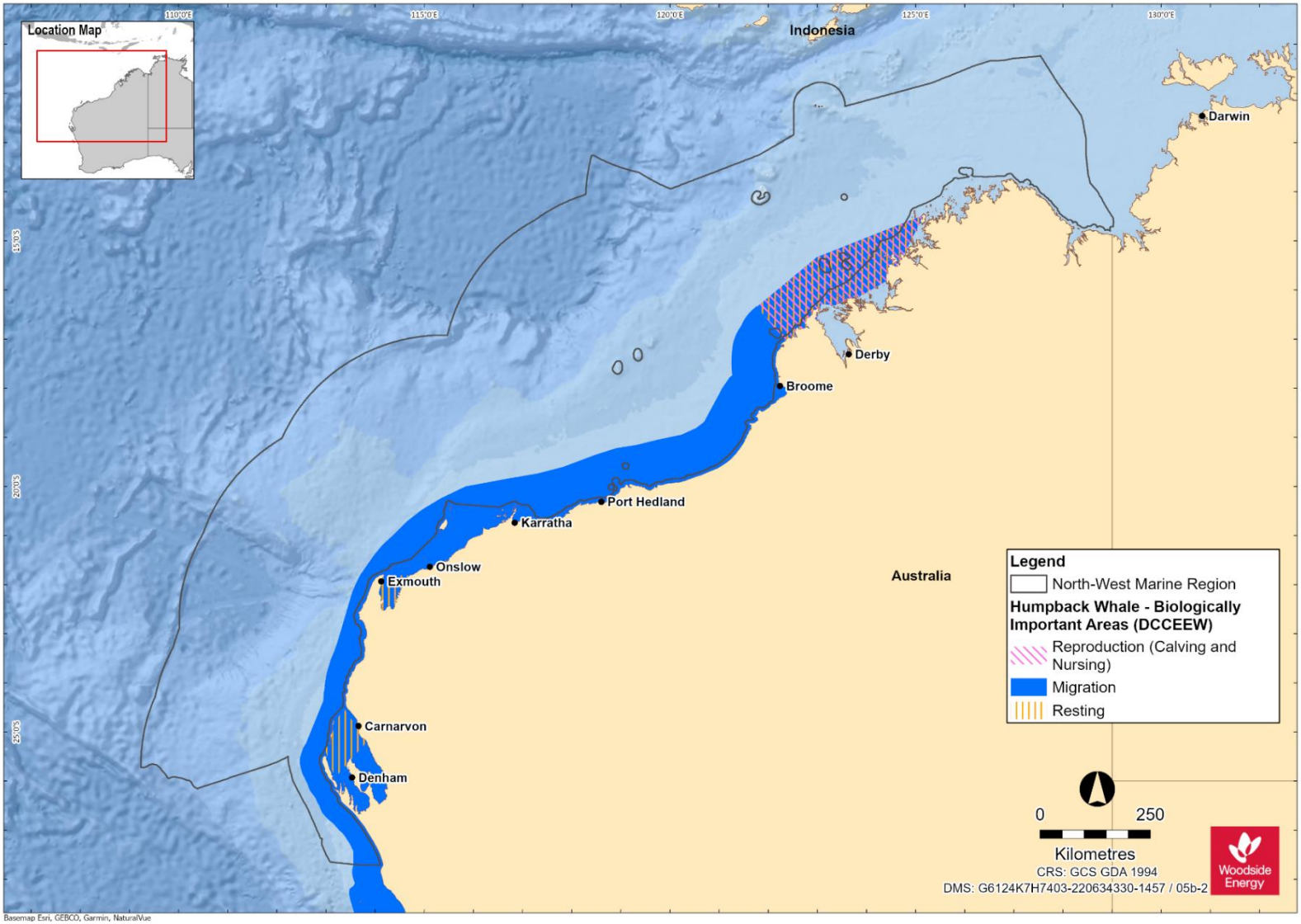


Figure 7-2: Humpback whale BIAs for the NWMR (data source: DCCEEW, 2024b)

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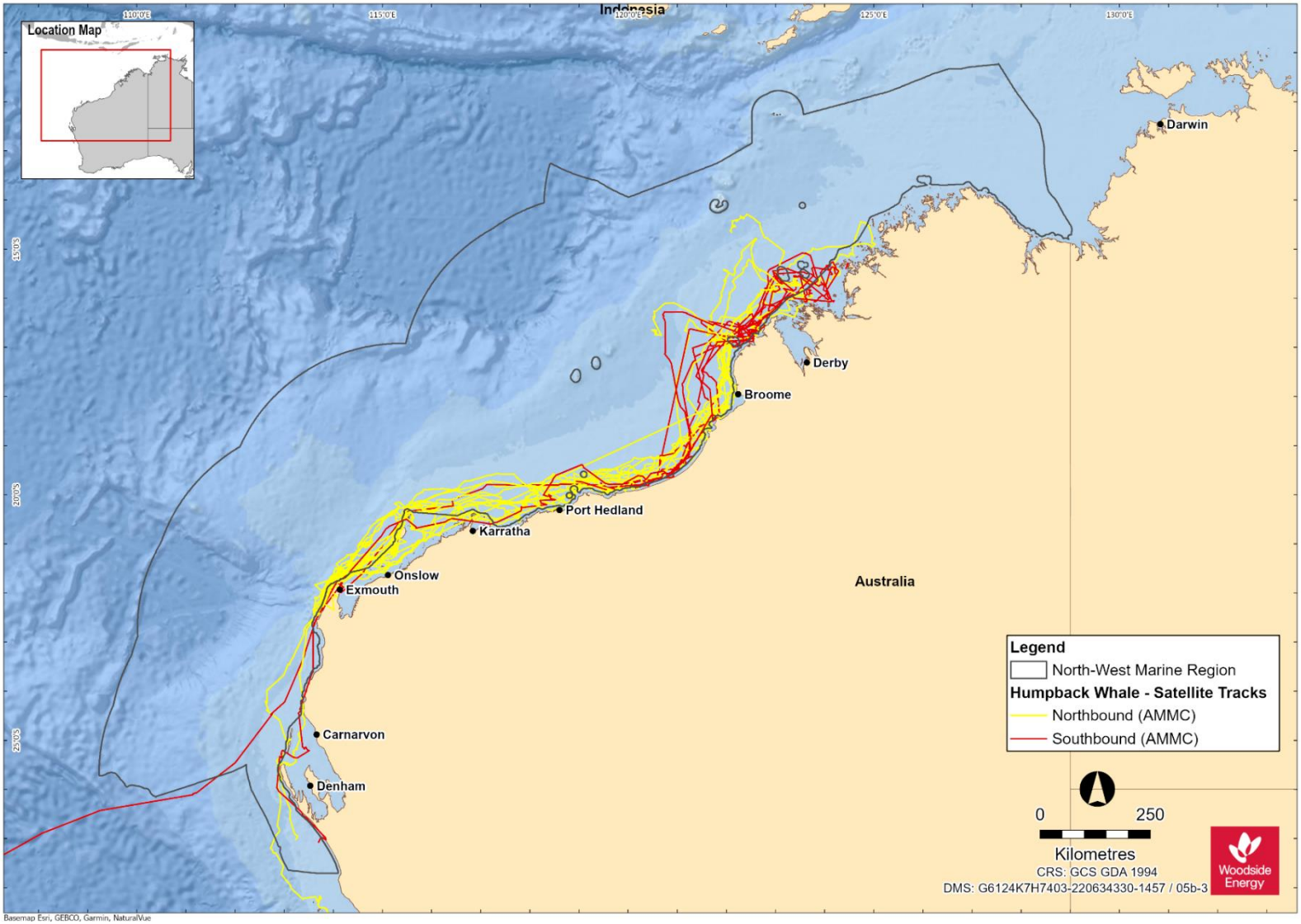


Figure 7-3: Humpback whale tagged tracks for north and south bound migrations (AMMC as published in Double et al. 2010 and 2012)

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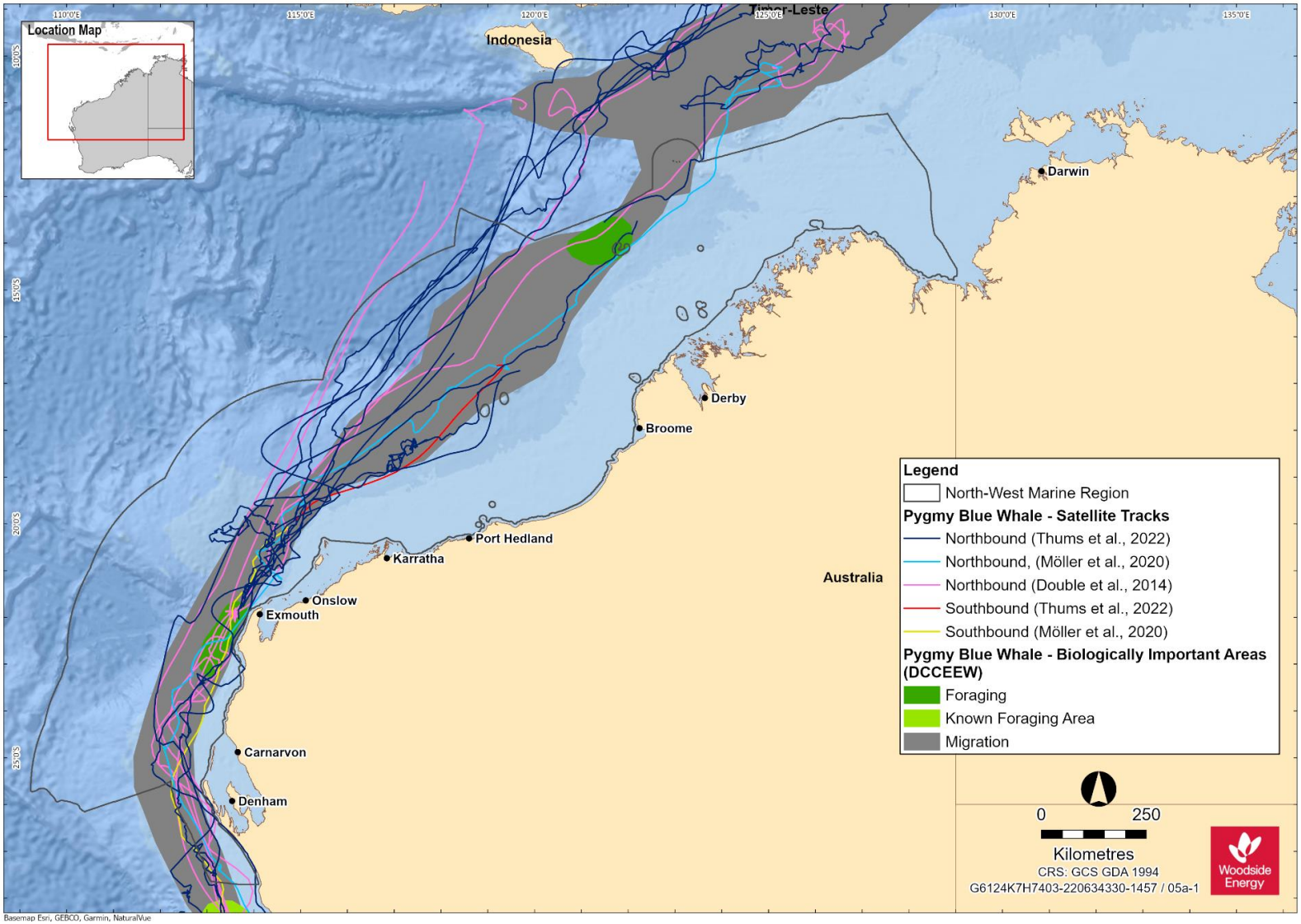


Figure 7-4: Pygmy blue whale BIAs for the NWMR and tagged whale tracks for northbound migration (data source for BIAs: DCCEEW, 2024b)

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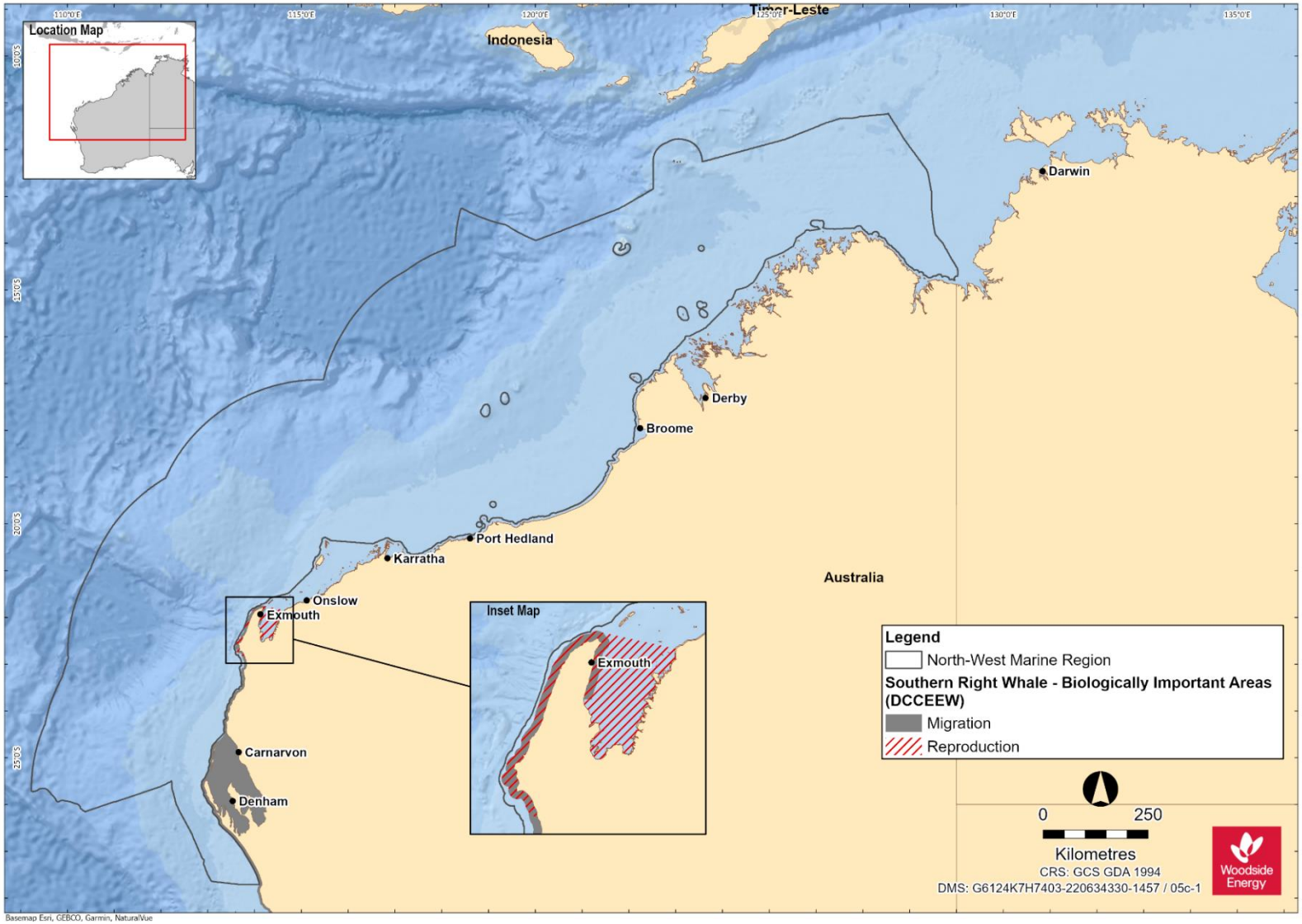


Figure 7-5: Southern right whale BIAs for the NWMR; migration and reproduction BIAs along the coast extend to 3 NM (data source: DCCEEW, 2024b)

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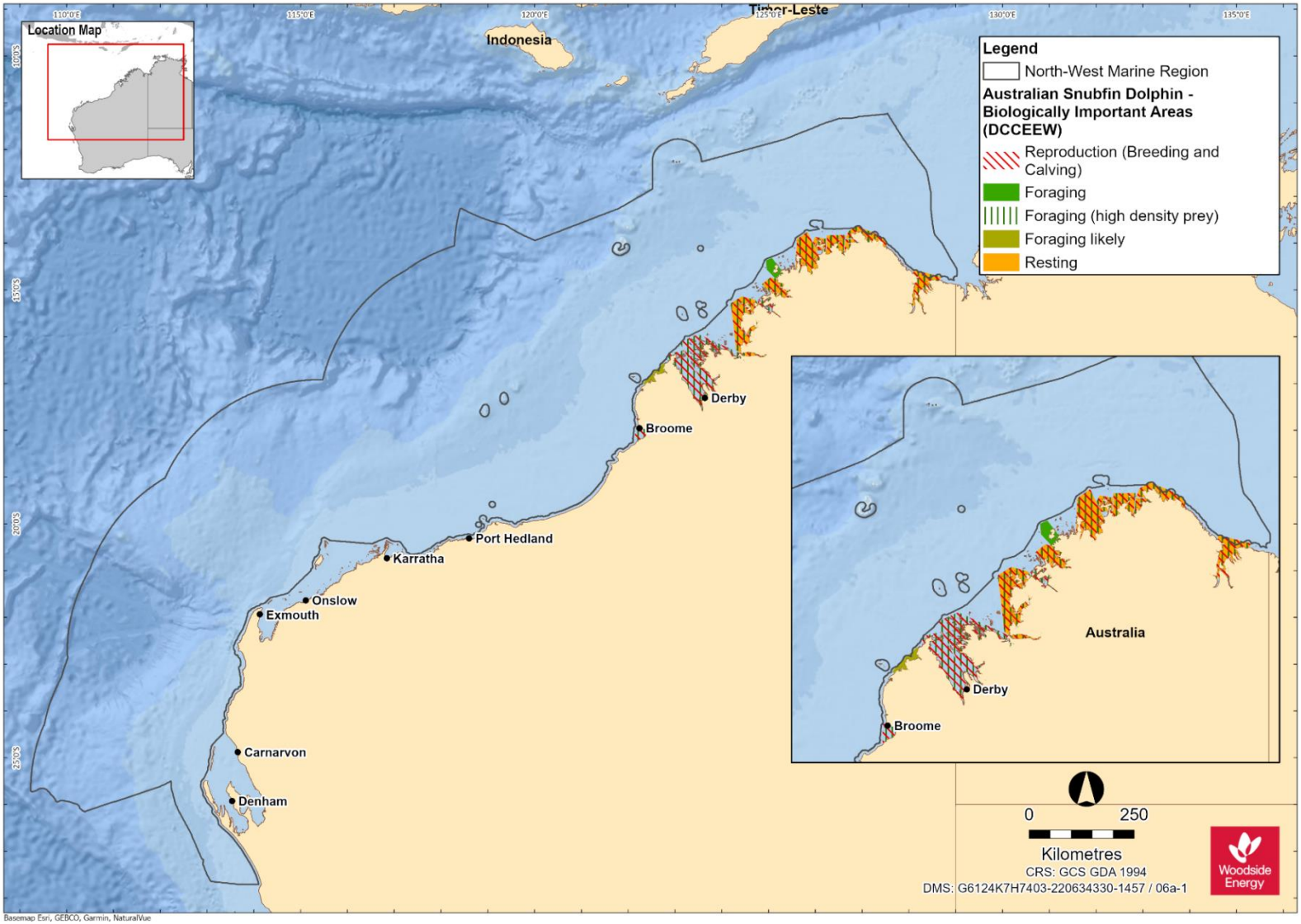


Figure 7-6: Australian snubfin dolphin BIAs for the NWMR (data source: DCCEEW, 2024b)

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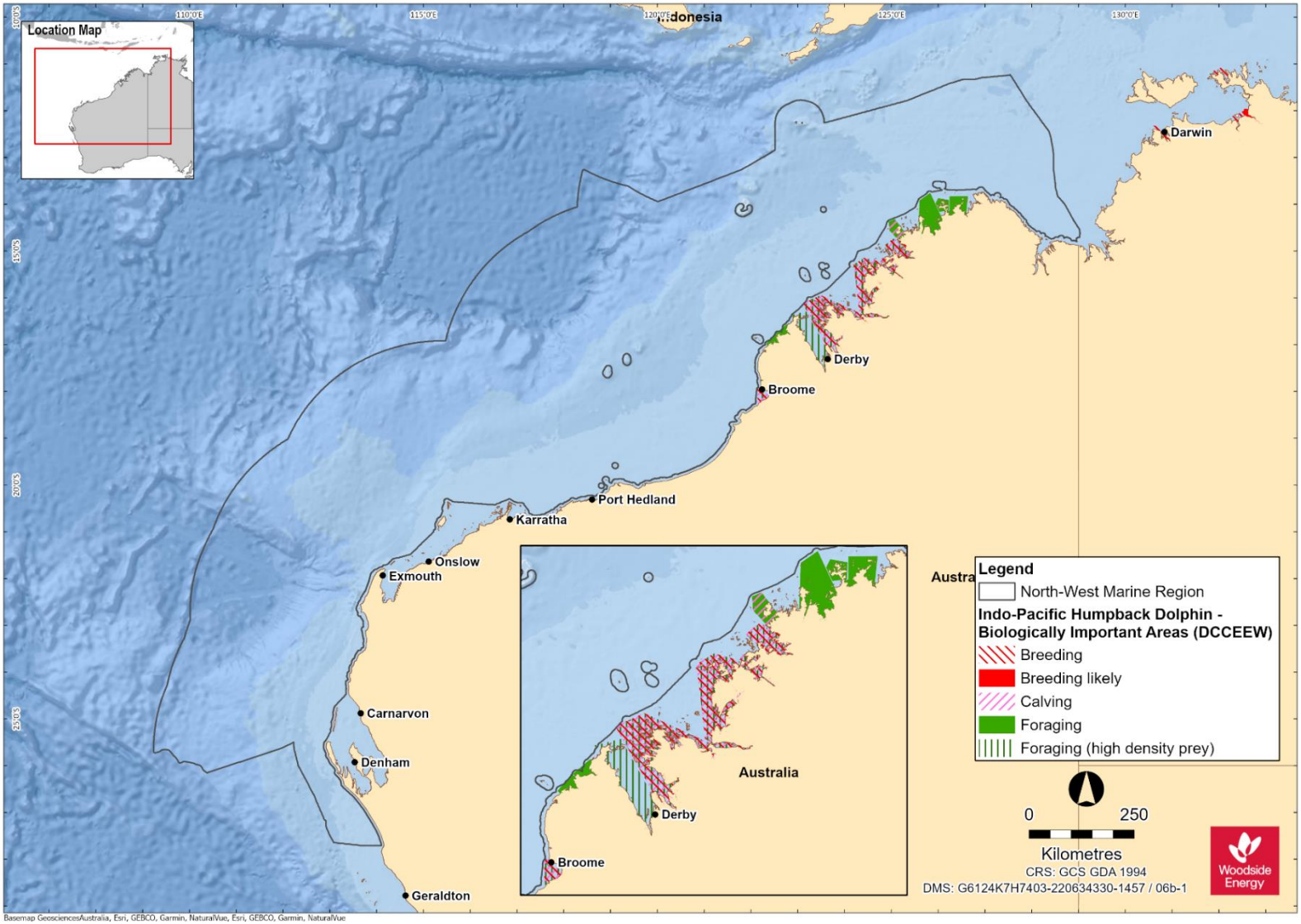


Figure 7-7: Indo-Pacific humpback dolphin BIAs for the NWMR (data source: DCCEEW, 2024b)

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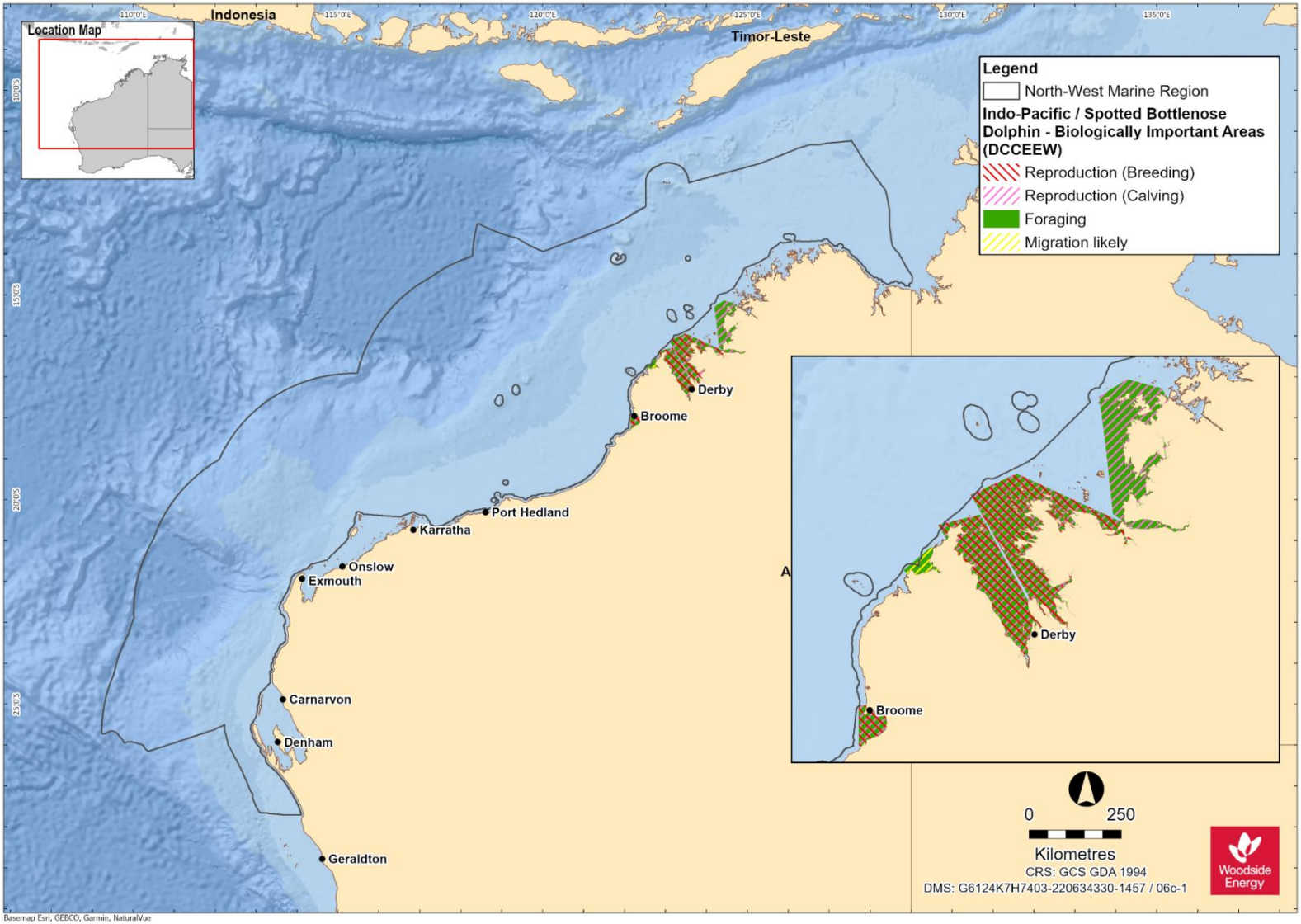


Figure 7-8: Indo-Pacific spotted bottlenose dolphin BIAs for the NWMR (data source: DCCEEW, 2024b)

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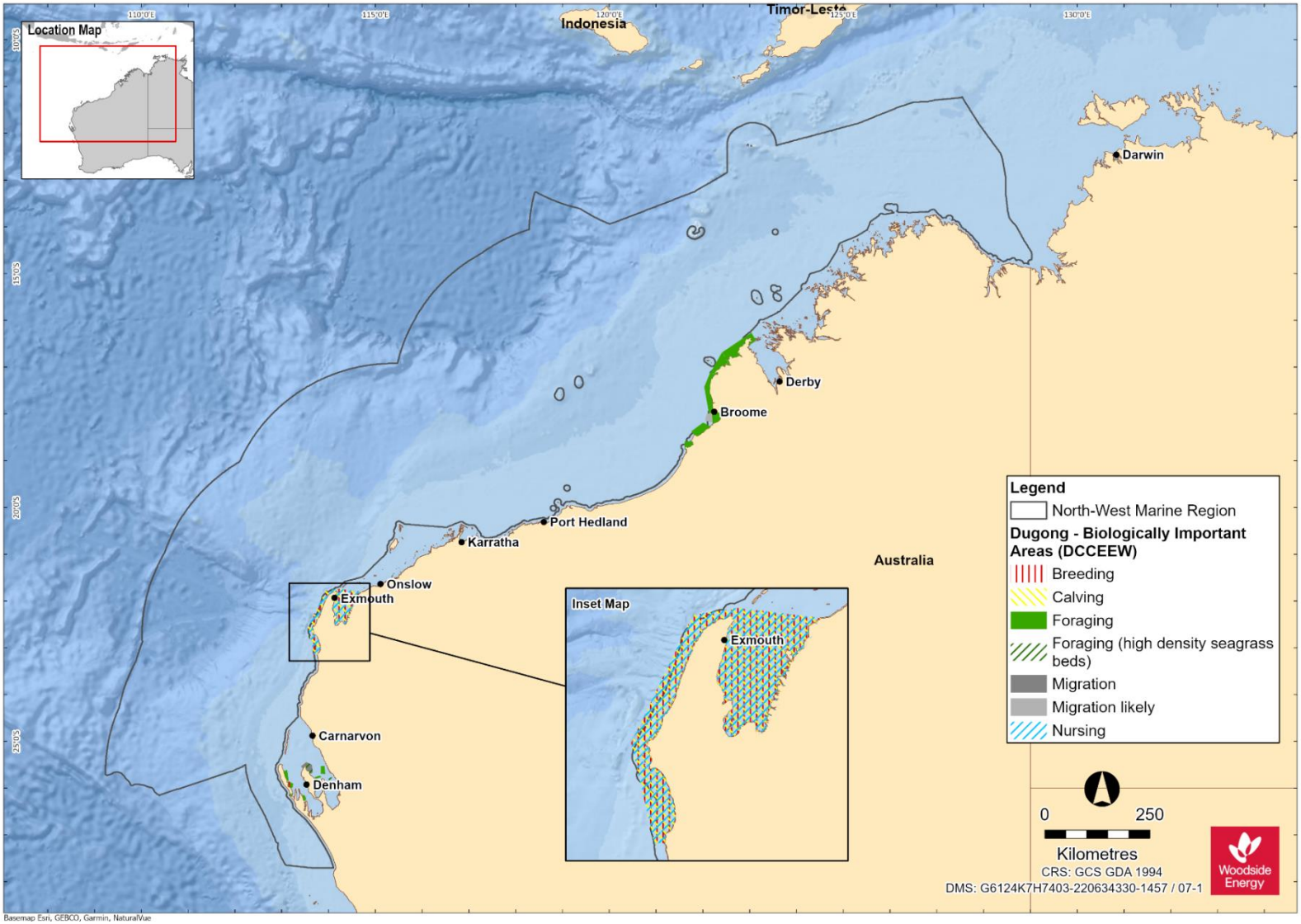


Figure 7-9: Dugong BIAs for the NWMR (data source: DCCEEW, 2024b)

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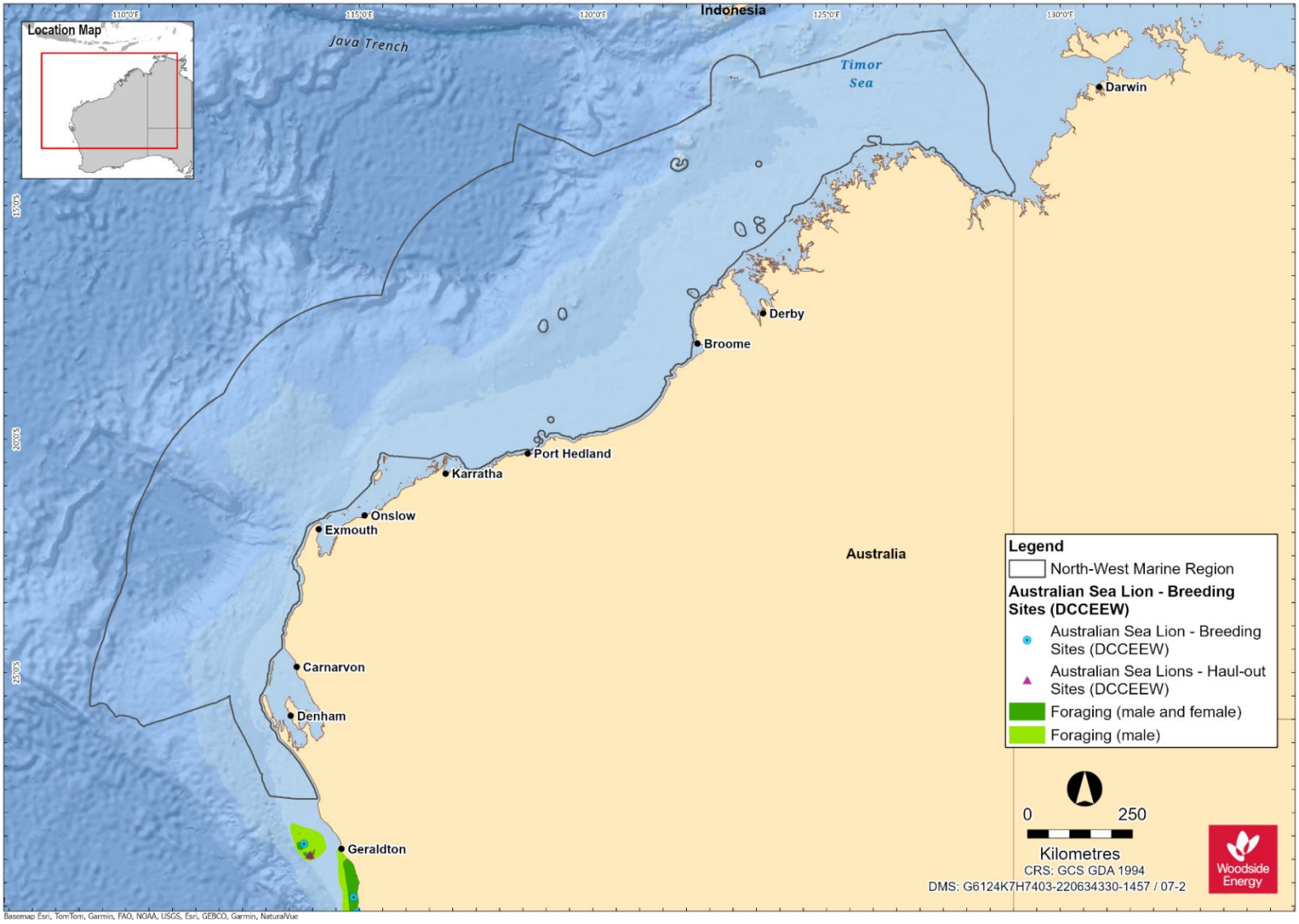


Figure 7-10: Australian sea lion BIAs in the northern extent of the SWMR closest to the NWMR (data source: DCCEEW, 2024b)

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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)
- 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)
- 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)
- dugong (foraging and breeding/ calving areas).

BIAs for the marine mammal species are outlined in Table 7-3.

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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[17]), 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.

[17] https://www.birdlife.org.au/projects/KBA#:~:text=The%20Key%20Biodiversity%20Areas%20(KBAs,of%20advocacy%20for%20protected%20areas. [Accessed April, 2021]

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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 in Appendix A)			Biodiversity Conservation Act 2016 (WA)[18]	IUCN Red List of Threatened Species (non-statutory)[19]	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	

[18] Threatened and Priority Fauna List – April 2024 - https://www.dbca.wa.gov.au/management/threatened-species-and-communities (accessed on 13/08/2024)
[19] IUCN, 2024. The IUCN Red List of Threatened Species. Version 2024-1. https://www.iucnredlist.org (accessed on 13/08/2024)

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Species Name	Common Name	Environment Protection and Biodiversity Conservation Act 1999 (Cth) (as per PMST report in Appendix A)			Biodiversity Conservation Act 2016 (WA)[18]	IUCN Red List of Threatened Species (non-statutory)[19]	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	

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Species Name	Common Name	Environment Protection and Biodiversity Conservation Act 1999 (Cth) (as per PMST report in Appendix A)			Biodiversity Conservation Act 2016 (WA)[18]	IUCN Red List of Threatened Species (non-statutory)[19]	EPBC Act Part 13 Statutory Instrument
		Threatened Status	Migratory Status	Listed	Conservation Status	Global Status	
Calonectris leucomelas	Streaked shearwater	N/A	Migratory	Marine	Migratory	Near Threatened	
Sula dactylatra	Masked booby	N/A	Migratory	Marine	Migratory	Least Concern	
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, 2023e)
Calidris ferruginea	Curlew sandpiper	Critically Endangered	Migratory	Marine	Critically Endangered	Near Threatened	Conservation Advice *Calidris ferruginea* Curlew sandpiper (DCCEEW, 2023f)
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)

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Species Name	Common Name	Environment Protection and Biodiversity Conservation Act 1999 (Cth) (as per PMST report in Appendix A)			Biodiversity Conservation Act 2016 (WA)[18]	IUCN Red List of Threatened Species (non-statutory)[19]	EPBC Act Part 13 Statutory Instrument
		Threatened Status	Migratory Status	Listed	Conservation Status	Global Status	
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, 2023g)
Limosa limosa	Black-tailed godwit	Endangered	Migratory	Marine	Migratory	Near Threatened	Conservation Advice for *Limosa limosa* black-tailed godwit (DCCEEW, 2024h)
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	

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Species Name	Common Name	Environment Protection and Biodiversity Conservation Act 1999 (Cth) (as per PMST report in Appendix A)			Biodiversity Conservation Act 2016 (WA)[18]	IUCN Red List of Threatened Species (non-statutory)[19]	EPBC Act Part 13 Statutory Instrument
		Threatened Status	Migratory Status	Listed	Conservation Status	Global Status	
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	
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	

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		Threatened Status	Migratory Status	Listed	Conservation Status	Global Status	
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)
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

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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).

8.2.1 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).

8.2.1.1 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 one 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).

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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 (1200–1400 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 and Congdon, 2005), and New Caledonia (Weimerskirch et al., 2020). However, divergent foraging strategies have been detected between colonies, which is linked to the proximity of colonies to high productivity waters (Peck and Congdon, 2005; Weimerskirch et al., 2020). While the presence of squid and lanternfish in their diet (Surman and Nicholson, 2009) suggests nocturnal foraging occurs in this species, 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 4500 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 6000 km northwards to Micronesia (McDuie and Congdon, 2016).

Wedge-tailed shearwaters are observed during breeding across all shelf waters and are the most frequently encountered seabird at sea. Large numbers of wedge-tailed shearwaters have been observed foraging off the NWS between May–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.

8.2.1.2 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 and 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 and Wooller, 1995). The incubation period averaged 34 days and the fledging period 40 days. (Surman and Wooller, 1995).

Studies of foraging ecology of breeding Australian lesser noddies at the Houtman Abrolhos Islands found that they are largely diurnal, foraging between 04h00 and 20h40 and returning to their colony

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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 two and four hours with a total trip distance of less than 40 km. However, some trips lasted up to 16 hours covering distances of up to 112 km (Surman et al*.,* 2017). During non-breeding, birds appear to remain near the breeding islands year-round (Higgins and Davies, 1996).

Due to differences in climate and seasonality experienced at the Houtman Abrolhos Islands and Ashmore Reef, timing of breeding differs. The Ashmore Reef population has been recorded breeding in the Austral autumn/winter (Clarke and Herrod, 2016), while the Houtman Abrolhos Islands 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.

8.2.1.3 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 (5000 pairs at Middle Island and 3000 pairs at East Island in 2007, Swann, 2005a; Swann, 2005b; Swann, 2005c; Milton, 2005; Clarke, 2010), Bedout Island (1000 pairs) and Adele Island (7500 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 and Claridge, 1997).

Brown boobies do not migrate far from their breeding islands, rarely dispersing more than 240 km from their natal colony (Dunlop et al., 2001). Brown boobies forage within 50 km of their colony where they plunge dive, reaching up to 15 m depth and pursuing their prey when ascending after the dive (Austin et al*.,* 2021). Brown booby diet is principally medium to large surface schooling prey (northern pilchard, Indian anchovy, flying fish and cephalopods), often associated with feeding tunas and mackerels (Cannell et al. 2022; Austin et al*.,* 2021).

Brown boobies are not prone to waterlogging and will roost on the 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).

8.2.1.4 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 and Herrod, 2016) and Adele Island (14 pairs,

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Botle et al., 2004). At Ashmore Reef they have been recorded breeding year-round (Clarke and Herrod, 2016).

The red-footed booby is one of the most widely distributed of the boobies across oceanic waters in the tropical Indian Ocean; during non-breeding, individuals have been observed up to 800 km from their natal colony (Dunlop et al., 2001). However, individuals are limited to a range of 150 km from the breeding colony when breeding (Wiemerskirsch et al., 2005). In the Ashmore area, adults have been detected up to 125 km from the nearest breeding islands during October (unpubl. data, referenced in Clarke and Herrod, 2016).

Red-footed boobies are diurnal foragers, plunge diving for flying fishes (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).

8.2.1.5 Masked Booby (Pelagic Seabird)

The masked booby (*Sula dactylatra*) is listed as 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 and 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 and Higgins, 1990; Swann et al., 2002). Breeding is also reported at the Ashmore Reef group with up to 30 breeding pairs recorded on Middle Island and 15 pairs on East Island (Burbidge and Fuller, 1996; Hassell et al., 2003; Swann, 2005a; Swann, 2005b; Swann, 2005c; Milton, 2005; Clarke, 2010; Clarke et al., 2016). Up to two pairs have also been recorded breeding in the 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.

8.2.1.6 Common Noddy (Pelagic Seabird)

The common (or brown) noddy (*Anous stolidus*) is listed as migratory under the EPBC Act and BC Act. The species is widespread in tropical and subtropical areas within and beyond Australia. This seabird species is gregarious and normally occurs in flocks, up to hundreds of individuals, when feeding or roosting.

The Houtman Abrolhos is the primary breeding habitat for the common noddy in the Eastern Indian Ocean, although breeding occu rs 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 and Herrod, 2016). Breeding at Ashmore Reef has been recorded as occurring between April and November (Clark and Herrod, 2016).

During breeding, individuals nesting on Lancelin Island in the SWMR were found to forage diurnally (Shephard et al., 2018). Tracked individuals travelled an average of 97 km from the colony with an average trip distance of 141 km, with significantly longer trips during chick rearing compared to incubation (Shephard et al., 2018).

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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.

8.2.1.7 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.

8.2.1.8 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 and 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 and 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

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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).

8.2.1.9 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 6000 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 and up to three nesting pairs; Clark, 2010; Burbidge et al., 1996, respectively). Breeding can occur year-round (Clarke and Herrod, 2016).

Pennycuick et al. (1990) demonstrated that the white-tailed tropicbirds breeding in Puerto Rico foraged up to 89 km from the nest site when breeding and moved considerably larger distances when not breeding. Dunlop et al. (2001) observed birds from Christmas Island foraging singly between 1400–1600 km south-east 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 and Higgins, 1990).

There are breeding BIAs associated with nesting occurring at the Rowley Shoals and Ashmore Reef within the NWMR (Figure 8-5).

8.2.1.10 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 (1400–2000 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

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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.

8.2.1.11 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 2500 km 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.

8.2.1.12 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.

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8.2.1.13 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 and Nicholson, 2009). Large colonies breed within the Lowendal Island and Montebello Island region where there is a stronghold for this species (Higgins and Davies, 1996). A large breeding colony has also been recorded on Goodwyn Island on the Dampier Archipelago (Higgins and Davies, 1996). Peak breeding times across the NWMR are between May to August.

Birds are known to usually move away from breeding colonies following breeding, but their non-breeding range is not well defined (Higgins and Davies, 1996). Many non-breeding roseate terns have been observed at several remote locations in the Kimberley 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 and Wooller, 2003). Roseate terns will also readily raft (roost in flocks on the sea surface) after foraging episodes (Commonwealth of Australia, 2020).

Roseate terns 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).

8.2.1.14 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 and 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.

8.2.1.15 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,

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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 and Wooller, 2003; Rock et al., 2007; McLeay et al., 2010) with most foraging behaviour displayed by individuals at distances >5 km (McLeay et al., 2010).

The chicks are predominantly fed pelagic fish, a diet that varies among colonies and years (Chiaradia et al., 2002; McLeay et al., 2009). Adults may forage more widely on inshore reef fish (Surman and Wooller, 2003), crustaceans and cephalopods using a plunge diving method (Commonwealth of Australia, 2020a).

Although there is known habitat use in the NWMR, there are no designated BIAs for the greater crested tern in the NWMR.

8.2.2 Moderate-occurrence Key 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–Jun	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: Jun–Dec	Diurnal and nocturnal Dipping, surface-seizing	Crustaceans, fish
Common tern	Non-breeding: Aug–Mar	Diurnal Surface-plunging, dipping	Fish

8.2.3 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.

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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 nearest BIA to the NWMR	Dampier Archipelago, Montebello, Lowendal and Barrow Island Groups, south Ningaloo and barrier island of Shark Bay	Eighty Mile Beach
White-tailed tropicbird	✓	✓	-	-	-	Rowley Shoals Ashmore Reef	-

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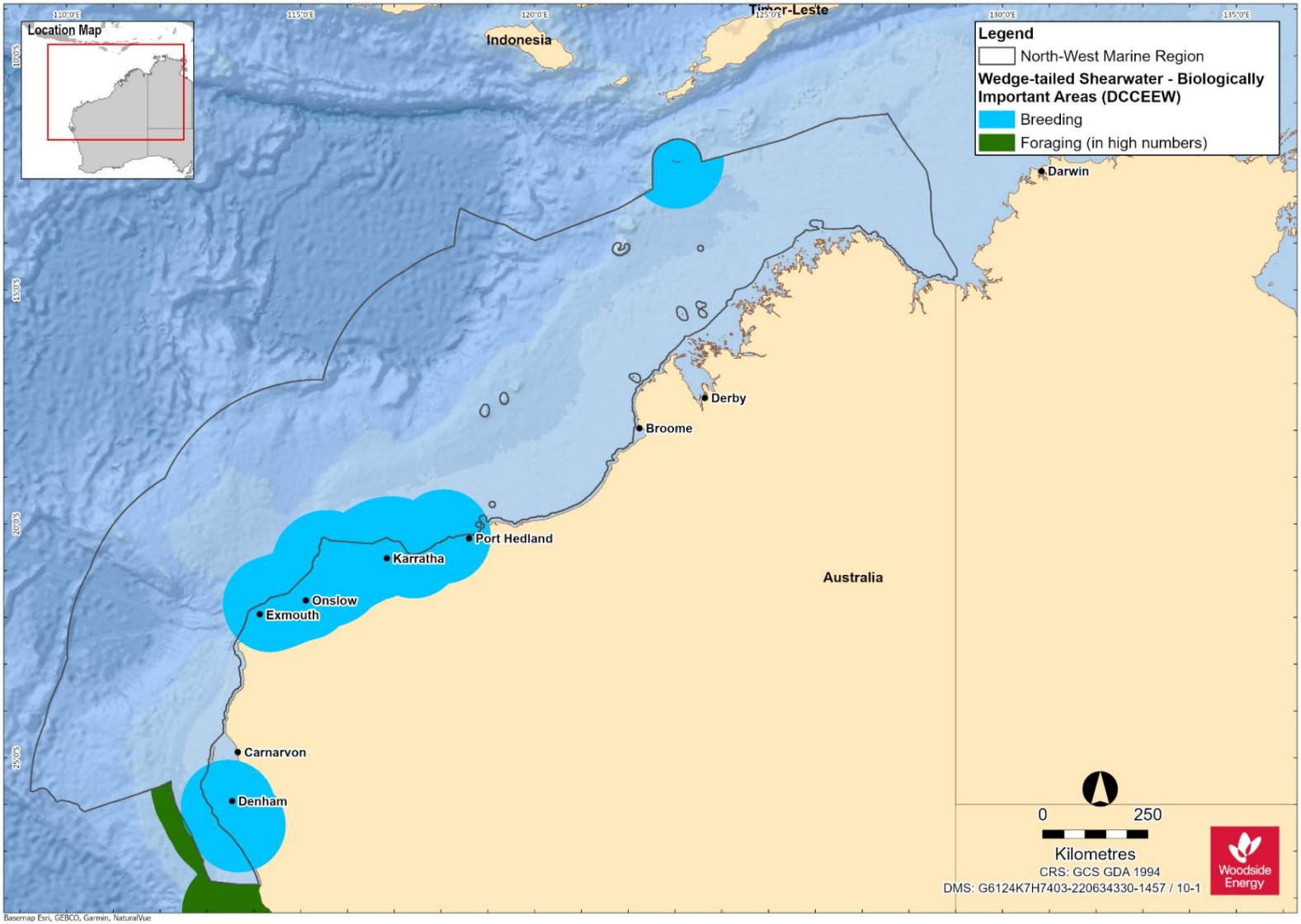


Figure 8-1: Wedge-tailed shearwater BIAs for the NWMR (data source: DCCEEW, 2024b)

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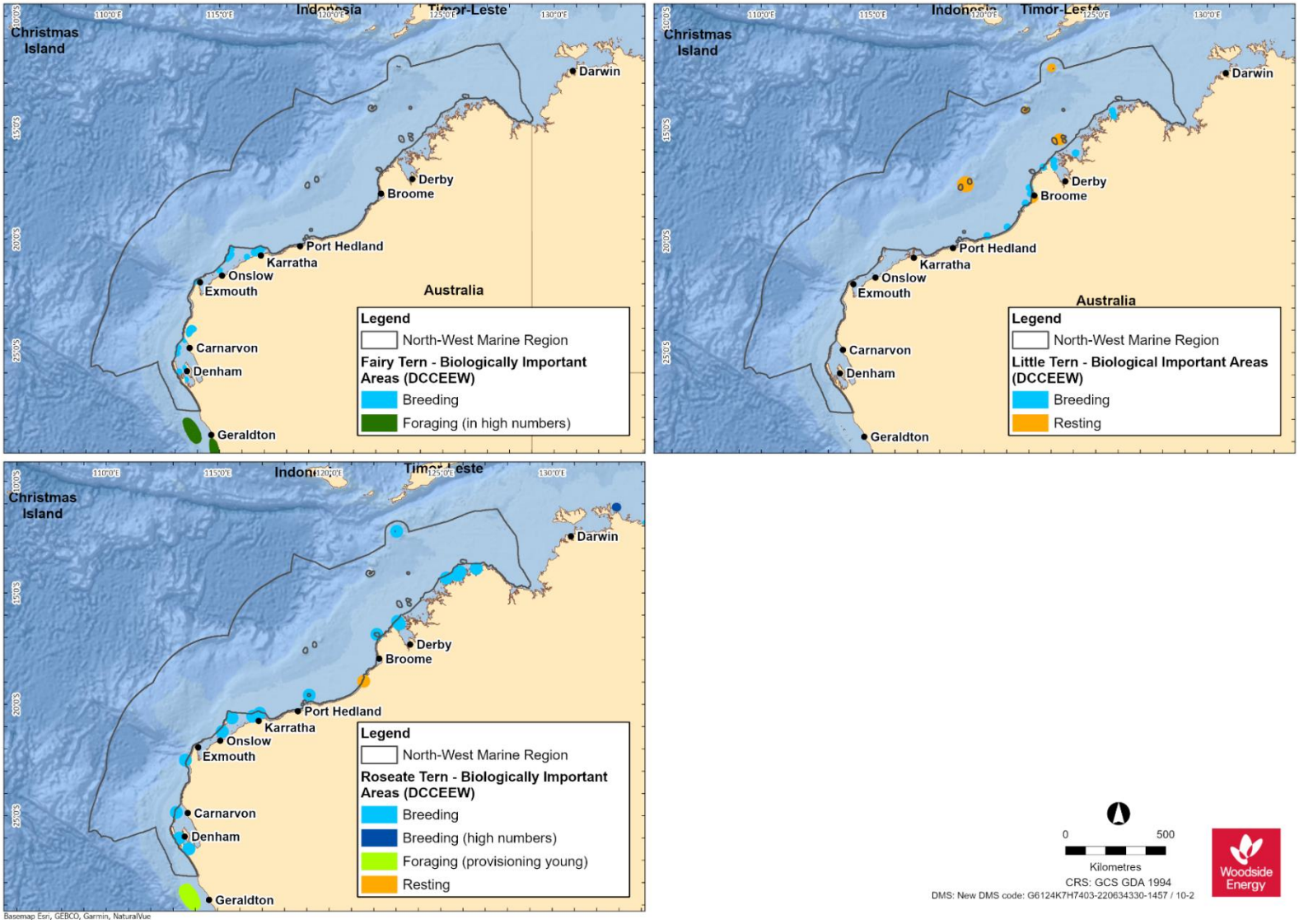


Figure 8-2: Tern species BIAs for the NWMR (data source: DCCEEW, 2024b)

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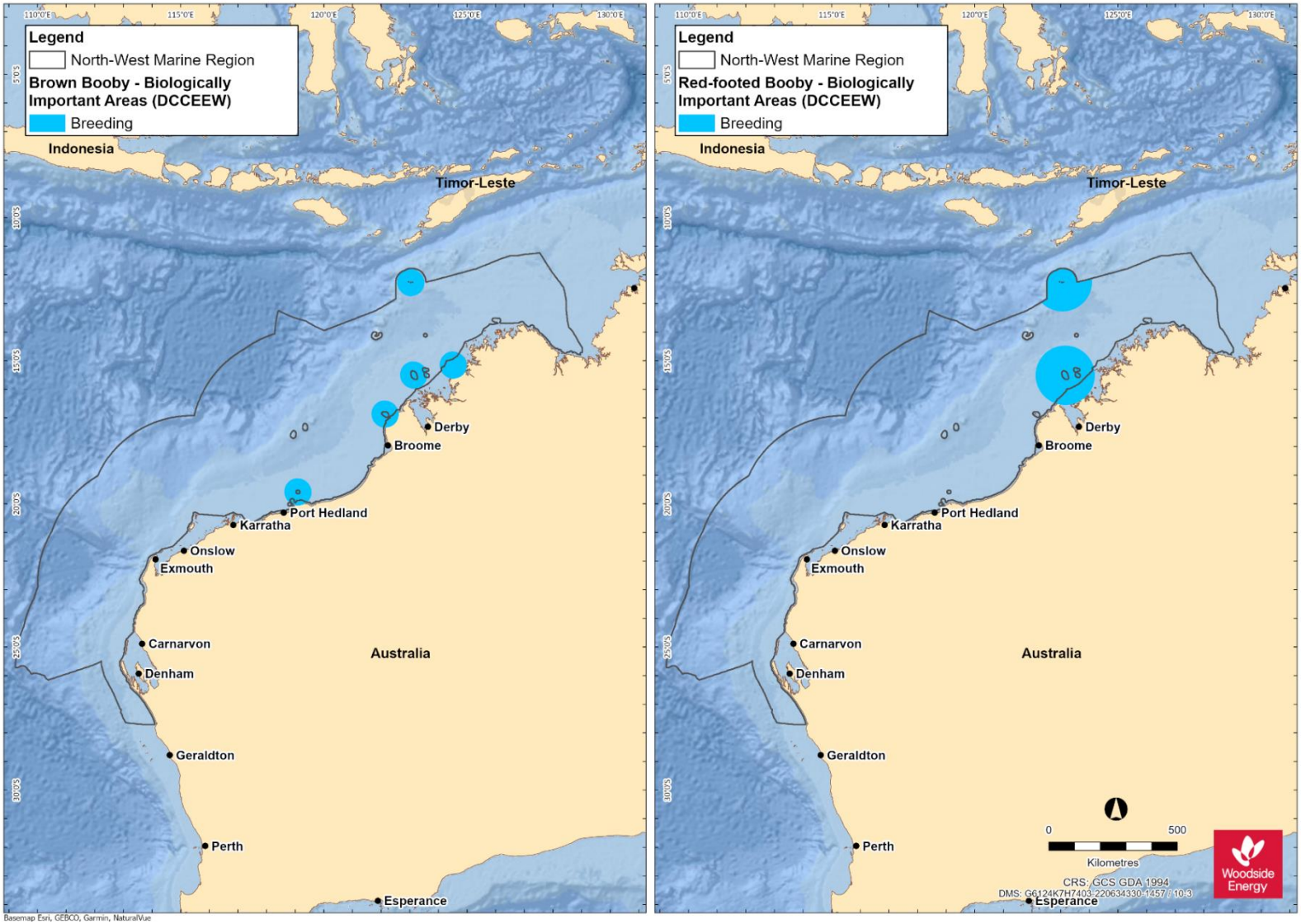


Figure 8-3: Red-footed and brown booby BIAs for the NWMR (data source: DCCEEW, 2024b)

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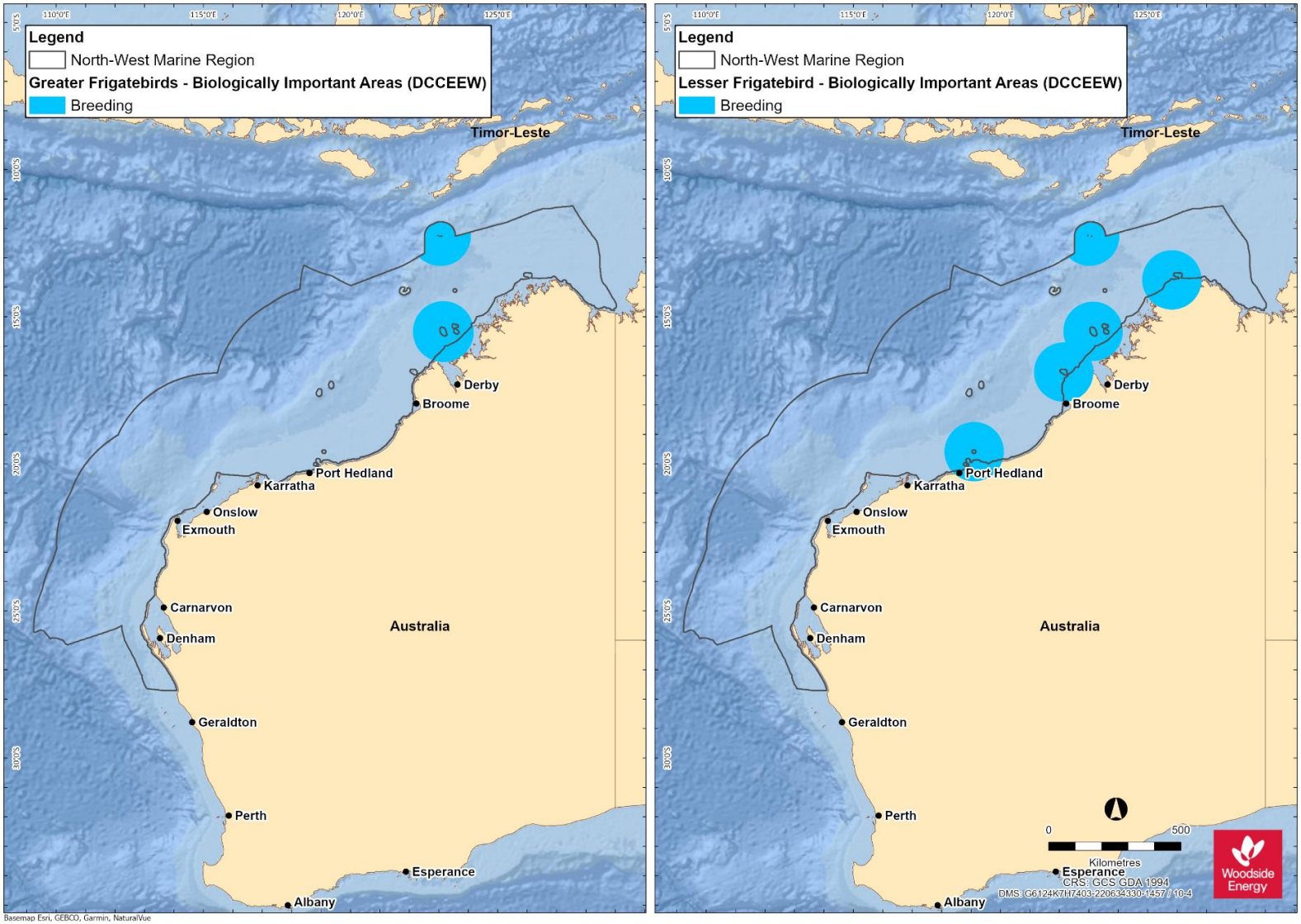


Figure 8-4: Greater and lesser frigatebird BIAs for the NWMR (data source: DCCEEW, 2024b)

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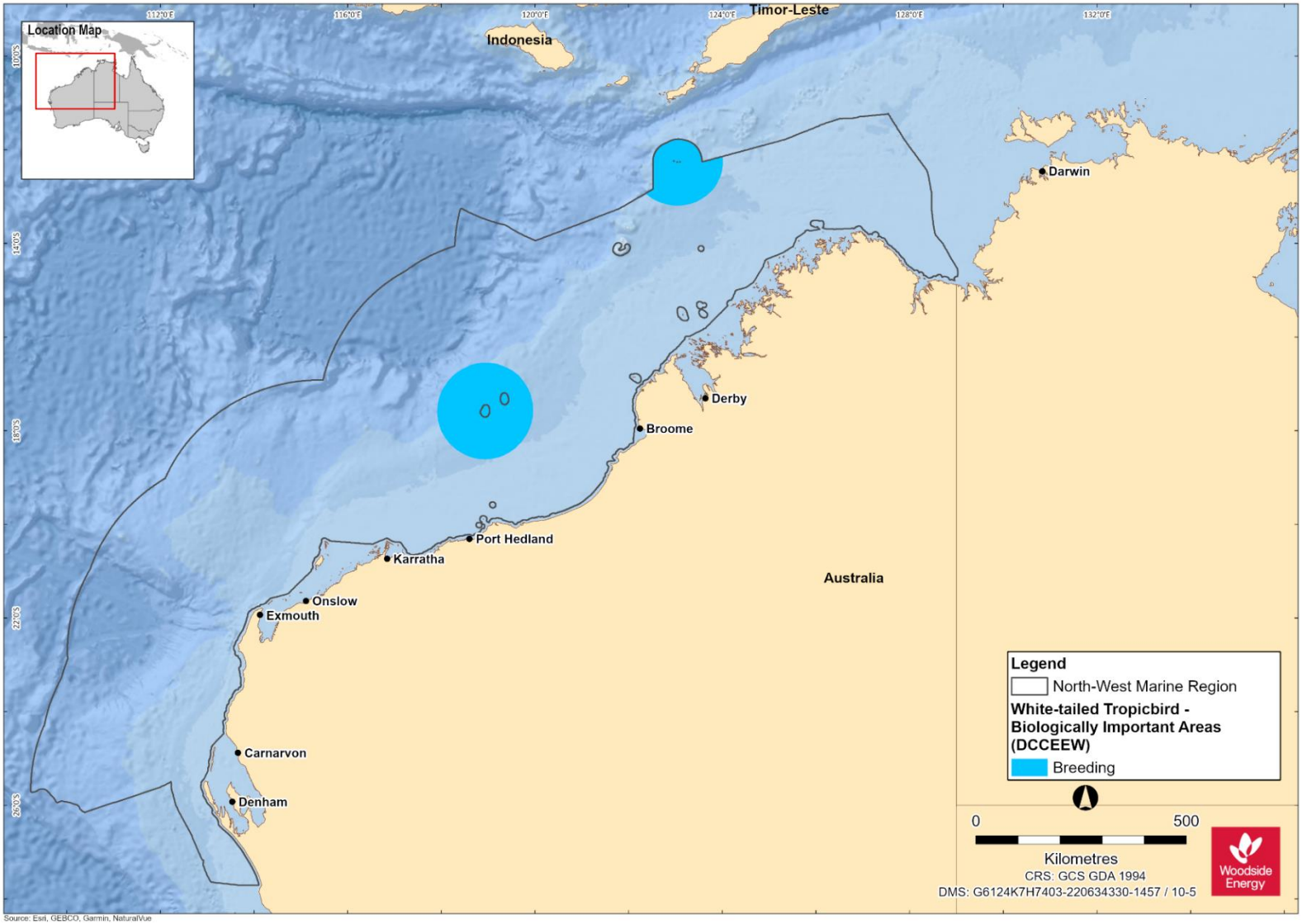


Figure 8-5: White-tailed tropicbird BIAs for the NWMR (data source: DCCEEW, 2024b)

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8.2.4 Seabird Summary for NWMR

8.2.4.1 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)
- white-tailed tropicbird (breeding).

BIAs for the seabird species are outlined in Table 8-3.

8.2.4.2 North West Shelf / 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)
- roseate tern (breeding and resting).

BIAs for the seabird species are outlined in Table 8-3.

8.2.4.3 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)
- 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 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

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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.

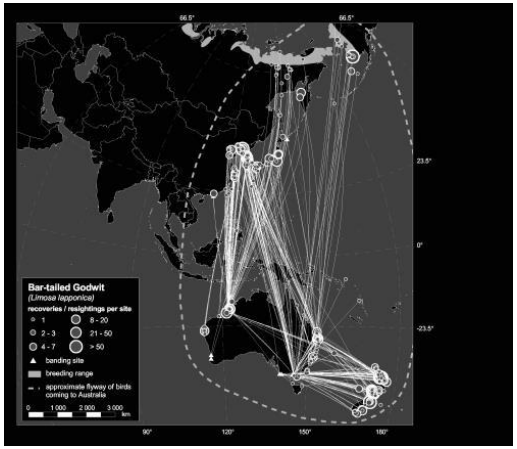
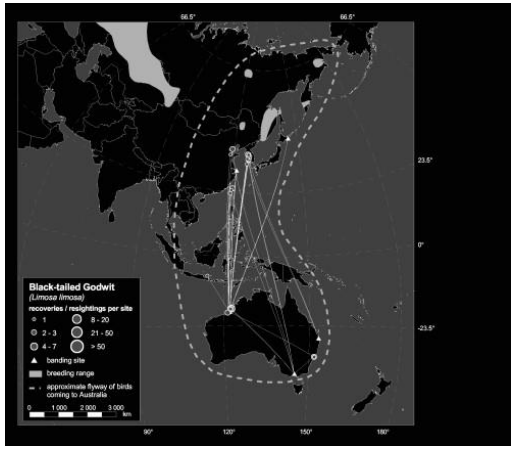
Within the EAAF, “a wetland should be considered internationally important if it regularly supports 1% of the individuals in a population of one species or subspecies of waterbird” (Ramsar Convention Bureau, 2000). All shorebirds identified as high occurrence key species occur in shoreline habitats within 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.

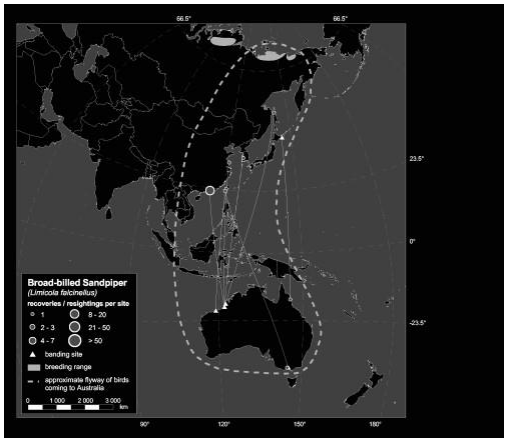
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Table 8-4: Species summary for high and selected moderate occurrence key shorebird species

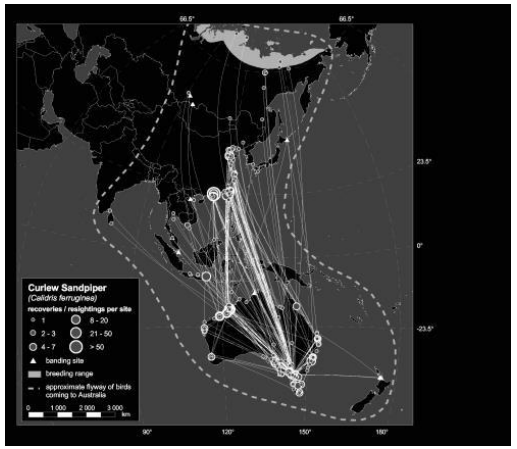
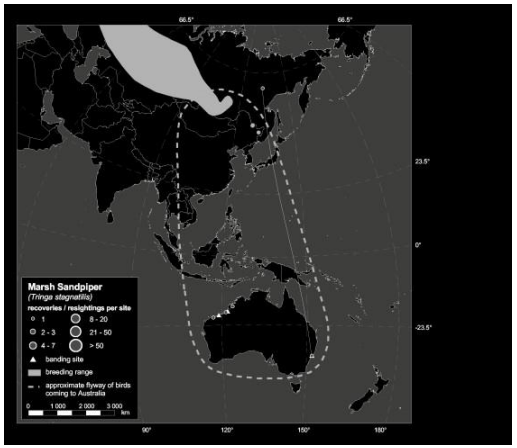
Species	Presence in NWMR	Roosting habitat	Foraging habitat	Diet	Migration From Minton et al (2006)
Bar-tailed godwit[20]	Widespread around the coast as far east as Derby, with a few scattered records elsewhere in the Kimberley *Internationally important site:* • Roebuck Bay • Eighty Mile Beach	Sandy 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	

[20] Nominate species Limosa lapponica. Subspecies which may occur includes L. l menzbieri, which is listed Critically Endangered under the EPBC Act. Specific information on L. l menzbieri is lacking, but information regarding habitat use and diet for the nominate species is considered applicable.

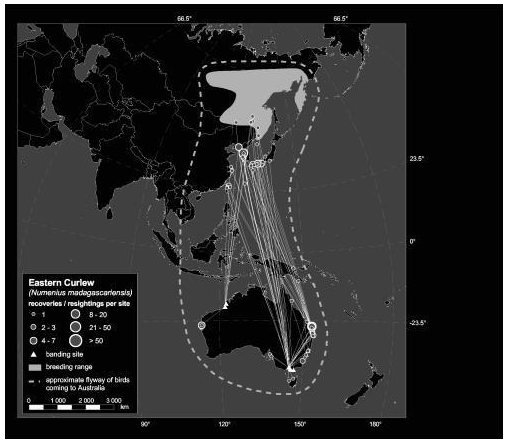
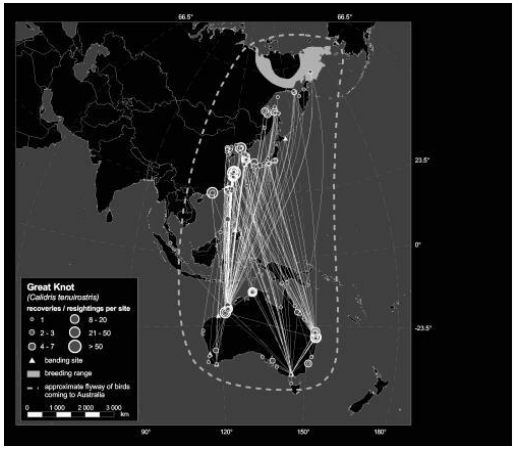
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Species	Presence in NWMR	Roosting habitat	Foraging habitat	Diet	Migration From Minton et al (2006)
Broad billed sand piper	Regular visitor to coasts of the Pilbara and Kimberley between Onslow and Broome *Internationally important site:* • Port Hedland Saltworks	Sheltered sandy, shelly or shingly beaches	Mudflats, mangroves	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

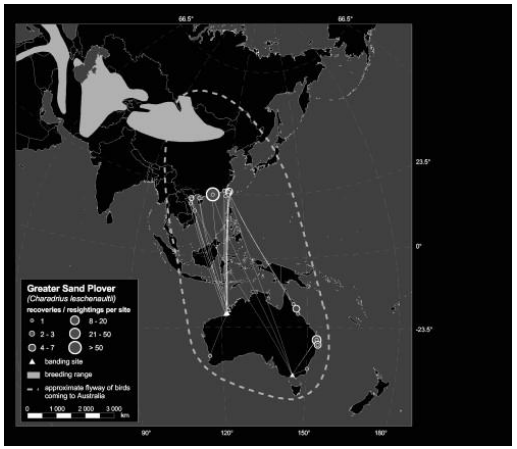
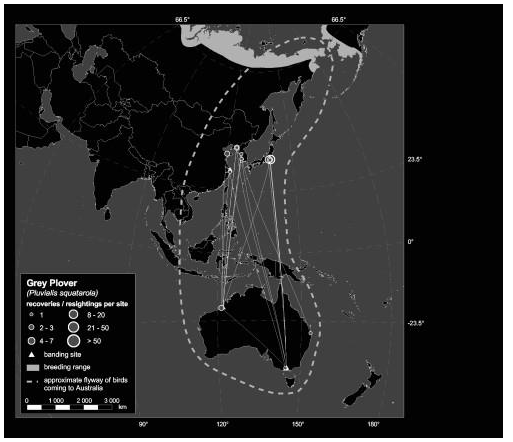
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Species	Presence in NWMR	Roosting habitat	Foraging habitat	Diet	Migration From Minton et al (2006)
Curlew sandpiper	Widespread around coastal and subcoastal plains Non-breeding one year old birds may remain in Australia rather than migrating north *Internationally important 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	
Marsh sandpiper	Widespread, notable areas include Eighty Mile Beach, Port Hedland Saltworks	Tidal mudflats	Mudflats, marshy vegetation	Molluscs, crustaceans and insects	

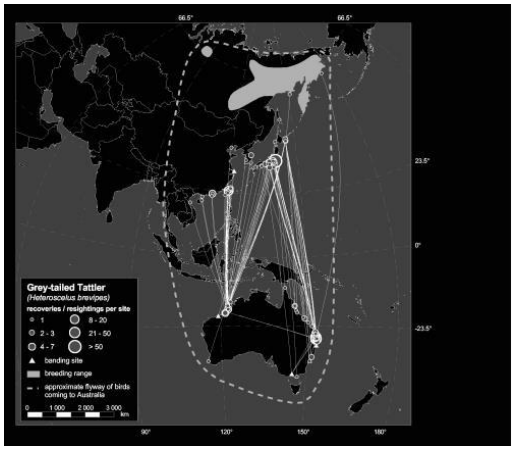
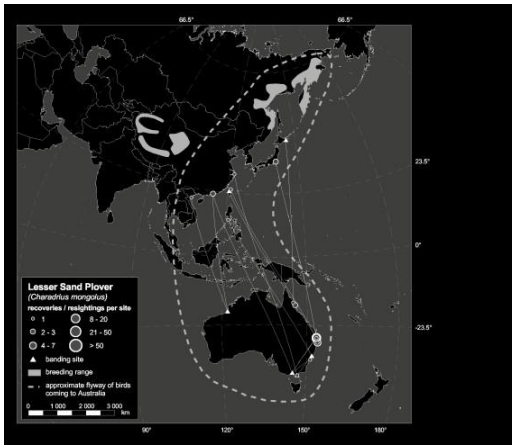
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Species	Presence in NWMR	Roosting habitat	Foraging habitat	Diet	Migration From Minton et al (2006)
Eastern curlew	Continuous distribution from Barrow Island and Dampier Archipelago through the Kimberley region *Internationally important site:* • Eighty 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	
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	

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Species	Presence in NWMR	Roosting habitat	Foraging habitat	Diet	Migration From Minton et al (2006)
Greater sand plover	Widespread between North-west Cape and Roebuck Bay *Internationally important 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	
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	

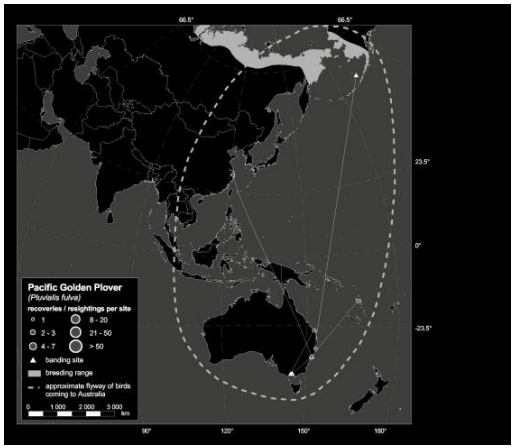
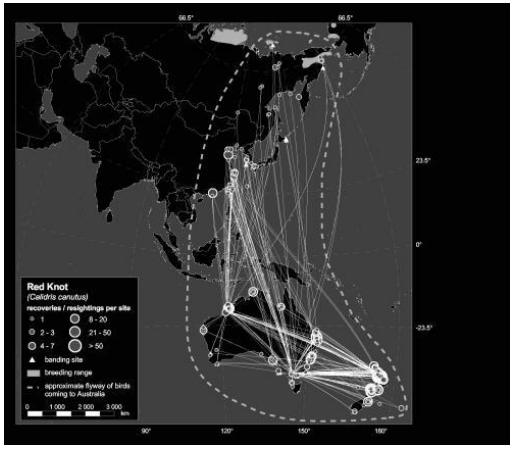
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Species	Presence in NWMR	Roosting habitat	Foraging habitat	Diet	Migration From Minton et al (2006)
Grey-tailed tattler	Widespread from Houtman Abrolhos and the mainland adjacent to the Kimberley *Internationally important site:* • Barrow Island • Roebuck 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	
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	

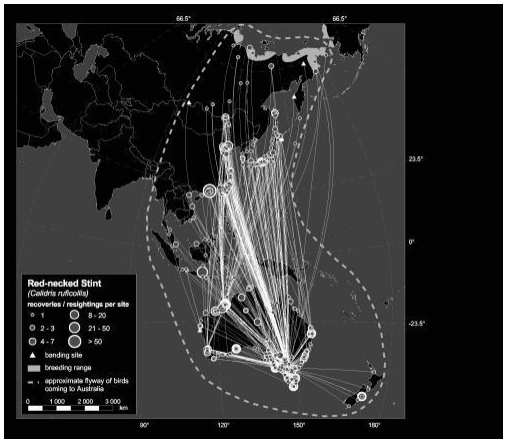
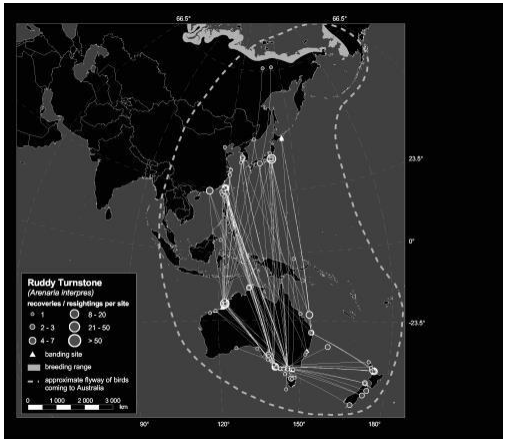
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Species	Presence in NWMR	Roosting habitat	Foraging habitat	Diet	Migration From Minton et al (2006)
Oriental plover	Most records are along the north- western coast, between Exmouth Gulf and Derby in Western Australia *Internationally important site:* • 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
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

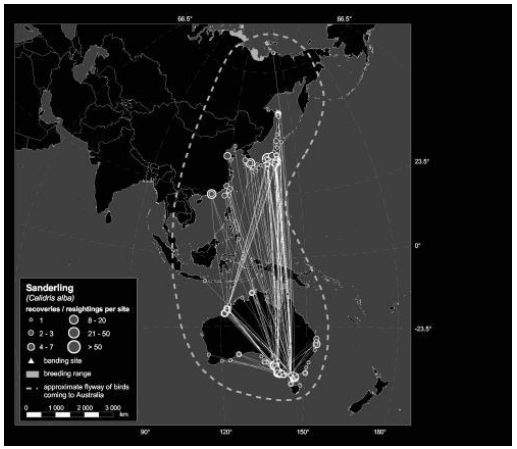
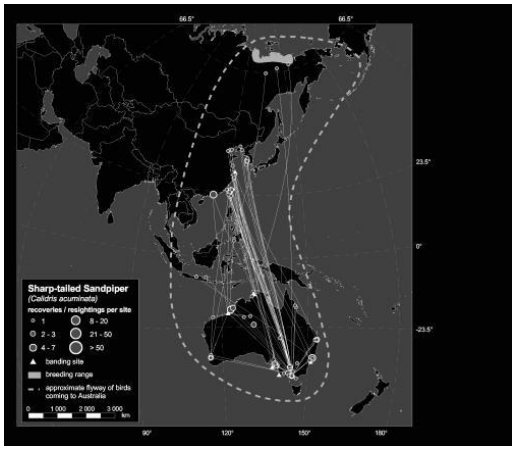
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Species	Presence in NWMR	Roosting habitat	Foraging habitat	Diet	Migration From Minton et al (2006)
Pacific golden plover	Widespread along the coasts of the Pilbara and Kimberley *Nationally important site:* • Eighty Mile Beach	Sandy beaches and spits, rocky points, islets, exposed reef, occasionally mangrove and saltmarsh vegetation, 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	
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	

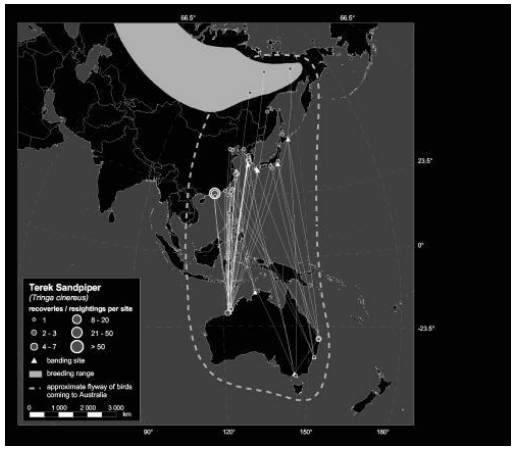
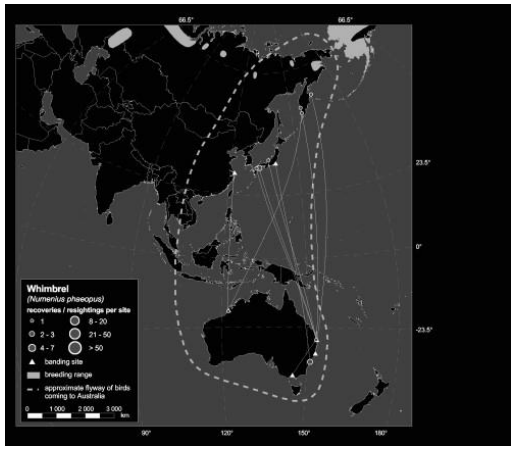
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Species	Presence in NWMR	Roosting habitat	Foraging habitat	Diet	Migration From Minton et al (2006)
Red-necked stint	Widespread in coastal areas across Australia *Internationally important site:* • Barrow Island • Port Hedland Saltworks • Eighty Mile 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	
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

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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	

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Species	Presence in NWMR	Roosting habitat	Foraging habitat	Diet	Migration From Minton et al (2006)
Terek sandpiper	The species is widespread in the Pilbara and Kimberley, from Dampier to Wyndham, with occasional records around Shark Bay *Internationally important 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)	

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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 • Port Hedland saltworks	Coastal lagoons, estuaries and tidal creeks	Intertidal mud flats	Polychaete worms and larvae, also insect larvae and molluscs
Australian painted snipe	Widespread in low numbers	Shallow freshwater wetlands with bare mud and dense canopy cover	Dense vegetation cover, occasionally mudflats and grassland	Vegetation, seeds, insects, worms, molluscs and crustaceans
Little curlew	Widespread with distribution concentrated along the northern coast from Port Hedland during the non-breeding season. *Internationally important sites:* • Roebuck Plains • Roebuck Bay • Anna Plains • Derby Sewage Ponds • Parry Floodplain	Short, dry grassland, and occasionally dry saltmarshes, coastal swamps, mudflats or sandflats in estuaries, or on the beaches of sheltered coasts.	Short, dry grassland and sedgeland with shallow freshwater pools or seasonal inundation	Insects, seeds and berries.
Common greenshank	Occurs in all types of wetlands and has the widest distribution of any shorebird in Australia *Internationally important sites:* • Eighty Mile Beach • Roebuck Bay	Wetlands, shallow pools and puddles, or slightly elevated on rocks, sandbanks or small muddy islets	Edges of wetlands, in soft mud on mudflats, in channels, among pneumatophores of mangroves or other sparse, emergent or fringing vegetation, such as sedges or saltmarsh	Molluscs, crustaceans, insects, and occasionally fish and frogs
Common sandpiper	Widespread in low numbers	Rocks or in roots or branches of vegetation, especially mangroves	Bare soft mud at the edges of wetlands	Molluscs, crustaceans and insects
Pectoral sandpiper	Low numbers recorded across the Gascoyne, Pilbara and Kimberley regions	Coastal lagoons, estuaries, bays, swamps, lakes, inundated grasslands, saltmarshes, river pools, creeks, floodplains and artificial wetlands	Bare soft mud at the edges of wetlands	Algae, seeds, crustaceans, arachnids and insects

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Species	NWMR Presence	Roosting Habitat	Foraging Habitat	Diet
Wood sandpiper	NWMR supports largest numbers in Australia. Notable areas include Parry floodplain, Shark Bay	Low trees, grassy hillocks	Bare soft mud at the edges of wetlands	Insects and molluscs
Long-toed stint	Widespread along the coasts of the Pilbara and Kimberley	Shallow inland wetlands	Wetland or islets with wet mud or shallow water and short vegetation	Seeds, molluscs, crustaceans, insects, occasionally algae
Pin-tailed snipe	Recorded in the Pilbara, Port Hedland, Myaree Pool, Maitland River and near Karratha	Wide variety of wetland habitats including flooded paddy-fields, wet grasslands, seepage swamps and marshland	Muddy shorelines of swamps and along streams	Molluscs, adult and larval insects, earthworms and occasionally crustaceans, seeds and other plant matter
Swinhoe's snipe	Recorded in the Pilbara, Kimberley, Mount Goldsworth, Mount Blaize and near the Mitchell Plateau	Grasses and rushes around the edge of fresh and brackish marshes	Grasses and rushes near the water edge, in addition to hummocks or on mudflats around seepage areas	Earthworms, adult and larval insects

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 1000 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

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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 – MarineTurtle Nesting [note: hatchling emergence is generally 6-8 weeks post-nesting activity]												
Green Turtle												
Ashmore Reef Stock (G-AR)[6]												
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]												

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Species	January	February	March	April	May	June	July	August	September	October	November	December
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]							▒	■	■	■	▒	
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	■	■	■	▒	▒					▒	■	■
Great frigatebird – breeding / foraging *possibly present in NWMR in non-breeding and foraging in breeding season	*	*	*	*	*	*	*	*	*		■	■

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Species	January	February	March	April	May	June	July	August	September	October	November	December
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											

[1]Whale shark foraging northward from Ningaloo in Spring (DCCEEW, 2024b[15]). 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, 2024b[15]). 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, 2024b[15]).

[4]Dwarf sawfish foraging- potential to occur in all seasons (DCCEEW, 2024b[15]).

[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).

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[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 and 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).*

[2] *Pygmy blue whale northern migration April–August (DCCEEW, 2024b15; DSEWPaC, 2012a; McCauley et al., 2018; CoA, 2015a). Peak April–July (Thums et al., 2022) refers to Western Australia from the Perth Canyon (April/May) to the North West Shelf (June/July).*

[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).*

[19]*Limited data however sightings reported year-round (Cerchio et al., 2019).*

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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 criteria of:

- 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, 12 KEFs within the SWMR and eight KEFs within the NMR. These KEFs have been identified in the Protected Matters search (Appendix A) and outlined in Table 10-1, Table 10-2 and Table 10-3, and Figure 10-1, Figure 10-2 and Figure 10-3.

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Table 10-1: Key Ecological Features (KEFs) 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).

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KEF Name	Woodside Activity Area			Values[1]	Description
	Browse	NWS/S	NW Cape		
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 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).

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KEF Name	Woodside Activity Area			Values[1]	Description
	Browse	NWS/S	NW Cape		
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)

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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).

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KEF Name	Woodside Activity Area			Values[1]	Description
	Browse	NWS/S	NW Cape		
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 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.
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).

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KEF Name	Woodside Activity Area			Values[1]	Description
	Browse	NWS/S	NW Cape		
Exmouth Plateau	-	✓	✓	Unique seafloor feature with ecological properties of regional significance, which apply to both benthic and pelagic habitats Likely to be an important area of biodiversity as it provides an extended area offshore for communities adapted to depths of 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 fish, sharks, toothed whales and dolphins	The canyons are associated with upwelling as they channel deep water from the Cuvier Abyssal Plain up onto the slope, Exmouth Plateau and Ningaloo Reef. This nutrient-rich water interacts with the Leeuwin Current at the canyon heads (DSEWPAC, 2012a). Aggregations of whale sharks, manta rays, sea snakes, sharks, large predatory fish, and seabirds are known to occur in this area.
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.

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KEF Name	Woodside Activity Area			Values[1]	Description
	Browse	NWS/S	NW Cape		
Wallaby Saddle	-	-	✓	High productivity and aggregations of marine life: Representing almost the entire area of this type of geomorphic feature in the NWMR. It is a unique habitat that neither occurs anywhere else nearby (within hundreds of kilometres) nor with as large an area (Falkner et al., 2009)	The Wallaby Saddle may be an area of enhanced productivity. Historical whaling records provide evidence of sperm whale aggregations in the area of the Wallaby Saddle, possibly due to the enhanced productivity of the area and aggregations of baitfish (DSEWPAC, 2012a).

[1]Values description sourced from Marine bioregional plan for the North-west Marine Region (DSEWPAC, 2012a) and the Department of Agriculture, Water and the Environment (DAWE) SPRAT database.

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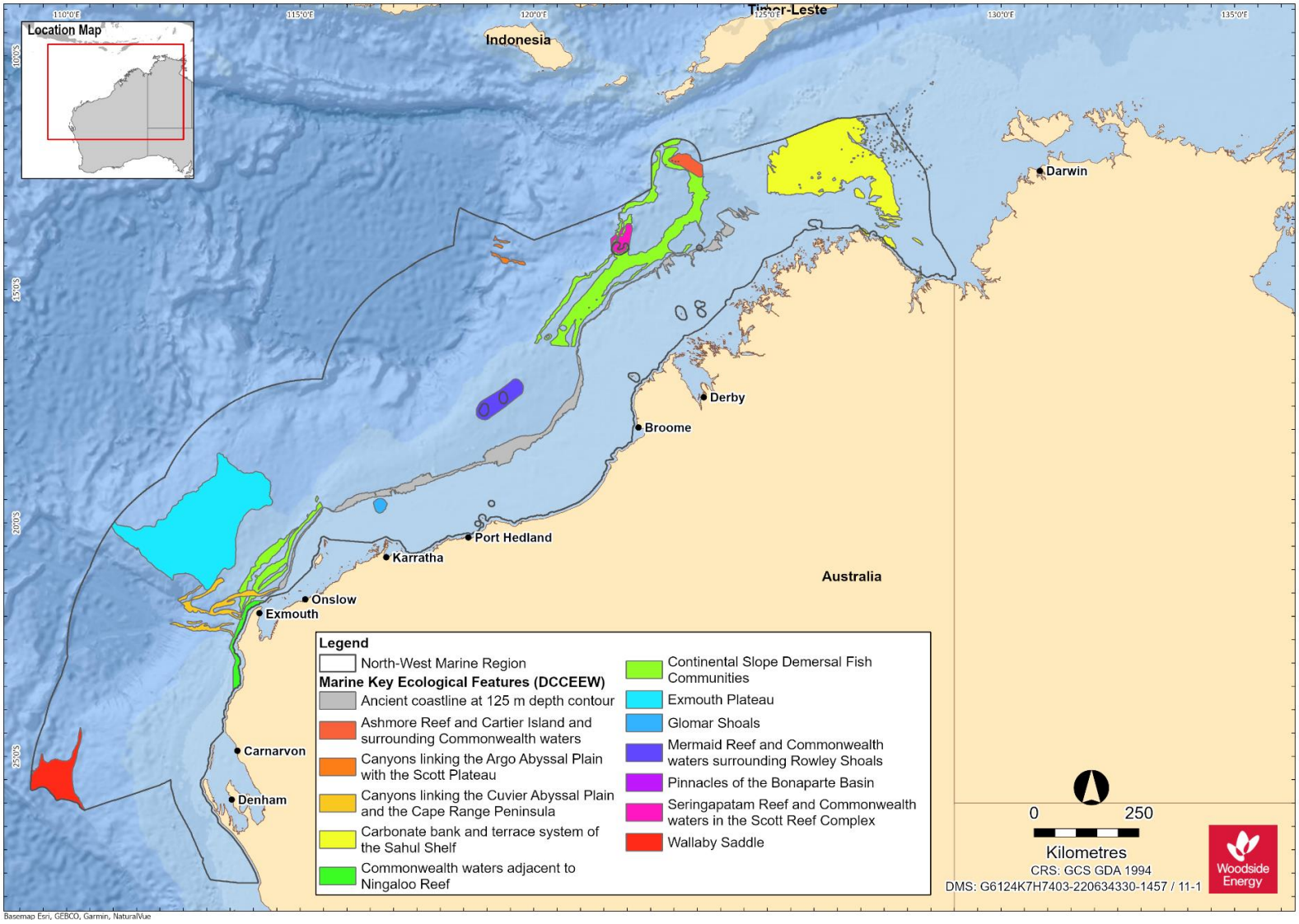


Figure 10-1: KEFs within the NWMR (data source: DCCEEW, 2024d)

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Table 10-2: Key Ecological Features (KEFs) 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.

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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.

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KEF Name	Values[1]	Description
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.

[1]Values description sourced from Marine bioregional plan for the South-west Marine Region (DSEWPAC, 2012b) and the DAWE SPRAT database.

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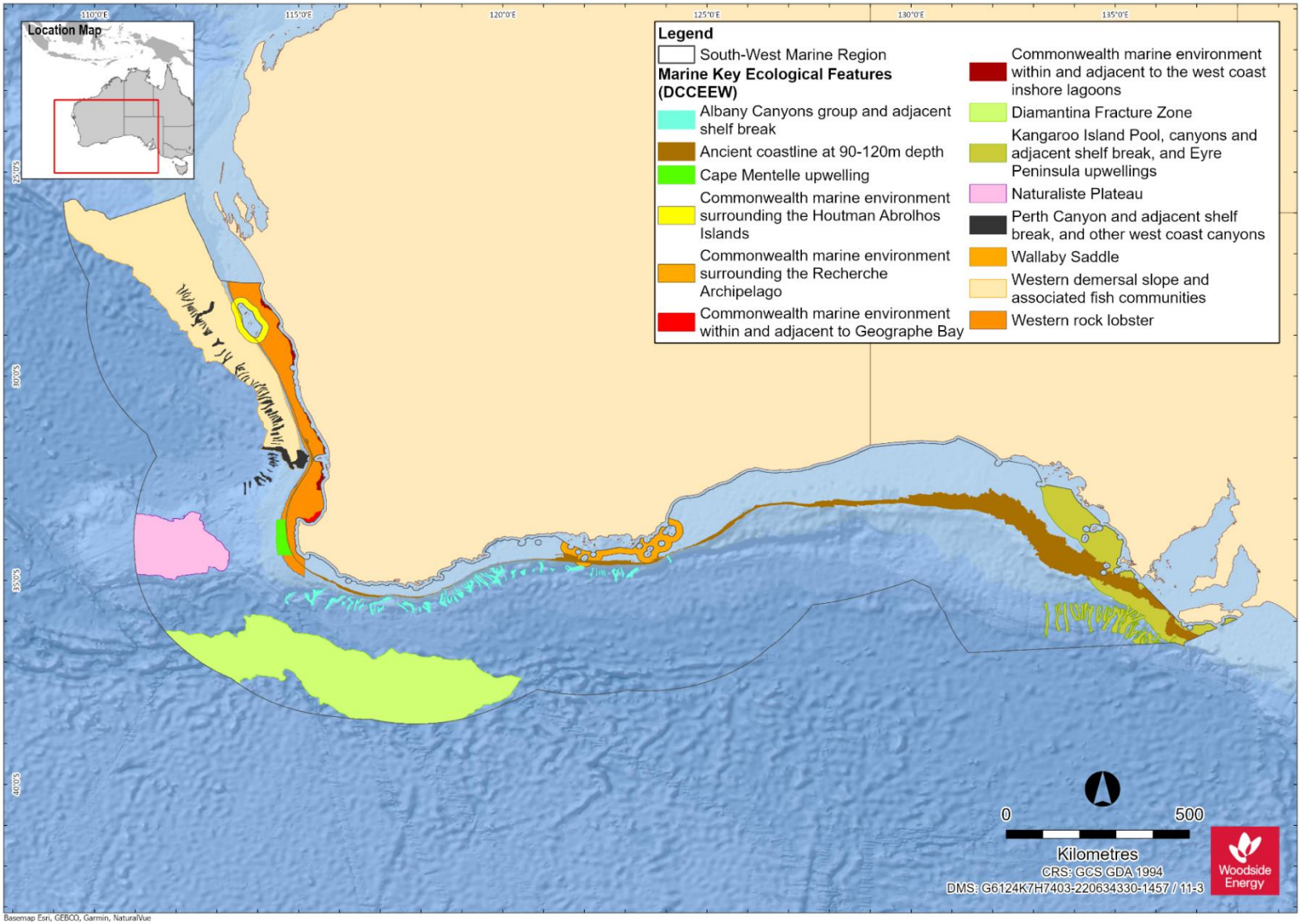


Figure 10-2: KEFs within the SWMR (data source: DCCEEW, 2024d)

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Table 10-3: Key Ecological Features (KEFs) 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.
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.

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KEF Name	Values[1]	Description
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 DAWE SPRAT database.*

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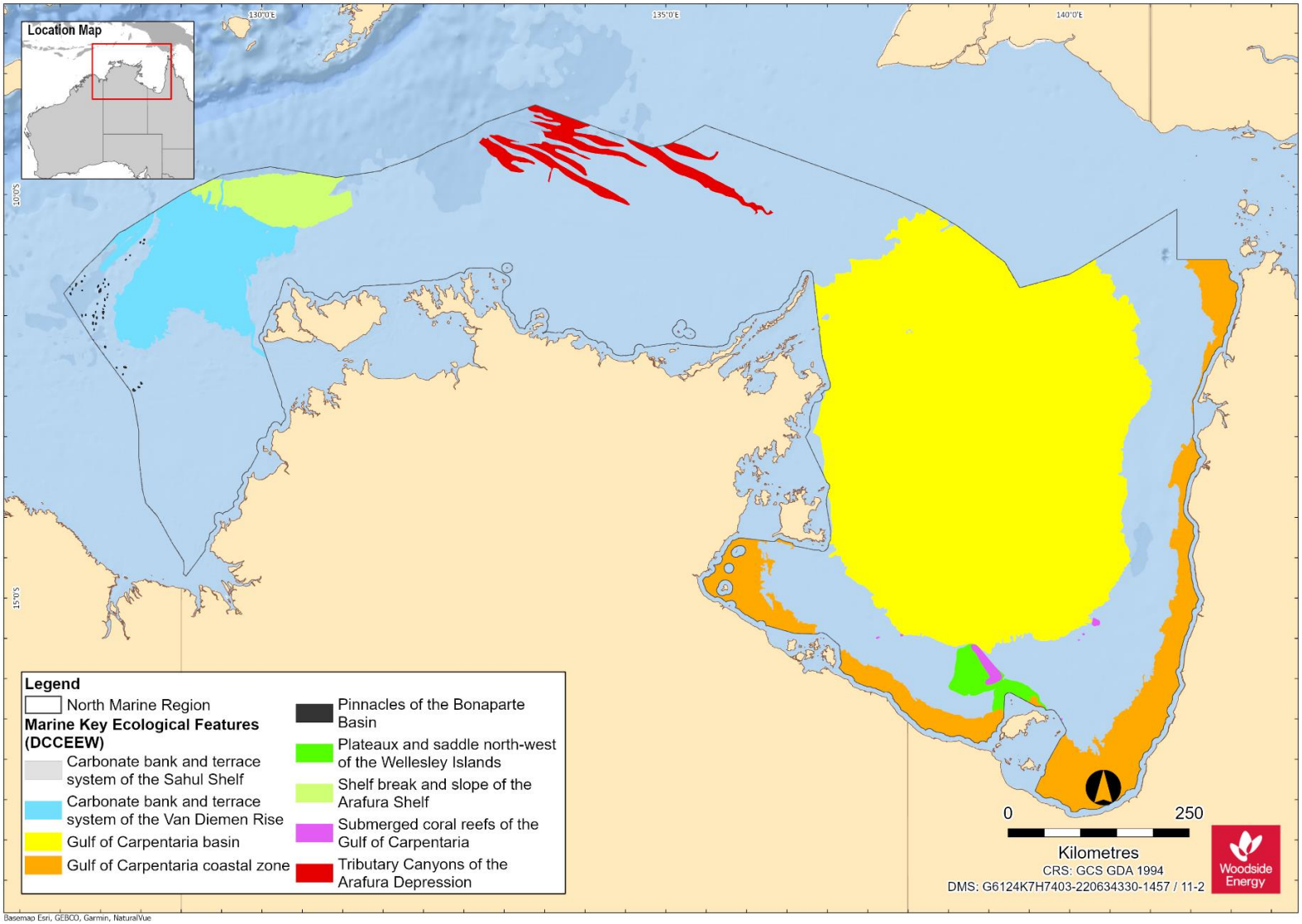


Figure 10-3: KEFs within the NMR (data source: DCCEEW, 2024d)

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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) 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 11-2, 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 11-5, 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) 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 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 11-8) 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) 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.

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PMST Reports (Appendix A) show 16 AMPs within the NWMR, 10 within the SWMR and eight within the NMR. These are displayed in Figure 11-1, Figure 11-2 and Figure 11-3, 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).

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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 are: • canyons linking the Argo Abyssal Plain with the Scott Plateau • Mermaid Reef and Commonwealth waters surrounding Rowley Shoals. The marine park includes a range of seafloor features such as canyons on the slope between the Argo Abyssal Plain, Rowley Terrace and Scott Plateau. These are believed to be up to 50 million years old and are associated with small, periodic upwellings that results in localised higher levels of biological productivity. The marine park includes species listed under the EPBC Act. 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).

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North West Marine Park Network	IUCN Zones	Description and Values
		Social and economic values Socio-economic values of this marine park include commercial fishing and mining.
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 5920 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 are: • Ashmore Reef and Cartier Island and surrounding Commonwealth waters • continental slope demersal fish communities—an area of high-diversity demersal fish assemblages.
		Cultural values Sea country is valued for Indigenous Australians cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. As noted in the North West Marine Park Management Plan, there is limited information about the cultural significance of this marine park (DNP, 2018a). This marine park is valued in Indonesian culture as it contains Indonesian artefacts and grave sites. Ashmore lagoon is still accessed as a rest or staging area for traditional Indonesian fishers travelling to and from fishing grounds within the MoU Box.

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North West Marine Park Network	IUCN Zones	Description and Values
		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 1500–6000 m.
		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.

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North West Marine Park Network	IUCN Zones	Description and Values
		Natural values This marine park includes ecosystems representative of the Timor Province—a bioregion with 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 are: • Ashmore Reef and Cartier Island and surrounding Commonwealth waters • continental slope demersal fish communities. There are two distinct demersal fish communities of the continental slope: one on the upper slope, the other mid slope. This marine park includes an unvegetated sand island (Cartier Island), mature reef flat, a small, submerged pinnacle (Wave Governor Bank), and two shallow pools 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.
		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.

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North West Marine Park Network	IUCN Zones	Description and Values
		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.
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.

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North West Marine Park Network	IUCN Zones	Description and Values
		Cultural values Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. The sea country of the Nyangumarta, Karajarri and Ngarla people extends into the Eighty Mile Beach Marine Park. Sea country is culturally significant and important to their identity. They have an unbroken, deep spiritual connection to their sea country, with traditional practices continuing today. Staple foods of living cultural value for the Nyangumarta, Karajarri and Ngarla people include saltwater fish, turtles, 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 6000 m.

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North West Marine Park Network	IUCN Zones	Description and Values
		Natural values This marine park includes ecosystems representative of: • Central Western Shelf Transition—continental shelf with water depths up to 100 m, and a significant transition zone between tropical and temperate species • Central Western Transition—characterised by large areas of continental slope, a range of topographic features such as terraces, rises and canyons, seasonal and sporadic upwelling, benthic slope communities comprising tropical and temperate species • Northwest Province—an area of continental slope comprising diverse and endemic fish communities. Key ecological features are: • canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula • Commonwealth waters adjacent to Ningaloo Reef • continental slope demersal fish communities • Exmouth Plateau. Ecosystems represented in this Marine Park are influenced by the interaction of the Leeuwin Current, Leeuwin Undercurrent and the Ningaloo Current. This marine park supports a range of species listed under the EPBC Act. 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.

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North West Marine Park Network	IUCN Zones	Description and Values
		Heritage values *World heritage* The Ningaloo Coast was listed as an area of outstanding universal value under the World Heritage Convention in 2011, meeting world heritage listing criteria vii and x. The Ningaloo Coast World Heritage Property is adjacent to the marine park. *Commonwealth heritage* The Ningaloo Marine Area (Commonwealth waters) meets the Commonwealth heritage listing criteria A, B and C. The Ningaloo Marine Area is adjacent to the marine park. *National heritage* The Ningaloo Coast meets the national heritage listing criteria A, B, C, D, and F and is adjacent to the marine park. *Historic shipwrecks* The marine park contains more than five known shipwrecks listed under the Historic Shipwrecks Act 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) Multiple Use (VI)	**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 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.

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North West Marine Park Network	IUCN Zones	Description and Values
		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 5920 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 are: • ancient coastline at the 125 m depth contour • 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.

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North West Marine Park Network	IUCN Zones	Description and Values
		Cultural values Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. The 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 3400 km^2 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 • important pearl resources that were used in traditional trade through the wunan and in contemporary commercial agreements. The Wunambal Gaambera, Dambimangari and Bardi Jawi people consider that these values extend into the Kimberley Marine Park. The Wanjina Wunggurr is law of the Wunambal Gaambera and Dambimangari people and it is recognised 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.

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North West Marine Park Network	IUCN Zones	Description and Values
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 NWS, 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. 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.

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North West Marine Park Network	IUCN Zones	Description and Values
		Natural values This marine park includes examples of ecosystems representative of the Northwest Shelf Province—a dynamic environment influenced by strong tides, cyclonic storms, long-period swells and internal tides. The bioregion includes diverse benthic and pelagic fish communities. 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 2435 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.

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North West Marine Park Network	IUCN Zones	Description and Values
		Natural values This marine park includes examples of ecosystems representative of: • Central Western Shelf Transition—continental shelf of water depths up to 100 m, and a significant transition zone between tropical and temperate species • Central Western Transition—characterised by large areas of continental slope, a range of topographic features such as terraces, rises and canyons, seasonal and sporadic upwelling, and benthic slope communities comprising tropical and temperate species • Northwest Province—an area of continental slope comprising diverse and endemic fish communities • Northwest Shelf Province—a dynamic environment, influenced by strong tides, cyclonic storms, long-period swells and internal tides. The bioregion includes diverse benthic and pelagic fish communities, and ancient coastline thought to be an important seafloor feature and migratory pathway for humpback whales. Key ecological features are: • canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula • Commonwealth waters adjacent to Ningaloo Reef • continental slope demersal fish communities. Ecosystems represented in this marine park are influenced by interaction of the Leeuwin Current, Leeuwin Undercurrent and the Ningaloo Current. This marine park supports a range of species listed under the EPBC Act. 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.

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North West Marine Park Network	IUCN Zones	Description and Values
		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.
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.

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North West Marine Park Network	IUCN Zones	Description and Values
		Cultural values Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. 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.
Shark Bay Marine Park	Multiple Use (VI)	**Description** 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.

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North West Marine Park Network	IUCN Zones	Description and Values
		Natural values This Marine Park includes examples of ecosystems representative of: • 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 • 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

Table 11-2 describes the values of the Indian Ocean territory Australian Marine Parks (Commonwealth of Australia, 2021).

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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, 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.

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Indian Ocean Territory Marine Park	IUCN Zones	Values
		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.
		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 AMPs 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 6000 m.

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South West Marine Park Network	IUCN Zones	Natural Values
		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. • 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 are: • 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 • Wallaby Saddle. 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.

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South West Marine Park Network	IUCN Zones	Natural Values
		Cultural values Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. The 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 4472 km² and water depths from 15 m to 5000 m.

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South West Marine Park Network	IUCN Zones	Natural Values
		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 5900 m, and is characterised by a long continental slope incised by numerous, well-developed submarine canyons • 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 are: • Albany Canyon group and adjacent shelf break • 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, 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 6000 m.

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South West Marine Park Network	IUCN Zones	Natural Values
		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. • 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 are: • mesoscale eddies • ancient coastline between 90 m and 120 m depth • Commonwealth marine environment surrounding the Recherche Archipelago. 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.

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South West Marine Park Network	IUCN Zones	Natural Values
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 are: • Commonwealth marine environment within and adjacent to Geographe Bay • 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. 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.

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South West Marine Park Network	IUCN Zones	Natural Values
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 6000 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 are: • ancient coastline between 90 m and 120 m depth • benthic invertebrate communities of the eastern Great Australian Bight • 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 1000 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 shellfish, 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.

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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. • 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 are: • ancient coastline between 90 m and 120 m depth • demersal slope and associated fish communities of the Central Western Province • 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.

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South West Marine Park Network	IUCN Zones	Natural Values
		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** 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 are: • benthic invertebrate communities of the eastern Great Australian Bight • 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.

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South West Marine Park Network	IUCN Zones	Natural Values
		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 7409 km² and water depths range between 120 m and 5000 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 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. • 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 are: • 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 • 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.

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South West Marine Park Network	IUCN Zones	Natural Values
		Cultural values Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. The 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. 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.

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South West Marine Park Network	IUCN Zones	Natural Values
		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 6400 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 are: • Albany Canyon group and adjacent shelf break • Cape Mentelle upwelling • Diamantina Fracture Zone • Naturaliste Plateau • western rock lobster • 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, 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.

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South West Marine Park Network	IUCN Zones	Natural Values
		Cultural values Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. The 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 4641 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.

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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 are: • Commonwealth marine environment within and adjacent to the west-coast inshore lagoons • western rock lobster • 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.

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South West Marine Park Network	IUCN Zones	Natural Values
		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 6000 m.
		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. • 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 are: • 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 • 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.

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South West Marine Park Network	IUCN Zones	Natural Values
		Cultural values Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. The far west coast region of South Australia includes over 1000 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 shellfish, 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.
		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 2335 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 are: • the ancient coastline between 90 m and 120 m depth • 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.

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South West Marine Park Network	IUCN Zones	Natural 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. 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 AMPs for the North Marine Park Network

North Marine Park Network	IUCN Zones	Values
Arafura Marine Park	Multiple Use Zone (VI) Special Purpose Zone (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.

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North Marine Park Network	IUCN Zones	Values
	Special Purpose Zone (Trawl) (VI)	**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.
Arnhem Marine Park	Special Purpose Zone (VI)	**Description** 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 7125 km² and water depth ranges from less than 15 m to 70 m.

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North Marine Park Network	IUCN Zones	Values
		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.
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 are: • Gulf of Carpentaria basin • Gulf of Carpentaria coastal zone • plateaux and saddle north-west of the Wellesley Islands • 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.

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North Marine Park Network	IUCN Zones	Values
		Cultural values Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. The 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 1399 km² and water depths range from less than 15 m to 70 m.

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North Marine Park Network	IUCN Zones	Values
		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 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 5908 km² and water depths between 15 m and 70 m.

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North Marine Park Network	IUCN Zones	Values
		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.
West Cape York Marine Park	National Park Zone (II) Habitat Protection Zone (IV) Special Purpose Zone (VI)	**Description** 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.

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North Marine Park Network	IUCN Zones	Values
		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 are: • Gulf of Carpentaria basin • 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)	**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.

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North Marine Park Network	IUCN Zones	Values
	Habitat Protection (IV)	**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. Key ecological features are: • carbonate bank and terrace systems of the Van Diemen Rise • carbonate bank and terrace system of the Sahul Shelf • pinnacles of the Bonaparte Basin • 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 8597 km² and water depth ranges between less than 15 m and 100 m.

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North Marine Park Network	IUCN Zones	Values
		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 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.

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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).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).

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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)
- 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.

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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).

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Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description and Values
	Browse	NWS/S	NW Cape		
					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).
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).

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Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description and Values
	Browse	NWS/S	NW Cape		
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 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).

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Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description and Values
	Browse	NWS/S	NW Cape		
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 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).
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).

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Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description and Values
	Browse	NWS/S	NW Cape		
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 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).

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Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description and Values
	Browse	NWS/S	NW Cape		
					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 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).

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Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description and Values
	Browse	NWS/S	NW Cape		
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 1250 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 7000 years old. The site contains the most important wetland for waders in north-western Australia, supporting up to 336,000 birds, and is especially important as a land fall for waders migrating south for the austral summer (CALM, 2003a).

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Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description and Values
	Browse	NWS/S	NW Cape		
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).

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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).

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Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description and Values
	Browse	NWS/S	NW Cape		
					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. 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).

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Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description and Values
	Browse	NWS/S	NW Cape		
					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 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 1000 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).

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Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description and Values
	Browse	NWS/S	NW Cape		
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 6000 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).
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).

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Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description and Values
	Browse	NWS/S	NW Cape		
					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).
					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).

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Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description and Values
	Browse	NWS/S	NW Cape		
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, ~1600 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).

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Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description and Values
	Browse	NWS/S	NW Cape		
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, ~1200 km north of Perth, and cover areas of ~2633 km^2 and 286 km^2 respectively (CALM, 2005a).
					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).

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Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description and Values
	Browse	NWS/S	NW Cape		
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 ~7487 km^2 and 1270 km^2, respectively (CALM, 1996).
					Conservation Values Seagrass covers over 4000 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. 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).

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Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description and Values
	Browse	NWS/S	NW Cape		
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 ~2040 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).
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).

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Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description and Values
	Browse	NWS/S	NW Cape		
					Conservation Values The Lalang-gaddam / Camden Sound Marine Park is the most important humpback whale nursery in the Southern Hemisphere. It also features the spectacular coastal Montgomery Reef. The marine park is home to six species of threatened marine turtle. Australian snubfin and Indo-Pacific humpback dolphins, saltwater crocodiles, manta rays, several species of protected sawfish, and the world's large population of dugongs (~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 this 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 The area is of cultural significance to the Dambeemangarddee people who have lived on the land and cared for land and sea country for tens of thousands of years. Some animals such as the barramundi and rock cod have particular cultural significance and are sacred animals to the Dambeemangarddee people. Numerous coastal and marine plants continue to be an important food source for the traditional owners of this marine park (DBCA, 2022b).

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Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description and Values
	Browse	NWS/S	NW Cape		
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 ~3150 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).

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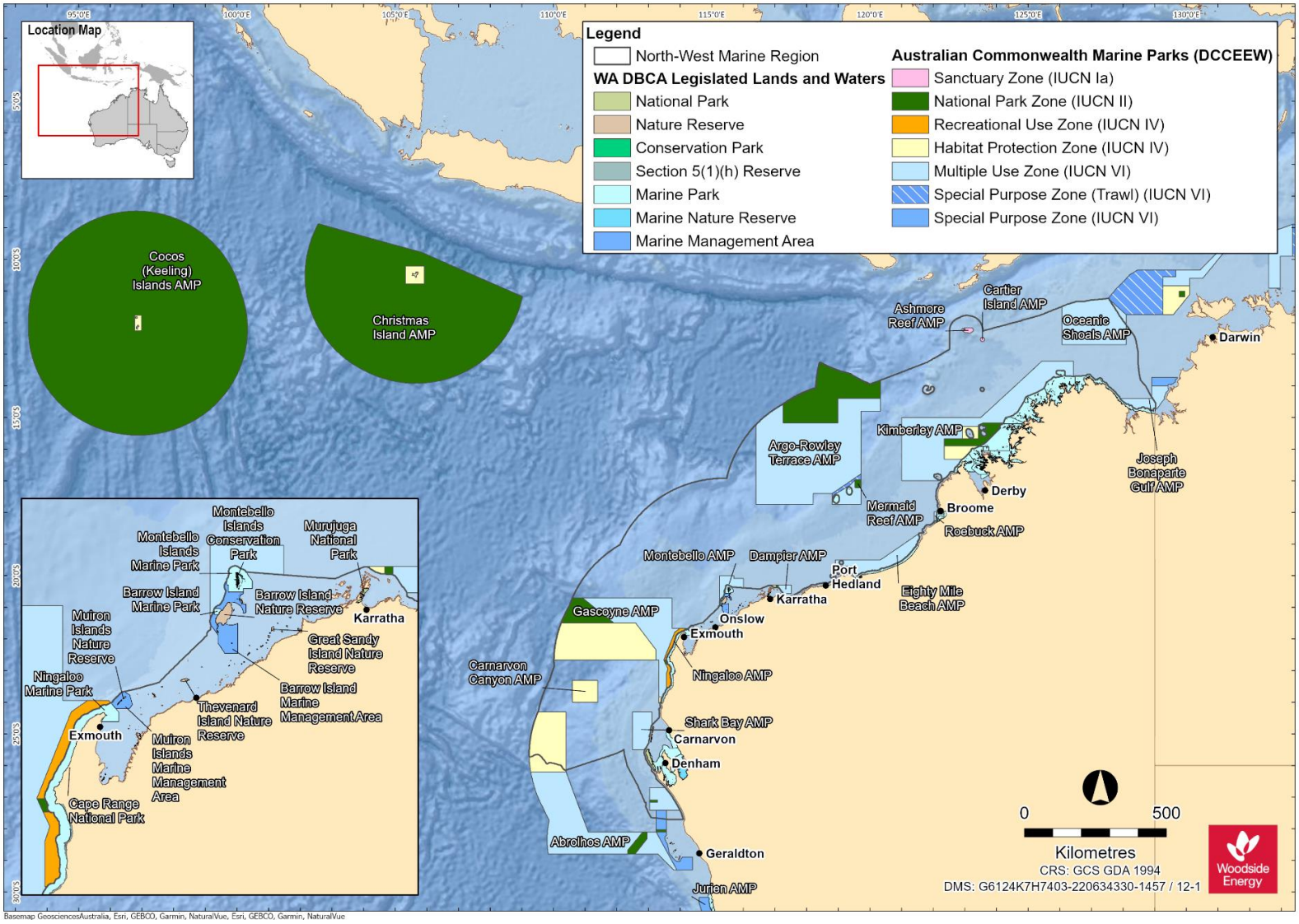


Figure 11-1: Commonwealth and State Marine Protected Areas for the NWMR and Indian Ocean Territories (data source: GA, 2024)

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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).

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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).

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Protected Area	IUCN Protected Area Category* or Relevant Park Zone	Description and Values
Vasse-Wonnerup System	Ramsar	**Description** The Vasse-Wonnerup System Ramsar wetland is situated in the Perth Basin, south-western Western Australia. 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 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).

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Protected Area	IUCN Protected Area Category* or Relevant Park Zone	Description and Values
		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).
		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).

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Protected Area	IUCN Protected Area Category* or Relevant Park Zone	Description and Values
		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).
South Coast Marine Park	Sanctuary Zone Special Purpose Zone (cultural protection) Special Purpose Zone (whale conservation) Special Purpose Zone (wildlife conservation) General Use Zone	**Description** The south-west marine park lies within State waters, between Bremer Bay to the WA/SA border.
		Ecological Values The marine park supports seagrass meadows, macroalgae, cetaceans, pinnipeds, shorebirds and seabirds, fish, sharks and rays, and marine invertebrates. The South-west region has some of the highest seagrass and macroalgal diversity globally, approximately half of the species found here occur nowhere else in the world. The marine park supports foraging areas for cetaceans and seabird and shorebirds, and habitat for the Australian sea lion and New Zealand fur seal. The region supports high proportion of endemic species and high diversity of marine invertebrates (DBCA, 2024).
		Social Values The marine park supports recreational and commercial fishing, and recreational activities and tourisms such as, diving and snorkelling, surfing, four-wheel driving, camping, wildlife watching, swimming, kayaking, and boating (DBCA, 2024).
		Cultural and heritage values First Nations people have had connection in the Western Australian south coast for tens of thousands of years. Native title or traditional ownership has been recognised for several First Nations groups throughout the region, including the Wagyl Kaip and Southern Noongar Traditional Owners, and the Esperance Nyungar, Ngadju People and Mirning People native title holders.
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 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).

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Protected Area	IUCN Protected Area Category* or Relevant Park Zone	Description and Values
		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 Marine 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).

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Protected Area	IUCN Protected Area Category* or Relevant Park Zone	Description and Values
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 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).

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Protected Area	IUCN Protected Area Category* or Relevant Park Zone	Description and Values
		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).

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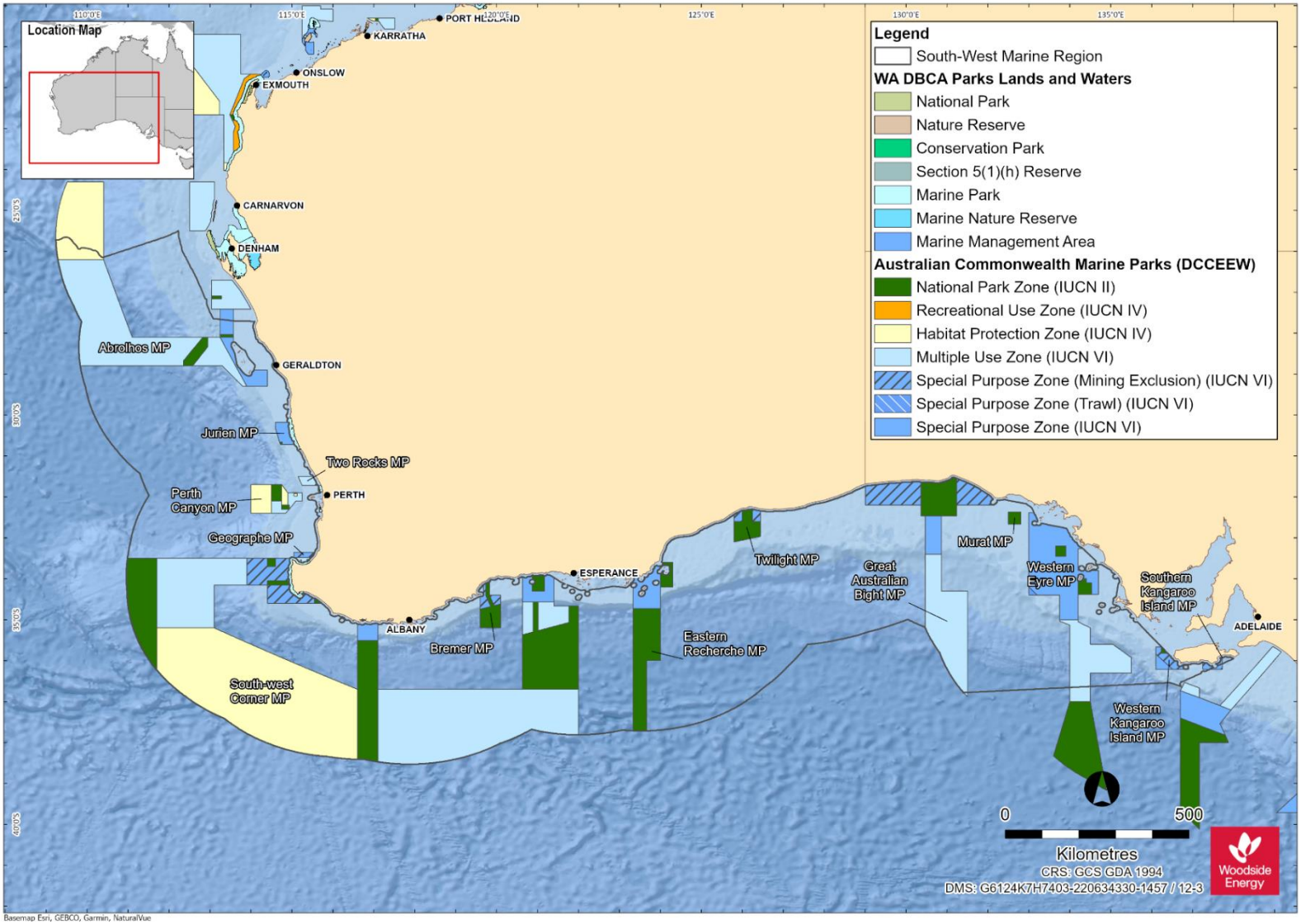


Figure 11-2: Commonwealth and State Marine Protected Areas for the SWMR (data source: GA, 2024)

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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).

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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).

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Protected Area	IUCN Protected Area Category* or Relevant Park Zone	Description and Values
		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 ~5460 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).
		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 2290 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).

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Protected Area	IUCN Protected Area Category* or Relevant Park Zone	Description and Values
		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).

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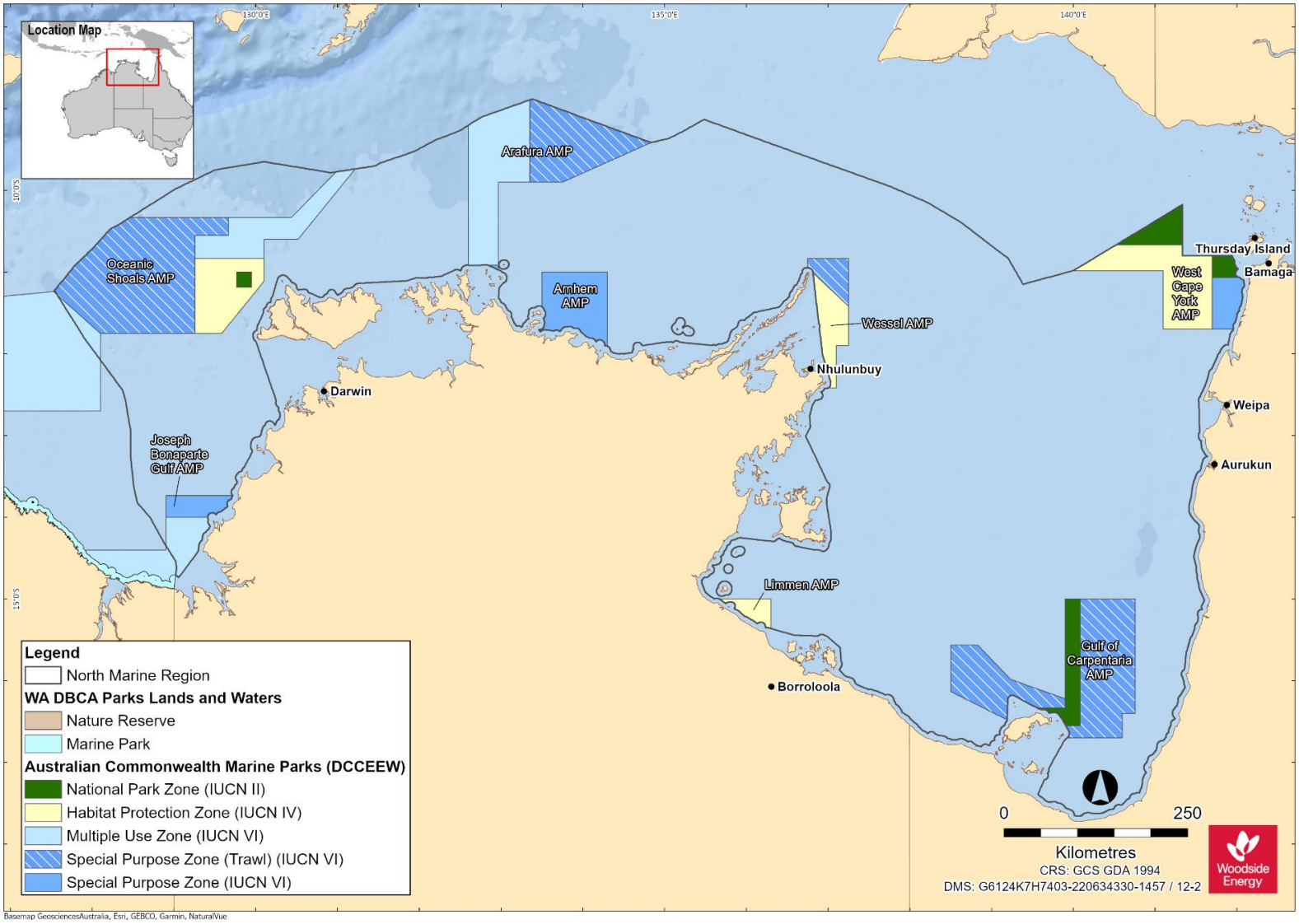


Figure 11-3: Commonwealth and State Marine Protected Areas within the NMR (data source: GA, 2024)

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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

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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.

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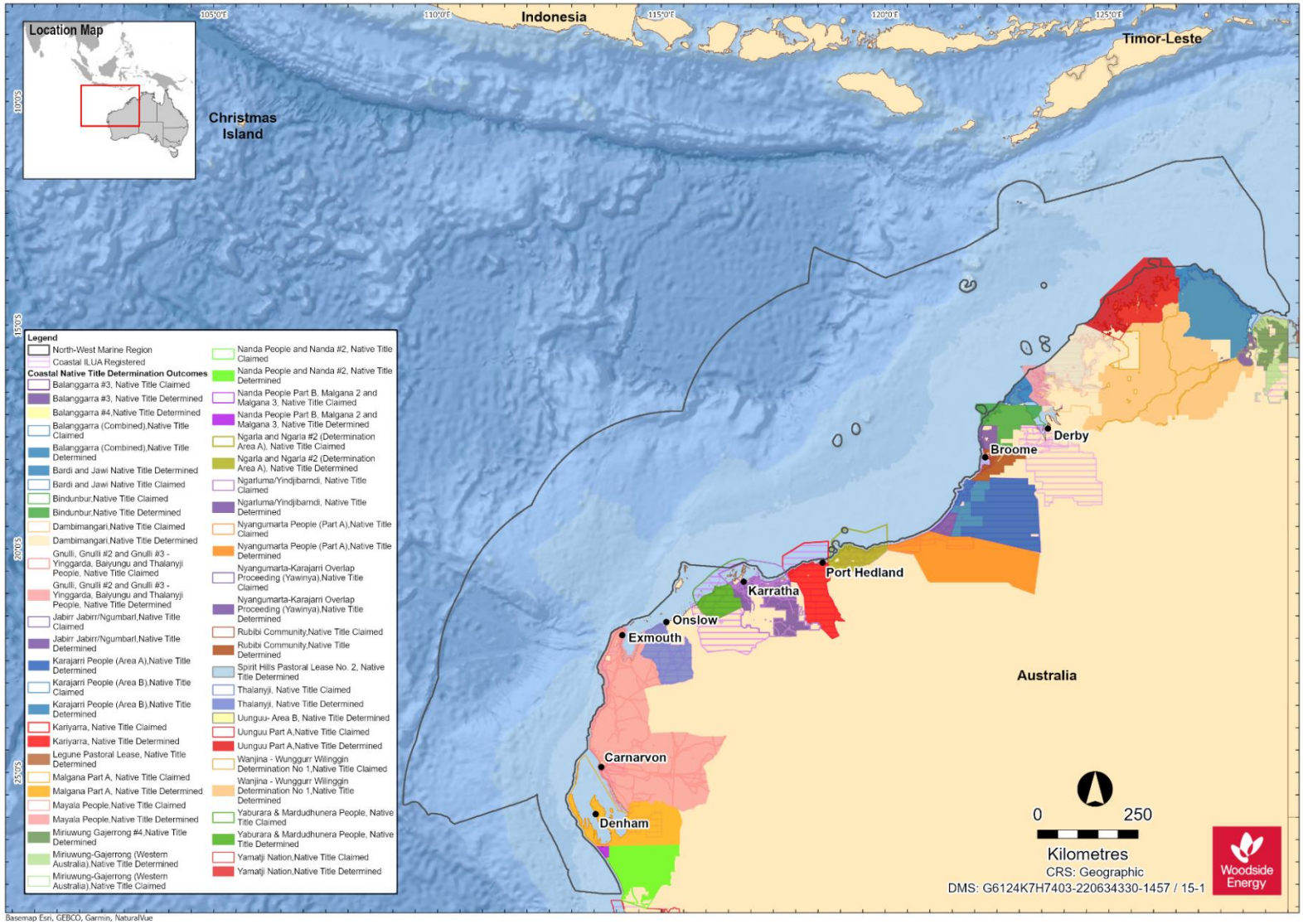


Figure 12-1: Coastal Native Title Claims / Determinations and Indigenous Land Use Agreements (ILUAs) in the NWMR (data source: DPLH, 2024)

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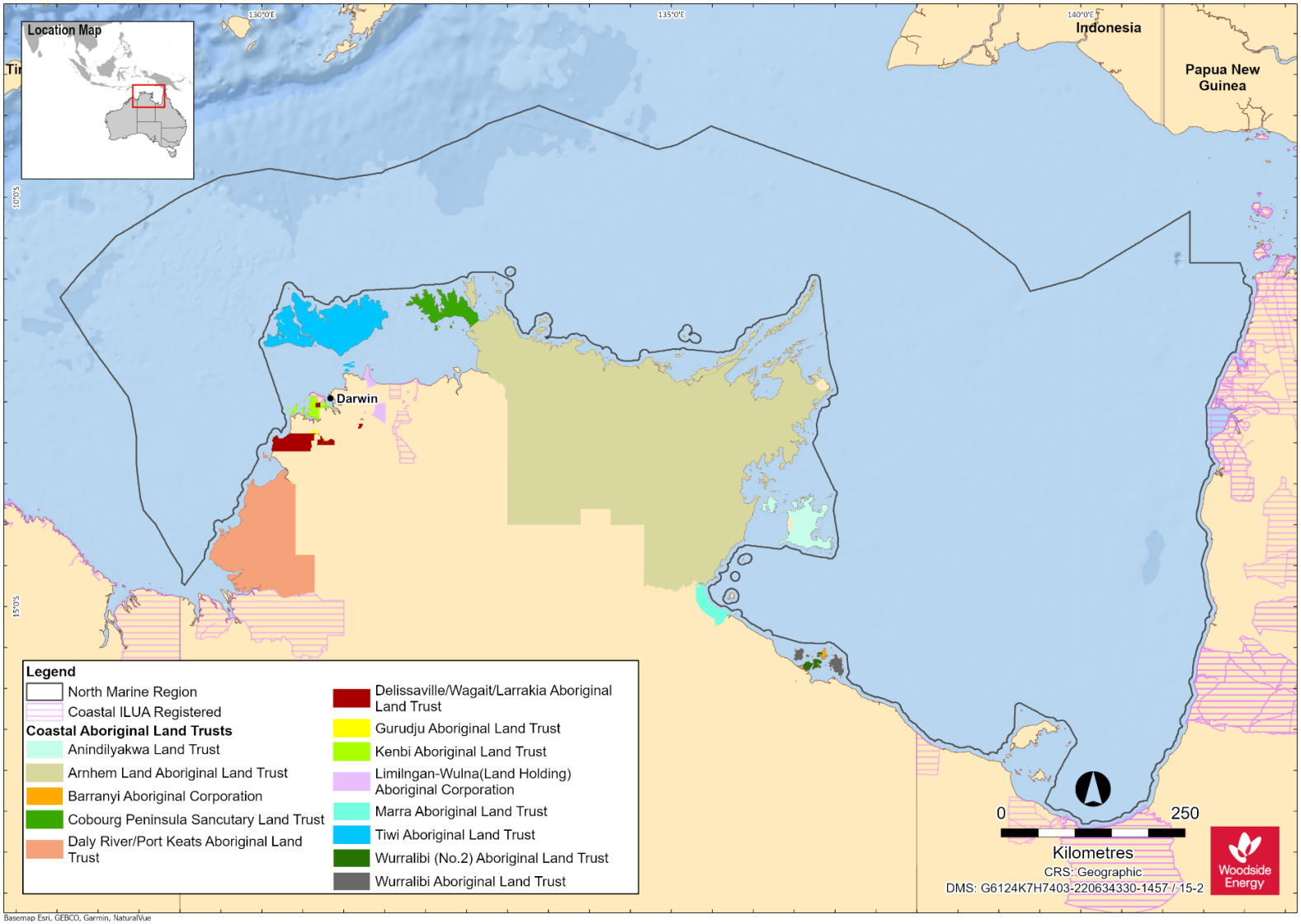


Figure 12-2: Coastal Native Title Claims / Determinations and ILUAs in the NMR (data source: DPLH, 2024)

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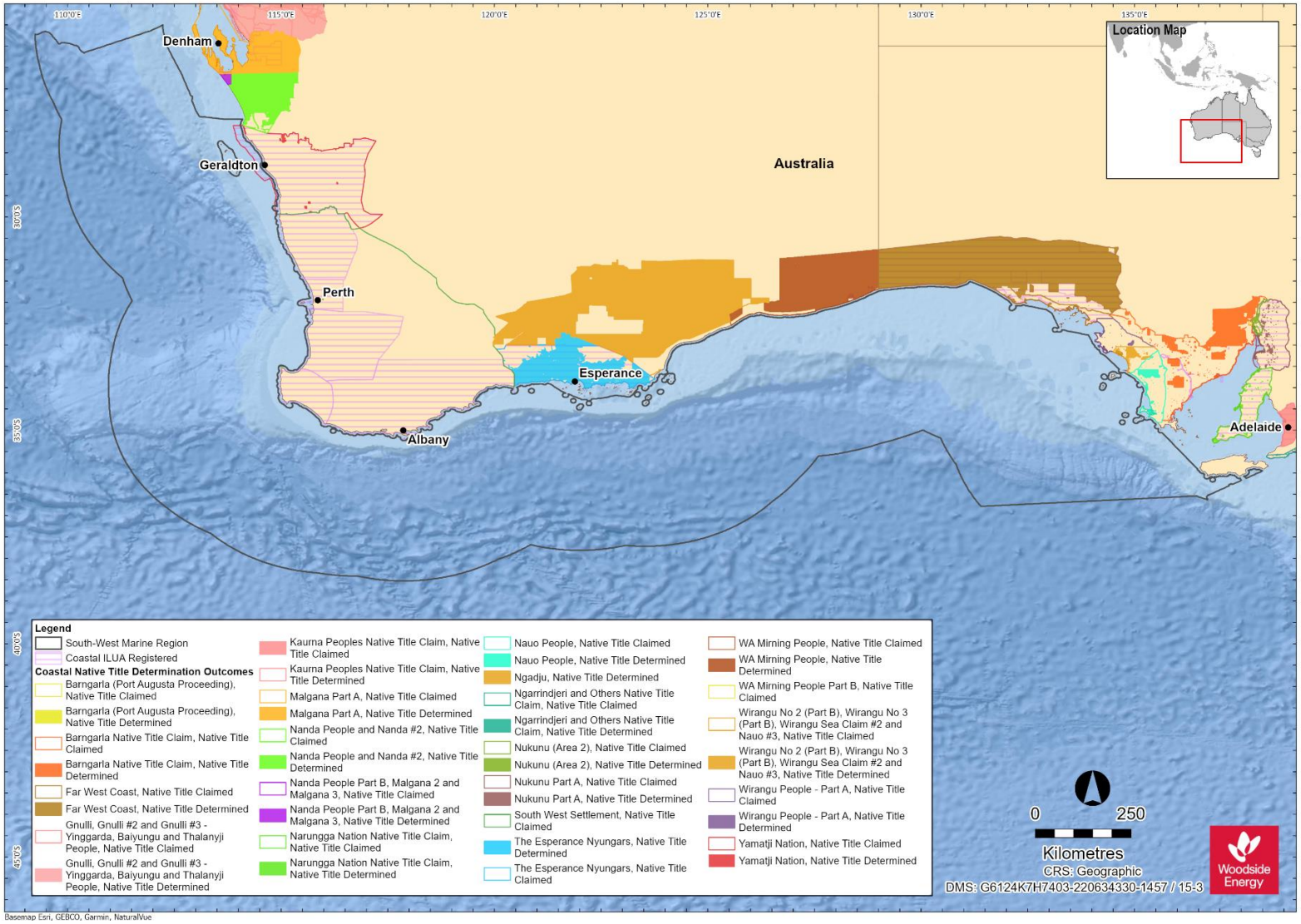


Figure 12-3: Coastal Native Title Claims / Determinations and ILUAs in the SWMR (data source: DPLH, 2024)

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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 5000 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.

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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 (IPAs)

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 12-4.

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The following IPAs are within the NWMR:

12.1.5.1 Nyangumarta Warrarn IPA

The Nyangumarta Warrarn IPA is comprised of four areas totalling approximately 28,675 km², including parts of the Great Sandy Desert, Walyarta Conservation Reserve, Kujungurru Warrarn Conservation Reserve Area and the Eighty Mile Beach Marine Park Intertidal Area. The traditional owners of the designated IPA self-identify as and are identified by other Pilbara 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 and YMAC, 2015).

12.1.5.2 Karajarri IPA

Karajarri Indigenous Protected Area (IPA) was dedicated in 2014, to manage, protect and enhance Karajarri country. The IPA covers nearly 25,000 km² of land in the southern Kimberley, including 130 km of coastline stretching from Gordon Bay to Cape Missiessy. It comprises extensive coastlines, tidal creeks and wetlands as well as arid country that stretches into the Great Sandy Desert (NIAA, n.d.).

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).

12.1.5.3 Yawuru IPA

The Yawuru IPA was dedicated by Yawuru people in 2017, covering 2109 km² 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, being:

- Yawuru cultural knowledge and practice
- Yawuru significant areas
- Yawuru rights and responsibilities
- Niyamarri – sand dunes

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- 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). Other ecological values include pearl shell beds for pearl oysters and habitat for a range of EPBC Act listed threatened species (YRNTBC, 2014).

12.1.5.4 Bardi Jawi IPA

Bardi Jawi IPA is located 160 km north of Broome and covers 1269.9 km² 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 garrabal (birds), including eastern curlews and fork-tailed swifts (KLC/ BJNAC RNTBC, 2013).

12.1.5.5 Dambimangari IPA

Dambimangari IPA is located between Broome and Darwin, stretching east to the Prince Regent area. It covers 6,422.94 km² of landscape, including open grasslands, eucalyptus woodlands, intertidal flats and rocky reefs and shoals (NIAA, n.d.-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).

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The targets for protection are identified in the Dambimangari Healthy Country Plan 2012–2022 as:

- 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).

12.1.5.6 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 km². It has been home to the Wunambal Gaambera people for many thousands of years and is part of the Wanjina Wunggurr culture. Wunambal Gaambera people call their country Uunguu – 'our living home'. Two of the reserves extend to the low water mark at Bougainville Peninsula, Vansittart Bay, Anjo Peninsula, Napier Broome Bay and islands in Rothsay Water (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)[21].

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).

[21] 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.

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12.1.5.7 Balanggarra IPA

The Balanggarra IPA was dedicated on August 7, 2013. The IPA spans over one million hectares of land and sea country in the Kimberley region and has been home to the Balanggarra people for thousands of years. The five big rivers of the north Kimberley intersect on Balanggarra country. These 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 1000 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).

12.1.5.8 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 identified in the Wilinggin Healthy Country Plan 2023–2032 are:

- becoming strong on country
- food and medicine plants
- bushfire
- law and culture sites
- law and culture
- freshwater places
- wildlife and bush meats.

The Wunggurr Rangers are caretakers of the unique natural and cultural values of Wilinggin country (Wilinggin Aboriginal Corporation, 2022).

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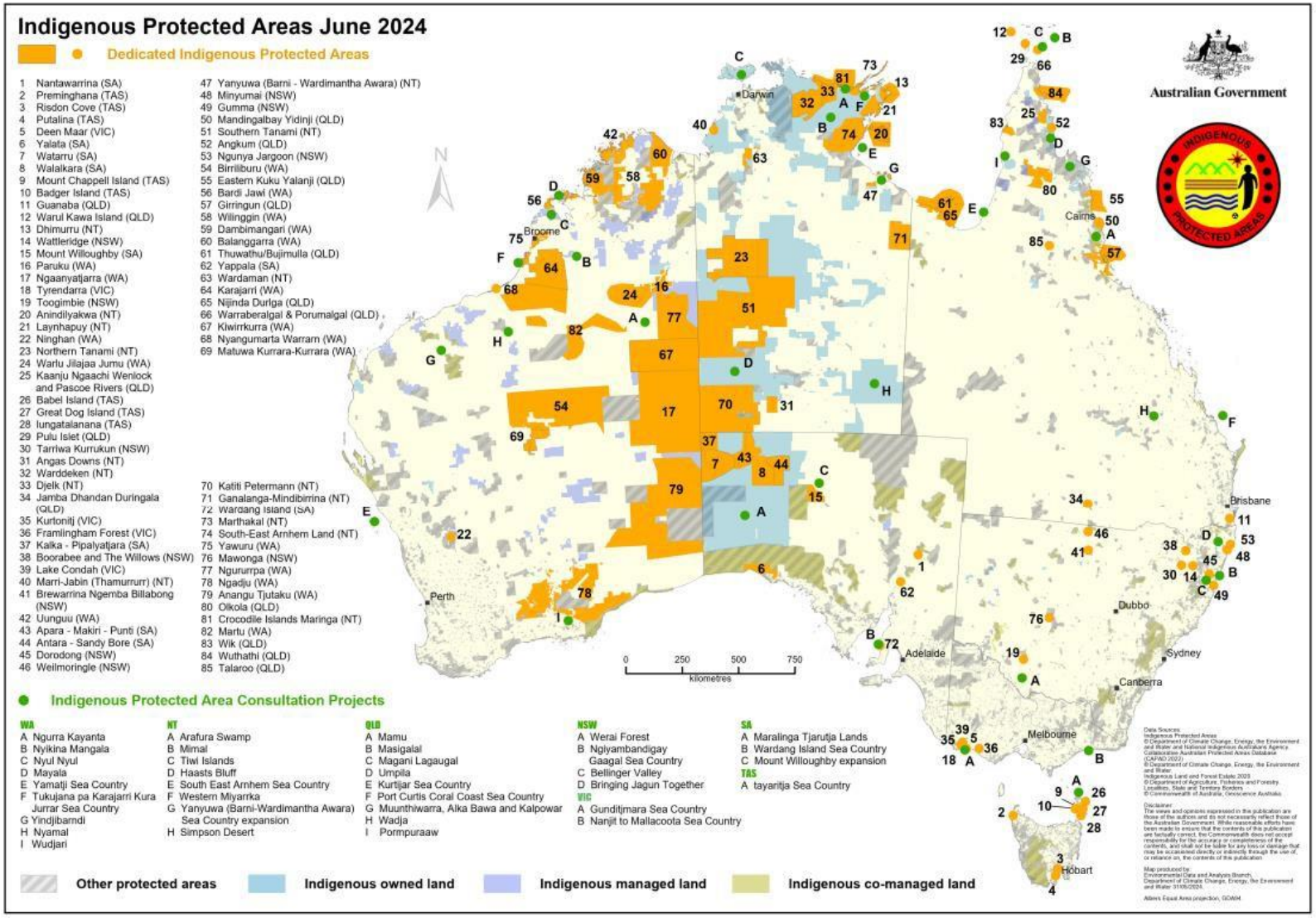


Figure 12-4: IPAs in Australia (data source: DCCEEW and NIAA, 2024)

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12.1.6 First Nations Cultural Heritage

Woodside understands that communal cultural connection exists 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 12-5 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).

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Value	Details
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.

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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 feature due to its igneous rock formations which have the potential to contain petroglyphs.

The sites considered most likely to survive inundation, based on the review of existing literature, were logically the more robust forms including:

- midden and artefacts within cemented dunes, relict water holes, and beach rock deposits
- quarry outcrops, extraction pits, and associated reduction debris in fine-grained volcanic outcrops
- curvilinear stone structures and standing stones sitting on volcanic pavements and jammed into volcanic rock piles
- lag deposits of artefacts and possibly midden on hardpan in suitable landscape contexts with good preservation conditions (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*, *Underwater 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

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Nations archaeology known to exist anywhere within Commonwealth waters and no areas subject to declarations or prescriptions under these Acts.

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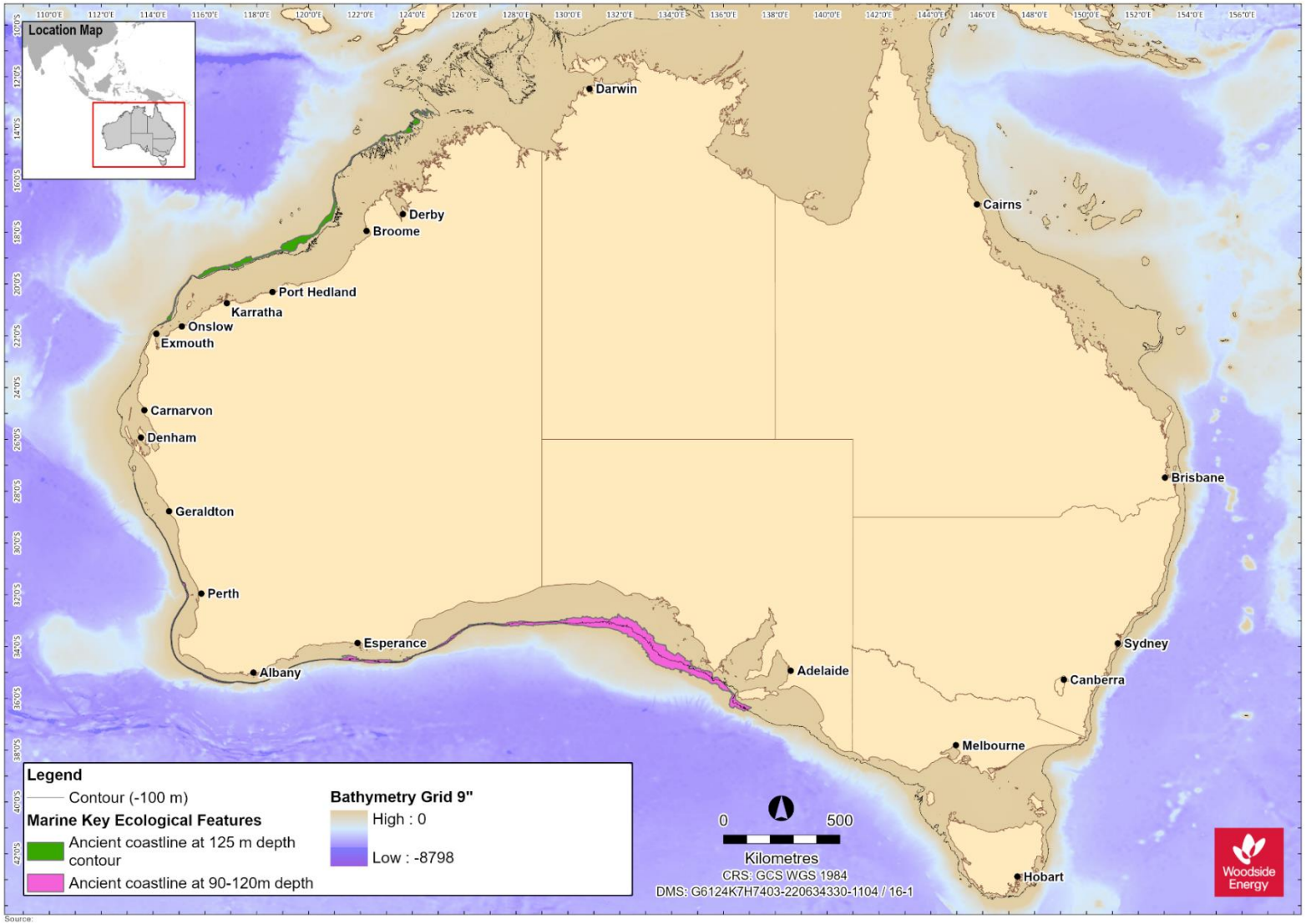


Figure 12-5: Indicative bathymetry of the ancient submerged landscape (data source: GA, 2024; DCCEEW, 2024d

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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 4913 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 1600 registered sites on Murujuga and the Dampier Archipelago with around 1100 other heritage places. This register is not comprehensive and will be complemented by heritage surveys where necessary. Protection of National and World Heritage values is also legislated through various provisions of the EPBC Act. Murujuga National Park is managed under the *Conservation and Land Management Act 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 EPBC Act. Historic places may also be protected under the *Heritage Act 2018* (WA); under section 129 of this Act the prohibited alteration, demolition, damage, despoilment or removal of objects from a registered place may result in a fine of A$1 million. Protection of heritage by local government typically emanates from local planning schemes produced under Part 5 of the *Planning and Development Act 2005* (WA).

Historical sites of significance and heritage value are found along adjacent foreshores of the 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.

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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 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) 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.

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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						

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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.

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Heritage Places	Class	Description	Conservation Values
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.
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).

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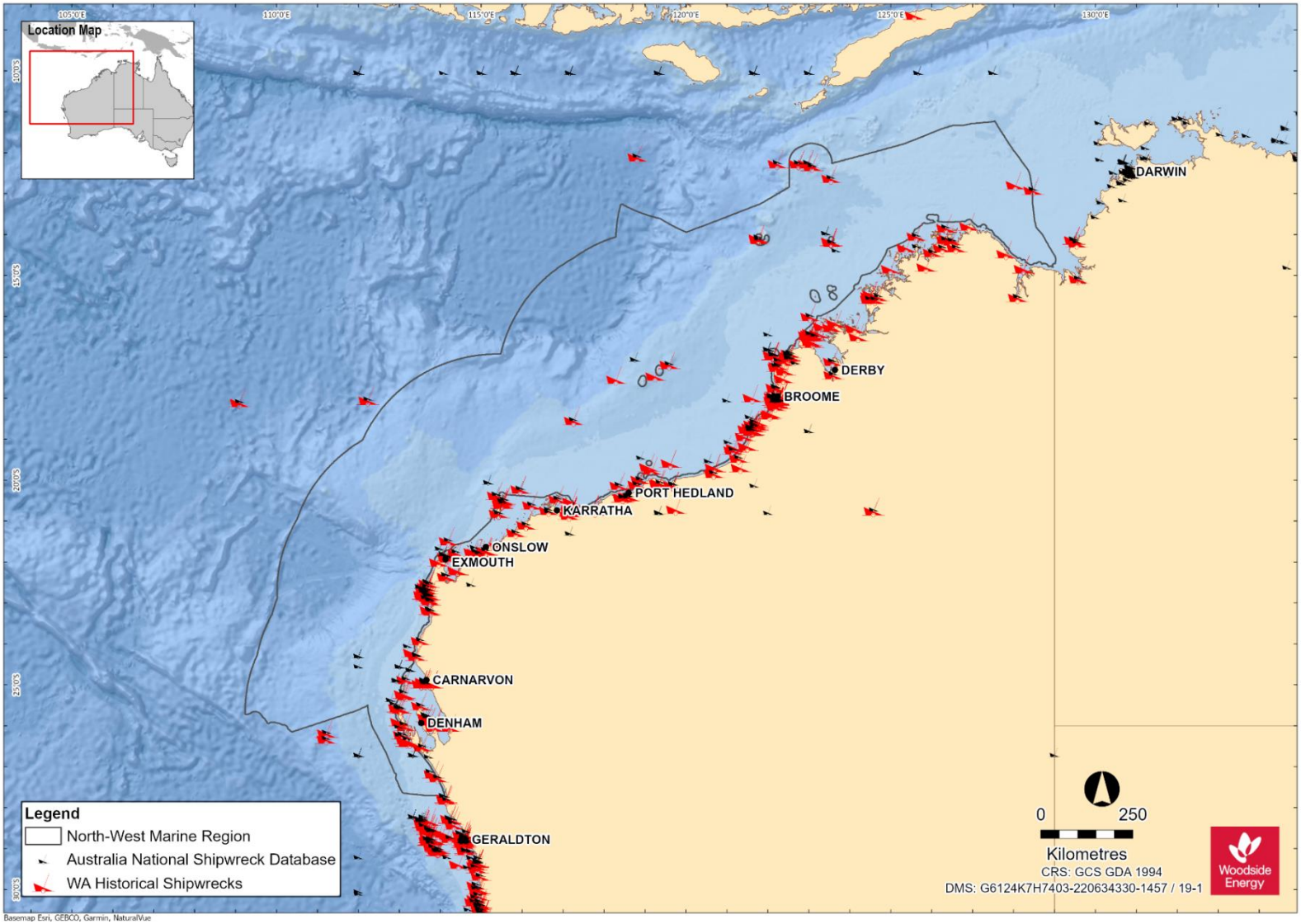


Figure 12-6: Shipwrecks in the NWMR (data source: WAM, 2018 and AODN, 2008)

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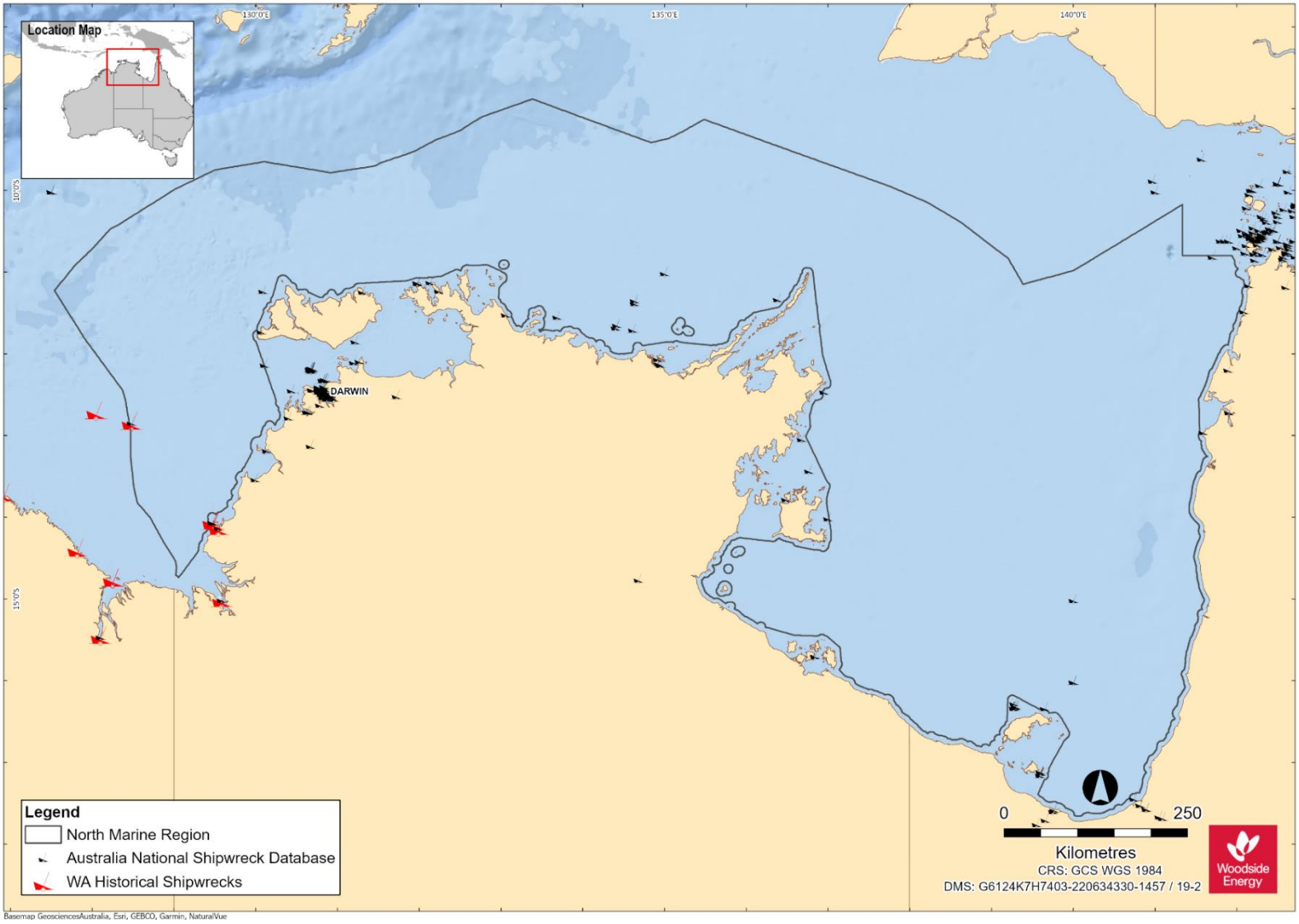


Figure 12-7: Shipwrecks in the NMR (data source: WAM, 2018 and AODN, 2008)

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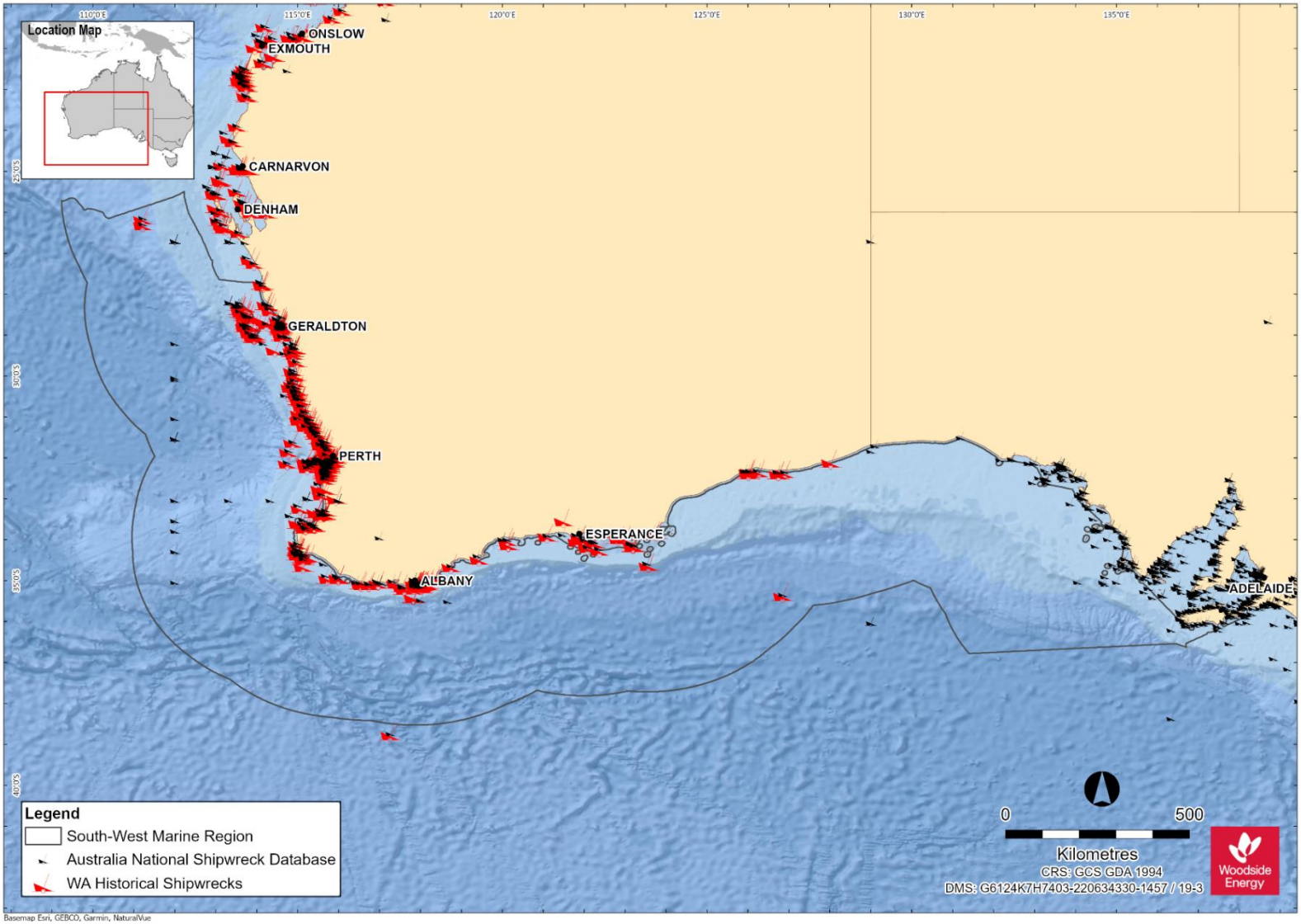


Figure 12-8: Shipwrecks in the SWMR (data source: WAM, 2018 and AODN, 2008)

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12.2 Socio-Economic Values

Socio-economic values include commercial and traditional fishing, tourism and recreation, shipping, oil and gas activities and defense 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.

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Table 12-6: Commonwealth and State managed fisheries

Fishery	Woodside Activity Area			Description			
	Browse	NWS/S	NWC				
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 five to six months). Ranching requires significant infrastructure, a resident labour force, plus proximity to a fishery able to supply a large quantity of natural feed/sardines (40,000+ tonnes). North-west WA is critically important regardless of how the quota is fished because of the proximity to the single spawning ground of this global roaming species. Young fish (one to four years of age) move from the spawning ground in the north-east Indian Ocean into the Australian EEZ and southwards along the Western Australian coast (Patterson and Dylewski, 2023). The stock is classified as not overfished (Patterson and Dylewski, 2023a). A total of 5972 t bluefin tuna catch was recorded for the 2021–22 fishing season, an increase from 5646 t in the 2020–21 period (Patterson and Dylewski, 2023a). Of the total catch, 4957 t were collected using purse seine and 1015 from pelagic longline.		
				Active licences/ vessels	Eight purse seine vessels and 22 longline vessels, an increase from seven purse seine vessels and 20 longline vessels in the 2020–21 period (Patterson and Dylewski, 2023a).		

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Fishery	Woodside Activity Area			Description			
	Browse	NWS/IS	NWC				
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 2008–09 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). 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).		

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<table>
<tr><th rowspan="2">Fishery</th><th colspan="3">Woodside Activity Area</th><th colspan="4" rowspan="2">Description</th></tr>
<tr><th>Browse</th><th>NWS/IS</th><th>NWC</th></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 rowspan="5">Western Deepwater Trawl Fishery</td><td rowspan="5"></td><td rowspan="5"></td><td rowspan="5">✓</td><td>Management area</td><td colspan="3">The Western Deepwater Trawl Fishery is in deep water off WA, from the line approximating the 200 m isobath to the edge of the Australian Fishing Zone (AFZ). (Blake et al., 2021).</td></tr>
<tr><td colspan="2">Species targeted</td><td>Fishing methods</td><td>Fishing depth</td></tr>
<tr><td colspan="2">More than 50 species, historically dominated by six commercial finfish species or species groups:
orange roughy (Hoplostethus atlanticus)
oreos (Oreosomatidae)
boarfish (Pentacerotidae)
eteline snapper (Lutjanidae: Etelinae)
apsiline snapper (Lutjanidae: Apsilinae)
sea bream (Lethrinidae).</td><td>Demersal trawl.</td><td>Water deeper than 200 m (Blake et.al., 2021).</td></tr>
<tr><td>Fishing effort:</td><td colspan="3">The number of vessels active in the fishery and total hours trawled have fluctuated from year to year. Notably, total hours trawled were relatively high for a brief period during the early 2000s when fishers targeted ruby snapper and 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 1108 in 2017–18 (Keller et al., 2023).
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>Active licences/ vessels:</td><td colspan="3">Since 2004–05, one to three vessels have been active in the fishery, with two active vessels in 2021–22 (Keller et al., 2023).</td></tr>
</table>

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<table>
<tr><th rowspan="2">Fishery</th><th colspan="3">Woodside Activity Area</th><th colspan="4" rowspan="2">Description</th></tr>
<tr><th>Browse</th><th>NWS/IS</th><th>NWC</th></tr>
<tr><td rowspan="5">North-west Slope Trawl Fishery</td><td rowspan="5">✓</td><td rowspan="5">✓</td><td rowspan="5"></td><td>Management area:</td><td colspan="3">The North-west Slope Trawl Fishery extends from 114 °E to 125 °E, from the 200 m isobath to the outer limit of the AFZ (200 NM from the coastline, which is the boundary of the Australian EEZ).</td></tr>
<tr><td colspan="2">Species targeted</td><td>Fishing methods</td><td>Fishing depth</td></tr>
<tr><td colspan="2">Australian scampi (Metanephrops australiensis) and smaller quantities of velvet and Boschma’s scampi (M. velutinus and M. boschmai). A quantity of prawns is harvested each season, and squids are becoming an increasingly significant component of the catch.
Mixed snappers (Lutjanidae) and redspot emperor (Lethrinus lentjan) have historically been an important component of the catch Blake et al., 2021).</td><td>Fishing for scampi occurs over soft, muddy sediments or sandy habitats, using demersal trawl gear on the continental slope (Patterson et al., 2017).</td><td>Typically depths of 350 to 600 m (Patterson et al., 2017).</td></tr>
<tr><td>Fishing effort:</td><td colspan="3">The North-west Slope Trawl Fishery commenced in 1985 and the number of active vessels peaked at 21 in the 1986–87 season, decreasing to between 1 and 6 vessels per year since 2005-06 (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>
<tr><td>Active licences/ vessels:</td><td colspan="3">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 Curtotti, 2023).</td></tr>
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<tr><th>Browse</th><th>NWS/IS</th><th>NWC</th></tr>
<tr><td rowspan="5">Pilbara Fish Trawl (Interim) Managed Fishery</td><td rowspan="5"></td><td rowspan="5">✓</td><td rowspan="5"></td><td>Management area:</td><td colspan="3">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).</td></tr>
<tr><td colspan="2">Species targeted</td><td>Fishing methods</td><td>Fishing depth</td></tr>
<tr><td colspan="2">The fishery targets 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).</td><td>Demersal trawl. The fishery operates with standard stern trawling gear (single net with extension sweeps) (Newman et al., 2021a).</td><td>The fishery operates in waters between 50 and 200 m water depth (Allen et al., 2014; Newman et al., 2015).</td></tr>
<tr><td>Fishing effort:</td><td colspan="3">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).
The biological stocks for the Pilbara Demersal Scalefish Fisheries are classified as sustainable-adequate (Wakefield et al., 2023a).</td></tr>
<tr><td>Active licences/ vessels:</td><td colspan="3">Four active vessels in the trawl sector in 2022 (Wakefield et al., 2023a).</td></tr>
</table>

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<tr><th rowspan="2">Fishery</th><th colspan="3">Woodside Activity Area</th><th colspan="4" rowspan="2">Description</th></tr>
<tr><th>Browse</th><th>NWS/IS</th><th>NWC</th></tr>
<tr><td rowspan="5">Pilbara Trap Managed Fishery</td><td rowspan="5"></td><td rowspan="5">✓</td><td rowspan="5">✓</td><td>Management area:</td><td colspan="3">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.</td></tr>
<tr><td colspan="2">Species targeted</td><td>Fishing methods</td><td>Fishing depths</td></tr>
<tr><td colspan="2">The catch is made up of around 45 to 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).</td><td>Demersal fish traps.</td><td>Approximately 30 m isobath to 200 m isobath (DPIRD. n.d.).</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 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).</td></tr>
<tr><td>Active licences/ vessels:</td><td colspan="3">Three active vessels in the trap sector in 2022 (Wakefield et al., 2023a).</td></tr>
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Fishery	Woodside Activity Area			Description			
	Browse	NWS/IS	NWC				
Pilbara Line Managed Fishery		✓	✓	**Management area:**	The Pilbara Line Managed Fishery boat licences are permitted to operate anywhere within 'Pilbara water', bounded by a line commencing at the intersection of 21° 56'S latitude and the high-water mark on the western side of the North-west Cape on the mainland of WA; west along the parallel to the intersection of 21° 56'S latitude and the boundary of the AFZ and north to longitude 120°E.		
				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*), other species from the genus *Scomberomorus*.		Trolling, baits or lures cast, jigging (Lewis et al., 2020).	Information not available.

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<table>
<tr><th rowspan="2">Fishery</th><th colspan="3">Woodside Activity Area</th><th colspan="4" rowspan="2">Description</th></tr>
<tr><th>Browse</th><th>NWS/IS</th><th>NWC</th></tr>
<tr><td></td><td></td><td></td><td></td><td>Fishing effort:</td><td colspan="3">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 and Rynvis, 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 19.7 t and 18.2 t, and other species contributed to the remaining <10 t of the total catch (Lewis and Watt, 2023).
All species stocks are sustainable-adequate (Lewis and Rynvis, 2023).</td></tr>
<tr><td></td><td></td><td></td><td></td><td>Active licences/ vessels:</td><td colspan="3">There were 16 vessels in 2022, primarily from May to November (Lewis and Rynvis, 2023).</td></tr>
<tr><td>Marine Aquarium Fish Managed Fishery</td><td>✓</td><td>✓</td><td>✓</td><td>Management area:</td><td colspan="3">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).</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">Finfish, hard coral, soft coral, tridacnid clams, syngnathids (seahorses and pipefish), other invertebrates (including molluscs, crustaceans, echinoderms), algae, seagrasses and ‘live rock’.
The resource potentially includes over 1500 species of marine aquarium fishes (Newman et al., 2021b).</td><td>The fishery is diver-based, which typically restricts effort to safe diving depths (less than 30 m).</td><td>Information not available.</td></tr>
</table>

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Fishery	Woodside Activity Area			Description			
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				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 39 L 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 and living sand and <20 L 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**
				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). 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).		

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Fishery	Woodside Activity Area			Description			
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				Active licences/ vessels:	Two operating vessels operating in 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**
				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 Managed Fishery	✓	✓	✓	**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).		
				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 8175 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).		

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Fishery	Woodside Activity Area			Description			
	Browse	NWS/IS	NWC				
				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).		
				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).		

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Fishery	Woodside Activity Area			Description			
	Browse	NWS/IS	NWC				
				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 popular with shell collectors, such as cowries, cones, murexes and volutes (Hart et al., 2023c).		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).
				Fishing effort:	A total of 5074 specimen shells were collected in 2022, distributed over 200 species (Hart et al., 2023f). A total of 5443 specimen shells were collect distributed over 200 species in 2021 (Hart et al., 2023b). Total number of specimen shells collected in 2020 was 4258 shells, across 206 species (Hart et al., 2021c). Stocks of landed species in the Specimen Shell Managed Fishery are classified as 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).		

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Fishery	Woodside Activity Area			Description			
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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). 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 the 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 shark (*Carcharhinus tilstoni*), 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.		

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Fishery	Woodside Activity Area			Description			
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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*) • giant (king) crab (*Pseudocarcinus gigas*) • champagne (spiny) crabs (*Hypothalassia acerba*). Catches are dominated by crystal crabs of which 99% of their total allowable catch was landed in 2020 (How and Baudains, 2021).		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 500–800 m). Most of the commercial crystal crab catch is taken in depths of 500–800 m (WAFIC[22]).
				Fishing effort:	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).		
				Active licences/ vessels:	There were seven licence holders with five vessels active in 2022 (How et al., 2023c).		
Abrolhos Islands and Mid-West Trawl Fishery			✓	**Management area:**	The Abrolhos Islands and Mid-West Trawl Fishery operates around the Abrolhos Islands within the SWMR.		
				Species targeted		**Fishing methods**	**Fishing depth**
				Saucer scallops (*Ylistrum balloti*, formerly *Amusium balloti*).		Otter trawl.	Saucer scallops occur in inshore waters around 40 m depth at the Abrolhos Islands (Kangas et.al., 2021a).

[22] https://www.wafic.org.au/fishery/west-coast-deep-sea-crustacean-fishery/

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				Fishing effort:	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		
				Active licences/ vessels:	The number of vessels is unreported. There were 10 licences 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*), blue endeavour prawn (*Metapenaeus endeavouri*), banana prawn (*Penaeus merguinensis*).		The fishery uses low opening, otter prawn trawl systems (Kangas et.al., 2021c).	Information not available.

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<tr><td></td><td></td><td></td><td></td><td>Fishing effort:</td><td colspan="3">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).</td></tr>
<tr><td></td><td></td><td></td><td></td><td>Active licences/ vessels:</td><td colspan="3">The number of participation vessels is six. Approximately 126 people, including skippers and other crew were employed in 2022 (Wilkin et al., 2023c).</td></tr>
<tr><td rowspan="4">Gascoyne Demersal Scalefish Managed Fishery</td><td rowspan="4"></td><td rowspan="4"></td><td rowspan="4">✓</td><td>Management area:</td><td colspan="3">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[23]).</td></tr>
<tr><td colspan="2">Species targeted</td><td>Fishing methods</td><td>Fishing depth</td></tr>
<tr><td colspan="2">Pink snapper (Chrysophrys auratus), goldband snapper (Pristipomoides multidens).
Other demersal species caught include:
• tropical snappers
• emperors
• cods
• mulloway trevallies.</td><td>Mechanised handlines.</td><td>The target species inhabit waters deeper than 20 m (Jackson et.al., 2021a).</td></tr>
<tr><td>Fishing effort:</td><td colspan="3">Previous years catch based on State of the Fisheries annual reports provided by DPIRD: The Gascoyne Demersal Scalefish Managed Fishery reported a total commercial catch of 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>
</table>

[23] https://www.wafic.org.au/fishery/gascoyne-demersal-scalefish-fishery/

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				Active licences/ vessels:	Ten vessels fished during 2022, six of which fished for more than 10 days during peak pink snapper season (Jackson et al., 2023c).		
Kimberley Crab Managed Fishery (formerly Kimberley Developing Mud Crab Fishery)	✓			**Management area:**	Kimberley Crab Managed Fishery is one of two small trap-based crab fisheries that exist in the North Coast Bioregion between Cambridge Gulf and Broome (Gaughan and Santoro, 2018). In November 2018, the fishery transitioned from developing to fully managed (Johnston et al., 2020b).		
				Species targeted		**Fishing methods**	**Fishing depth**
				Brown mud crab (*Scylla olivacea*), green mud crab (*Scylla serrata*).		Trap. Exemption holders use crab traps and drop nets in waters adjacent to native title lands (Johnston et al., 2023).	Information not available.
				Fishing effort:	Previous years catch based on State of the Fisheries annual reports provided by DPIRD: The total crab landed was 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).		
				Active licences/ vessels:	There is an allocation of 1200 units (equivalent to 600 traps) to licence holders (Johnston et al., 2023). An equivalent allocation of 600 traps for commercial purposes was provided to Traditional Owner groups through the granting of non-transferable Instruments of Exemption under the *Fish Resources Management Act 1994*. Two people were employed in 2022 between August and October (Johnston et al., 2023a).		
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.

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<tr><td></td><td></td><td></td><td></td><td>Fishing effort:</td><td colspan="3">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).</td></tr>
<tr><td></td><td></td><td></td><td></td><td>Active licences/ vessels:</td><td colspan="3">There were three participating vessels in 2022 (Wilkin et al., 2023b).</td></tr>
<tr><td rowspan="5">Northern Demersal Scalefish Managed Fishery</td><td rowspan="5">✓</td><td rowspan="5"></td><td rowspan="5"></td><td>Management area:</td><td colspan="3">The 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).</td></tr>
<tr><td colspan="2">Species targeted</td><td>Fishing methods</td><td>Fishing depth</td></tr>
<tr><td colspan="2">Goldband snapper (Pristipomoides multidens), blue-spotted emperor (Lethrinus punctulantus), red emperor (Lutjanus sebae), rankin cod (Epinephelus multinotatus).</td><td>Handline, dropline and fish trap.</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 Northern Demersal Scalefish Managed Fishery landed 1458 t in 2022, 1544 t in 2021, 1419 t in 2020, 1507 t in 2019, and 1297 t in 2018.
In 2022, the majority of the catch was landed from Zone B, with 1235 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).</td></tr>
<tr><td>Active licences/ vessels:</td><td colspan="3">Eight active vessels in 2022 (Wakefield et al., 2023a).</td></tr>
</table>

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Fishery	Woodside Activity Area			Description			
	Browse	NWS/IS	NWC				
Octopus Interim Managed Fishery	-	-	-	**Management area:**	The Octopus Interim Managed Fishery operates from Kalbarri Cliffs in the north to Esperance in the south.		
				Species targeted		**Fishing methods**	**Fishing depth**
				Octopus djinda, which is closely related to *Octopus tetricus*.		Primary method is baited octopus trap (combination of active trapping via trigger mechanisms, and passive trapping – shelter traps) (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 Managed 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). 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).		

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Fishery	Woodside Activity Area			Description			
	Browse	NWS/IS	NWC				
Shark Bay Crab Managed Fishery	-	-	-	**Management area:**	The Shark Bay Crab Managed Fishery operates within the NWMR. It is based primarily in Carnarvon but operates throughout the waters of Shark Bay.		
				Species targeted		**Fishing methods**	**Fishing depth**
				Blue swimmer crab (*Portunus armatus*)		Trap and trawl.	Information not available.
				Fishing effort:	Previous years catch based on State of the Fisheries annual reports provided by DPIRD: The fishery landed 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).		
				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. There were three trap vessels (Chandrapavan et al., 2023a).		
Shark Bay Prawn and Scallop Managed Fishery	-	-	-	**Management area:**	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).		
				Species targeted		**Fishing methods**	**Fishing depth**
				Western king prawn (*Penaeus latisulcatus*), brown tiger prawn (*Penaeus esculentus*), endeavour prawns (*Metapenaeus endeavouri*), coral prawns (*Metapenaeopsis sp.*), saucer scallop (*Amusium balloti*).		Low-opening otter trawls.	Information not available.

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<table>
<tr><th rowspan="2">Fishery</th><th colspan="3">Woodside Activity Area</th><th colspan="3" rowspan="2">Description</th></tr>
<tr><th>Browse</th><th>NWS/IS</th><th>NWC</th></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 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>
<tr><td></td><td></td><td></td><td></td><td>Active licences/ vessels:</td><td colspan="2">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 licences) and boats that also fish for prawns (18 Class B licenses). There were eight vessels (Wilkin et al., 2023a).</td></tr>
<tr><td rowspan="4">South Coast Crustacean Managed Fishery</td><td rowspan="4">-</td><td rowspan="4">-</td><td rowspan="4">-</td><td>Management area:</td><td colspan="2">The South Coast Crustacean Managed Fishery comprises four fisheries: the Windy Harbour/Augusta Rock Lobster Managed Fishery, the Esperance Rock Lobster Managed Fishery, the Southern Rock Lobster Pot Regulation Fishery and the South Coast Deep-Sea Crab Fishery.</td></tr>
<tr><td colspan="2">Species targeted</td><td>Fishing methods</td><td>Fishing depth</td></tr>
<tr><td colspan="2">Southern rock lobster (Jasus edwardsii), western rock lobster (Panulirus cygnus), giant crab (Pseudocarcinus gigas), crystal crab (Chaceon albus), champagne crab (Hypothalassia acerba).</td><td>Pots.</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 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).</td></tr>
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<tr><th rowspan="2">Fishery</th><th colspan="3">Woodside Activity Area</th><th colspan="4" rowspan="2">Description</th></tr>
<tr><th>Browse</th><th>NWS/IS</th><th>NWC</th></tr>
<tr><td></td><td></td><td></td><td></td><td>Active licences/ vessels:</td><td colspan="3">The South Coast Crustacean Managed Fishery is based on mobile vessels that employ a skipper and one to three crew. In 2022, there were nine participating vessels (How et al, 2023d).</td></tr>
<tr><td rowspan="4">South Coast Purse Seine Managed Fishery</td><td rowspan="4">-</td><td rowspan="4">-</td><td rowspan="4">-</td><td>Management area:</td><td colspan="3">The South Coast Purse Seine Managed Fishery is active in coastal waters between Cape Leeuwin and the 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).</td></tr>
<tr><td colspan="2">Species targeted</td><td>Fishing methods</td><td>Fishing depth</td></tr>
<tr><td colspan="2">Small pelagic finfish.
Australian sardine (pilchards, Sardinops sagax), yellowtail scad (Trachurus novaezelandiae), Australian anchovy (Engraulis australis), scaly mackerel (Sardinella lemuru), maray (Etrumeus jacksoniensis).
Entitled to take sandy sprat (Hyperlophus vittatus) and blue sprat (Spratelloides robustus), however not reported caught since 1993/94.</td><td>Purse seine nets from vessels.</td><td>Information not available.</td></tr>
<tr><td>Fishing effort:</td><td colspan="3">Previous years catch based on State of the Fisheries annual reports provided by DPIRD: The South Coast Purse Seine Managed Fishery landed 1636 t in 2022, 1255 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).</td></tr>
<tr><td>Active licences/ vessels:</td><td colspan="3">Seven active vessels in 2022 (Norriss and Blazeski et al., 2023c).</td></tr>
</table>

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Fishery	Woodside Activity Area			Description			
	Browse	NWS/IS	NWC				
South-west Trawl Managed Fishery	-	-	-	**Management area:**	The South-west Trawl Managed Fishery is a multi-species fishery and includes two of WA's smaller scallop fishing grounds at Fremantle and north of Geographe Bay (Fairclough and Walters, 2018).		
				Species targeted		**Fishing methods**	**Fishing depth**
				Scallops (*Ylistrum balloti,* formerly *Amusium balloti*) and associated by-products. In years of low scallop catches, licencees 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.

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Fishery	Woodside Activity Area			Description			
	Browse	NWS/IS	NWC				
				Fishing effort:	Previous years catch based on State of the Fisheries annual reports provided by DPIRD: Total catch for the South Coast Estuarine and Nearshore Scalefish and Invertebrates Resource was 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 26º and 33º 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*). Sandbar shark (*C. plumbeus*) Scalefish are a byproduct.		Gillnet and longline.	Information not available.

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<tr><th>Browse</th><th>NWS/IS</th><th>NWC</th></tr>
<tr><td></td><td></td><td></td><td></td><td>Fishing effort:</td><td colspan="3">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).</td></tr>
<tr><td></td><td></td><td></td><td></td><td>Active licences/ vessels:</td><td colspan="3">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).</td></tr>
<tr><td rowspan="5">West Coast Demersal Scalefish Interim Managed Fishery</td><td rowspan="5">-</td><td rowspan="5">-</td><td rowspan="5">-</td><td>Management area:</td><td colspan="3">The West Coast Demersal Scalefish Interim Managed Fishery is the main commercial fishery that targets demersal species in the West Coast Bioregion. It encompasses the waters from just south of Shark Bay down to just east of Augusta and extends seaward to the 200 NM boundary. The fishery is divided into four inshore management areas and one offshore management area.</td></tr>
<tr><td colspan="2">Species targeted</td><td>Fishing methods</td><td>Fishing depth</td></tr>
<tr><td colspan="2">The resource comprises over 100 species, including:
baldchin groper (Choerodon rubescens)
dhufish (Glaucosoma hebraicum)
pink snapper (Pagrus auratus).</td><td>Lines.</td><td>Information not available.</td></tr>
<tr><td>Fishing effort:</td><td colspan="3">Previous years catch based on State of the Fisheries annual reports provided by DPIRD: The West Coast Demersal Scalefish Interim Managed Fishery retained 240 t in 2022, 259 t in 2021, 227 t in 2020, 254 t in 2019 and 230 t in 2018.
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).</td></tr>
<tr><td>Active licences/ vessels:</td><td colspan="3">30 licenced vessels operated in 2022 (Fisher et al., 2023a).</td></tr>
</table>

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Fishery	Woodside Activity Area			Description			
	Browse	NWS/IS	NWC				
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 licencees 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 Managed Fishery			✓	**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.		
				Species targeted		**Fishing methods**	**Fishing depth**
				Western rock lobster (*Panulirus cygnus).*		Baited pots.	Information not available.

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Fishery	Woodside Activity Area			Description	
	Browse	NWS/IS	NWC		
				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 and Walsh, 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 to 14 Jan 2022) (How and Wiberg, 2023a). Landings for the 12-month (2021–22) season was 6334 t and the 18-month 2020–21 season was 9132 t. Commercial landings over the traditional 12-month season (15 Jan 2020 to 14 Jan 2021) were 5696 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 and Walsh, 2023).

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12.2.2 Fish Habitat Protection Areas

Fish Habitat Protection Areas (FHPAs) 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 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 FHPAs (four within the NWMR and two within the SWMR):

- Abrolhos Islands
- Kalbarri Blue Holes
- Miaboolya Beach
- Point Quobba
- Cottesloe Reef
- Lancelin Island Lagoon.

12.2.2.1 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 km² (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 1 November and 31 January)

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- spatial closures (e.g. Reef Observation Areas ~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 whiting (*Sillago ciliata*), and various crab species including mud crabs, blue swimmer and green mud crabs (family *Portunidae*). The fish and crab stocks use this environment for breeding, growth and development. Resident and migratory populations of birds, marine turtles and dolphins also exist within the area and contribute to its environmental value (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).

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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).

12.2.2.2 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

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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).

12.2.3 Aquaculture

Aquaculture operations in the northwest are typically restricted to inland and shallow coastal waters.

12.2.3.1 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).

12.2.3.2 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).

12.2.3.3 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).

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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).

12.2.3.4 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).

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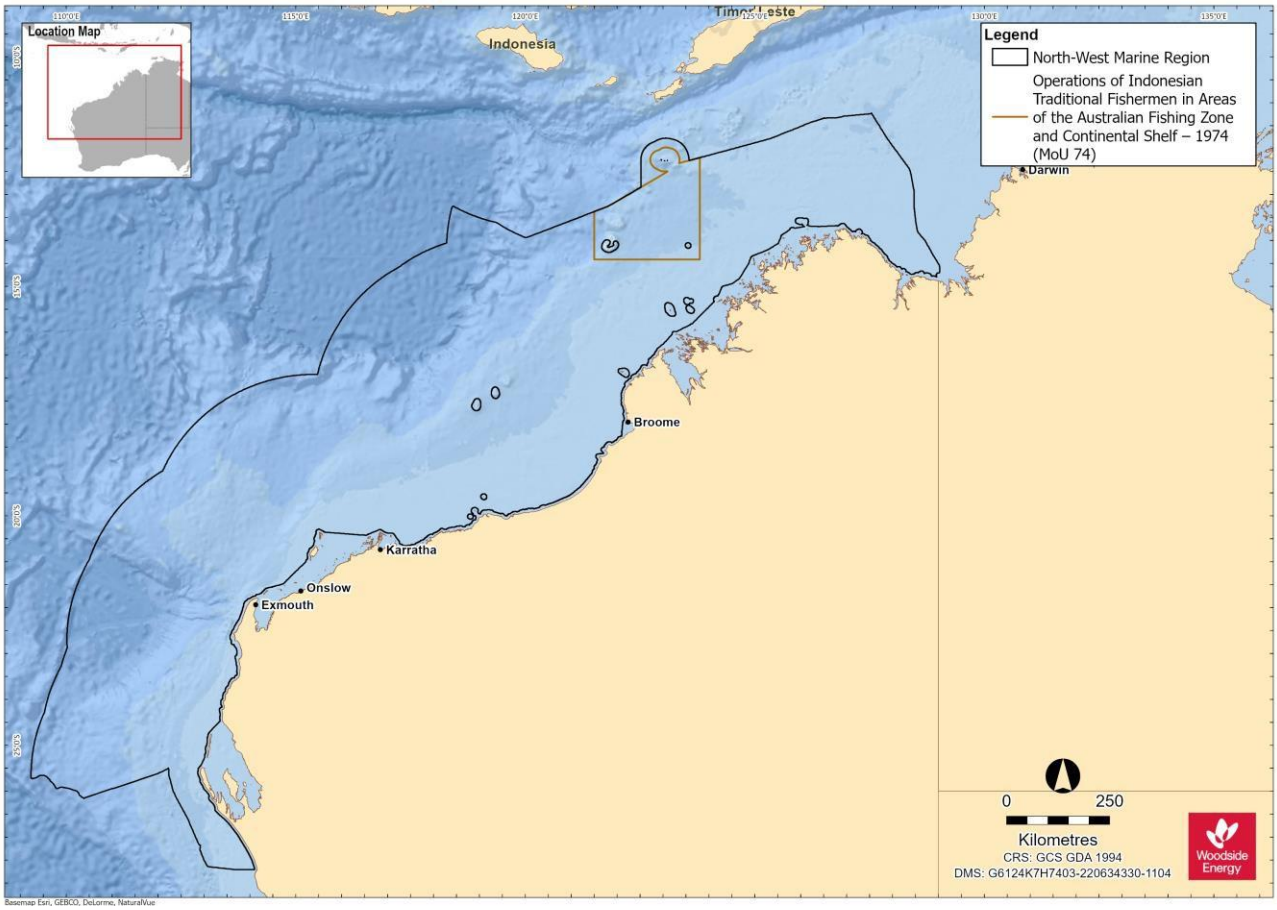


Figure 12-9: MOU 74 Box: operations of Indonesian traditional fishermen in areas of the Australian Fishing Zone and Continental Shelf – 1974

12.4 Tourism and Recreation

Western Australia's tourism sector is important to industry and the economy. In 2022–23, 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

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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 thousands 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

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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 9594 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.

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- 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.

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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 Summary

Details

Matters of NES

Other Matters Protected by the EPBC Act Extra Information

Caveat Acknowledgements



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 within area	Foraging, feeding or related behaviour known to occur
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

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 - [52116]	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, Endangered		Species or species habitat may occur within area
Golden Bosunbird [26021]		
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 within area	Species or species habitat known to occur
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 within area	Species or species habitat known to occur

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 within area	Foraging, feeding or related behaviour known to occur
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 WA373385(1)(h)	Reserve	WA
Unnamed WA373835(1)(h)	Reserve	WA
Unnamed WA403225(1)(h)	Reserve	WA
Unnamed WA408285(1)(h)	Reserve	WA
Unnamed WA408775(1)(h)	Reserve	WA
Unnamed WA410805(1)(h)	Reserve	WA
Unnamed WA446655(1)(h)	Reserve	WA
Unnamed WA446675(1)(h)	Reserve	WA
Unnamed WA446695(1)(h)	Reserve	WA
Unnamed WA446725(1)(h)	Reserve	WA
Unnamed WA446735(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 ClearlyUnacceptable	Completed
Highlands 3D Marine Seismic Survey	2012/6680	Action ClearlyUnacceptable	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 Approach	Controlled Action	Assessment
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 Approach	Controlled Action	Assessment
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 Approach	2021/9027	Controlled Action	Assessment
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 Action	Not Controlled	Completed
Baniyas-1 Exploration Well, EP-424, near Onslow	2007/3282 Action	Not Controlled	Completed
Barrow Island 2D Seismic survey Action	2006/2667	Not Controlled	Completed
Bollinger 2D Seismic Survey 200km North of North West Cape WA	2004/1868 Action	Not Controlled	Completed
Bultaco-2, Laverda-2, Laverda-3 and Montesa-2 Appraisal Wells	2000/103 Action	Not Controlled	Completed
Cape Lambert Port A Marine Structures Refurbishment Project	2018/8370 Action	Not Controlled	Completed
Carnarvon 3D Marine Seismic Survey Controlled Action	2004/1890	Not	Completed
Cazadores 2D seismic survey Action	2004/1720	Not Controlled	Completed
Construction and operation of an unmanned sea platform and connecting pipeline to Varanus Island for	2004/1703 Action	Not Controlled	Completed
Construction of a Commodities Berth, Wharf and Associated Infrastructure	2008/4129 Action	Not Controlled	Completed
Controlled Source Electromagnetic Survey	2007/3262 Action	Not Controlled	Completed
Development of Halyard Field off the west coast of WA	2010/5611 Action	Not Controlled	Completed
Development of iron ore facilities Action	2013/7013	Not Controlled	Completed
Development of Mutineer and Exeter petroleum fields for oil production, Permit	2003/1033 Action	Not Controlled	Completed
Drilling between Kalbarri and Cliff Head	2005/2185 Action	Not Controlled	Completed
Drilling of an exploration well Gats-1 in Permit Area WA-261-P	2004/1701 Action	Not Controlled	Completed
Drilling of exploration wells, Permit areas WA-301-P to WA-305-P	2002/769 Action	Not Controlled	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
Eagle-1 Exploration Drilling, North West Shelf, WA	2019/8578 Action	Not Controlled	Completed
Echo A Development WA-23-L, WA-24-L	2005/2042 Action	Not Controlled	Completed
Expansion of Monkey Mia Resort	2003/1146 Action	Not Controlled	Completed
Expansion of the Sino Iron Ore Mine and export facilities, Cape Preston, WA	2017/7862 Action	Not Controlled	Completed
Expansion Proposal, Mineralogy Cape Preston Iron Ore Project, Cape Preston, WA	2009/5010 Action	Not Controlled	Completed
Exploration drilling well WA-155-P(1)	2003/971 Action	Not Controlled	Completed
Exploration of appraisal wells	2006/3065 Action	Not Controlled	Completed
Exploration Well (Taunton-2)	2002/731 Action	Not Controlled	Completed
Exploration Well in Permit Area WA-155-P(1)	2002/759 Action	Not Controlled	Completed
Exploratory drilling in permit area WA-225-P	2001/490 Action	Not Controlled	Completed
Extension of Simpson Oil Platforms & Wells	2002/685 Action	Not Controlled	Completed
Extention to the existing Blind Strait Black Lip Pearl Oyster Farm	2004/1342 Action	Not Controlled	Completed
Gulf Fishing Lodge	2010/5499	Not Controlled Action	Completed
Hadda 1,Flying Foam 1,Magnat 1 exploration drill	2004/1697 Action	Not Controlled	Completed
HCA05X Macedon Experimental Survey	2004/1926 Action	Not Controlled	Completed
Hess Exploration Drilling Programme	2007/3566	Not Controlled Action	Completed
Huascaran-1 exploration well (WA-292-P)	2001/539 Action	Not Controlled	Completed

Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522 Action	Not Controlled	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
INDIGO West Submarine Telecommunications Cable, WA	2017/8126 Action	Not Controlled	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 Action	Not Controlled	Completed
Maia-Gaea Exploration wells	2000/17	Not Controlled Action	Completed
Manaslu - 1 and Huascaran - 1 Offshore Exploration Wells	2001/235 Action	Not Controlled	Completed
Marine Seismic Survey in WA-239-P	2000/24	Not Controlled Action	Completed
Mermaid Marine Australia Desalination Project	2011/5916 Action	Not Controlled	Completed
Montesa-1 and Bultaco-1 Exploration Wells	2000/102 Action	Not Controlled	Completed
Murujuga archaeological excavation, collection and sampling, Dampier Archipelago, WA	2014/7160 Action	Not Controlled	Completed
North Rankin B gas compression facility	2005/2500 Action	Not Controlled	Completed
Pipeline System Modifications Project	2000/3	Not Controlled Action	Completed
Port Hedland Channel Risk and Optimisation Project, WA	2017/7915 Action	Not Controlled	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 Action	Not Controlled	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 Action	Not Controlled	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 Action	Not Controlled	Completed
Telstra North Rankin Spur Fibre Optic Cable	2016/7836 Action	Not Controlled	Completed
Thevenard Island Retirement Project	2015/7423	Not Controlled Action	Completed
To construct and operate an offshore submarine fibre optic cable, WA	2014/7373 Action	Not Controlled	Completed
WA-295-P Kerr-McGee Exploration Wells	2001/152 Action	Not Controlled	Completed
Walkway Lighting Upgrade	2009/4965	Not Controlled Action	Completed
Wanda Offshore Research Project, 80 km north-east of Exmouth, WA	2018/8293 Action	Not Controlled	Completed
Western Flank Gas Development	2005/2464	Not Controlled Action	Completed
Wheatstone 3D seismic survey, 70km north of Barrow Island	2004/1761 Action	Not Controlled	Completed
Not controlled action (particular manner)			
'Kate' 3D marine seismic survey, exploration permits WA-320-P and WA-345-P, 60km	2005/2037 Action (Particular Manner)	Not Controlled	Post-Approval
'Tourmaline' 2D marine seismic survey, permit areas WA-323-P, WA-330-P and WA-32	2005/2282 Action (Particular Manner)	Not Controlled	Post-Approval
"Leanne" offshore 3D seismic exploration, WA-356-P	2005/1938 Action (Particular Manner)	Not Controlled	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)			
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 Action (Particular Manner)	2009/5212	Not Controlled	Post-Approval
Apache Northwest Shelf Van Gogh Field Appraisal Drilling Program	2007/3495 Action (Particular Manner)	Not Controlled	Post-Approval
Aperio 3D Marine Seismic Survey, WA	2012/6648 Action (Particular Manner)	Not Controlled	Post-Approval
Artemis-1 Drilling Program (WA-360-P)	2010/5432 Action (Particular Manner)	Not Controlled	Post-Approval
Aurora MC3D Marine Seismic Survey Action (Particular Manner)	2010/5510	Not Controlled	Post-Approval
Australia to Singapore Fibre Optic Submarine Cable System	2011/6127 Action (Particular Manner)	Not Controlled	Post-Approval
Babylon 3D Marine Seismic Survey, Commonwealth Waters, nr Exmouth WA	2013/7081 Action (Particular Manner)	Not Controlled	Post-Approval
Balnaves Condensate Field Development	2011/6188 Action (Particular Manner)	Not Controlled	Post-Approval
Bonaventure 3D seismic survey Action (Particular Manner)	2006/2514	Not Controlled	Post-Approval
Braveheart 2D Infill Marine Seismic Survey 100km offshore	2008/4442 Action (Particular Manner)	Not Controlled	Post-Approval
Braveheart 2D Marine Seismic Survey	2005/2322 Action (Particular Manner)	Not Controlled	Post-Approval
Cable Seismic Exploration Permit areas WA-323-P and WA-330-P	2008/4227 Action (Particular	Not Controlled	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	Post-Approval
Action (Particular Manner)			
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	Post-Approval
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	Post-Approval
Action (Particular Manner)			
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	Post-Approval
Action (Particular Manner)			
Enfield oilfield 3D Seismic Survey	2006/3132	Not Controlled	Post-Approval
Action (Particular Manner)			
Exmouth West 2D Marine Seismic Survey	2008/4132	Not Controlled Action (Particular Manner)	Post-Approval
Exploration drilling of Zeus-1 well	2008/4351	Not Controlled	Post-Approval
Action (Particular Manner)			
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 Action (Particular Manner)	2007/3856	Not Controlled	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 Action (Particular Manner)	2005/2290	Not Controlled	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	Post-Approval
Action (Particular Manner)			
Offshore Exploration Drilling Campaign	2011/6222	Not Controlled	Post-Approval
	Action (Particular Manner)		
Offshore Fibre Optic Cable Network Construction & Operation, Port Hedland WA to Darwin NT	2014/7223	Not Controlled	Post-Approval
	Action (Particular Manner)		
Offshore Gas Exploration Drilling Campaign	2012/6384	Not Controlled	Post-Approval
	Action (Particular Manner)		
Orcus 3D Marine Seismic Survey in WA-450-P	2010/5723	Not Controlled	Post-Approval
	Action (Particular Manner)		
Osprey and Dionysus Marine Seismic Survey	2011/6215	Not Controlled	Post-Approval
	Action (Particular Manner)		
Outer Canning exploration drilling program off NW coast of WA	2012/6618	Not Controlled	Post-Approval
	Action (Particular Manner)		
Palta-1 exploration well in Petroleum Permit Area WA-384-P	2011/5871	Not Controlled	Post-Approval
	Action (Particular Manner)		
Phoenix 3D Seismic Survey, Bedout Sub-Basin	2010/5360	Not Controlled	Post-Approval
	Action (Particular Manner)		
Pilot Appraisal Well - Torosa South 1	2008/3991	Not Controlled	Post-Approval
Action (Particular Manner)			
Pomodoro 3D Marine Seismic Survey in WA-426-P and WA-427-P	2010/5472	Not Controlled	Post-Approval
	Action (Particular Manner)		

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	Post-Approval
Action (Particular Manner)			
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	Post-Approval
Action (Particular			

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	Post-Approval
Action (Particular Manner)			
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	Post-Approval
Action (Particular Manner)			
Skorpion Marine Seismic Survey WA	2001/416	Not Controlled	Post-Approval
Action (Particular Manner)			
Sovereign 3D Marine Seismic Survey	2011/5861	Not Controlled	Post-Approval
Action (Particular Manner)			
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 Action (Particular Manner)	2011/5810	Not Controlled	Post-Approval
Stybarrow Baseline 4D marine seismic survey	2008/4530 Action (Particular Manner)	Not Controlled	Post-Approval
Tantabiddi Boat Ramp Sand Bypassing	2015/7411 Action (Particular Manner)	Not Controlled	Post-Approval
Tidepole Maz 3D Seismic Survey Campaign	2007/3706 Action (Particular Manner)	Not Controlled	Post-Approval
Torosa-5 Apraisal Well, WA-30-R Action (Particular Manner)	2008/4430	Not Controlled	Post-Approval
Tortilla 2D Seismic Survey, WA Action (Particular Manner)	2011/6110	Not Controlled	Post-Approval
Tridacna 3D Ocean Bottom Cable Marine Seismic Survey	2011/5959 Action (Particular Manner)	Not Controlled	Post-Approval
Triton 3D Marine Seismic Survey, WA-2-R and WA-3-R	2006/2609 Action (Particular Manner)	Not Controlled	Post-Approval
Undertake a 3D marine seismic survey	2010/5695 Action (Particular Manner)	Not Controlled	Post-Approval
Undertake a three dimensional marine seismic survey	2010/5679 Action (Particular Manner)	Not Controlled	Post-Approval
Undertake a three dimensional marine seismic survey	2010/5715 Action (Particular Manner)	Not Controlled	Post-Approval
upgrade of 3 community recreation sites	2005/2349 Action (Particular	Not Controlled	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status	Not controlled action (particular 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 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] (north)	Migration	Known to occur
[Megaptera novaeangliae](#) Humpback Whale [38] (north and south)	Migration	Known to occur
[Megaptera novaeangliae](#) Humpback Whale [38]	Nursing	Known to occur
[Megaptera novaeangliae](#) Humpback Whale [38]	Resting	Known to occur

Caveat

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.

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

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

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 Summary

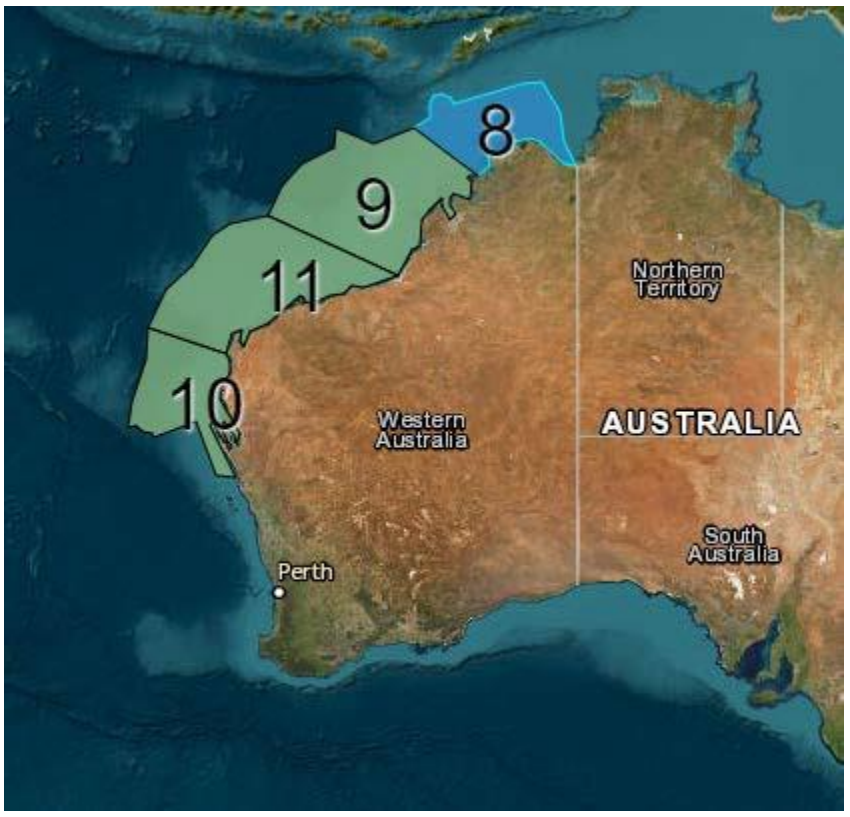
Details

Matters of NES

Other Matters Protected by the EPBC Act Extra Information

Caveat Acknowledgements

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) 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 within area	Species or species habitat known to occur
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
Nort 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 (Particular
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	Post-Approval
Action (Particular Manner)			
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	Post-Approval
Action (Particular Manner)			

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 Action (Particular Manner)	2011/5961	Not Controlled	Post-Approval
Aurora MC3D Marine Seismic Survey Action (Particular Manner)	2010/5510	Not Controlled	Post-Approval
Bassett 3D Marine Seismic Survey Action (Particular Manner)	2010/5538	Not Controlled	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	Post-Approval
Action (Particular Manner)			
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	Post-Approval
Action (Particular Manner)			
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	Post-Approval
Action (Particular Manner)			
Exploration Drilling Campaign	2011/6047	Not Controlled	Post-Approval
Action (Particular Manner)			

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)
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 (Particular Manner)	2001/345	Not Controlled Action	Post-Approval
Songa Venus Drilling and Testing Operations	2009/5122	Not Controlled Action (Particular Manner)	Post-Approval
Thoar 3D Marine Seismic Survey Action (Particular Manner)	2010/5668	Not Controlled	Post-Approval
Tiffany 3D Seismic Survey Action (Particular Manner)	2010/5339	Not Controlled	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 Action (Particular Manner)	2008/4634	Not Controlled	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 Action (Particular Manner)	2011/6148	Not Controlled	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	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

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.

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

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

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 Summary

Details

Matters of NES

Other Matters Protected by the EPBC Act Extra Information

Caveat Acknowledgements

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

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

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
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	Post-Approval
Action (Particular Manner)			
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	Post-Approval
Action (Particular Manner)			

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 Action Manner)	Controlled (Particular	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	2003/1302	Channel	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

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.

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

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

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 Summary

Details

Matters of NES

Other Matters Protected by the EPBC Act Extra Information

Caveat Acknowledgements

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, Mororong, 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 within area	Foraging, feeding or related behaviour known to occur

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 within area	Foraging, feeding or related behaviour known to occur
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 Endangered Species or species habitat known to occur within area [832]

Tringa stagnatilis
Marsh Sandpiper, Little Greenshank Roosting known to occur within area [833]

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 WA ISLAND [50117]

Defence - HMAS STIRLING-ROCKINGHAM ;HMAS STIRLING - GARDEN WA ISLAND [50133]

Defence - HMAS STIRLING-ROCKINGHAM ;HMAS STIRLING - GARDEN WA ISLAND [50134]

Defence - HMAS STIRLING-ROCKINGHAM ;HMAS STIRLING - GARDEN WA ISLAND [50132]

Defence - HMAS STIRLING-ROCKINGHAM ;HMAS STIRLING - GARDEN WA ISLAND [50131]

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
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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
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Commonwealth Land - [51105]	WA
Commonwealth Land - [50471]	WA
Commonwealth Land - [50622]	WA
Commonwealth Land - [50458]	WA
Commonwealth Land - [50621]	WA
Commonwealth Land - [50620]	WA
Commonwealth Land - [50623]	WA
Commonwealth Land - [50452]	WA
Commonwealth Land - [50450]	WA
Commonwealth Land - [50451]	WA
Commonwealth Land - [50454]	WA
Commonwealth Land - [50589]	WA
Commonwealth Land - [50639]	WA
Commonwealth Land - [50464]	WA

Commonwealth Land Name	State
Commonwealth Land - [50463]	WA
Commonwealth Land - [50635]	WA
Commonwealth Land - [50632]	WA
Commonwealth Land - [50634]	WA
Commonwealth Land - [51487]	WA
Commonwealth Land - [50466]	WA
Commonwealth Land - [50469]	WA
Commonwealth Land - [50557]	WA
Commonwealth Land - [50569]	WA
Commonwealth Land - [50401]	WA
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Commonwealth Land - [50530]	WA
Commonwealth Land - [50533]	WA
Commonwealth Land - [50613]	WA
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Commonwealth Land - [50389]	WA
Commonwealth Land - [50438]	WA
Commonwealth Land - [50388]	WA
Commonwealth Land - [50442]	WA
Commonwealth Land - [50443]	WA
Commonwealth Land - [50441]	WA
Commonwealth Land - [50447]	WA
Commonwealth Land - [52119]	WA
Commonwealth Land - [50524]	WA
Commonwealth Land - [50484]	WA

Commonwealth Land Name	State
Commonwealth Land - [50523]	WA
Commonwealth Land - [50387]	WA
Commonwealth Land - [50434]	WA
Commonwealth Land - [50433]	WA
Commonwealth Land - [50536]	WA
Commonwealth Land - [51987]	WA
Commonwealth Land - [50432]	WA
Commonwealth Land - [50449]	WA
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Commonwealth Land - [50580]	WA
Commonwealth Land - [50616]	WA
Commonwealth Land - [50465]	WA
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Commonwealth Land - [51117]	WA
Commonwealth Land - [50581]	WA
Commonwealth Land - [52242]	WA
Commonwealth Land - [51895]	WA
Commonwealth Land - [50526]	WA
Commonwealth Land - [50564]	WA
Commonwealth Land - [50565]	WA
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Commonwealth Land - [50404]	WA
Commonwealth Land - [50610]	WA
Commonwealth Land - [50619]	WA
Commonwealth Land - [50612]	WA
Commonwealth Land - [50611]	WA
Commonwealth Land - [50615]	WA

Commonwealth Land Name	State
Commonwealth Land - [50614]	WA
Commonwealth Land - [50568]	WA
Commonwealth Land - [51892]	WA
Commonwealth Land - [51891]	WA
Commonwealth Land - [51894]	WA
Commonwealth Land - [51893]	WA
Commonwealth Land - [52200]	WA
Commonwealth Land - [50535]	WA
Commonwealth Land - [50532]	WA
Commonwealth Land - [50537]	WA
Commonwealth Land - [50534]	WA
Commonwealth Land - [50509]	WA
Commonwealth Land - [50627]	WA
Commonwealth Land - [50497]	WA
Commonwealth Land - [50453]	WA
Commonwealth Land - [50637]	WA
Commonwealth Land - [50416]	WA
Commonwealth Land - [50459]	WA
Commonwealth Land - [52279]	WA
Commonwealth Land - [50572]	WA
Commonwealth Land - [50479]	WA
Commonwealth Land - [50476]	WA
Commonwealth Land - [50474]	WA
Commonwealth Land - [50577]	WA
Commonwealth Land - [50600]	WA
Commonwealth Land - [50604]	WA
Commonwealth Land - [50603]	WA

Commonwealth Land Name	State
Commonwealth Land - [50601]	WA
Commonwealth Land - [50578]	WA
Commonwealth Land - [50472]	WA
Commonwealth Land - [50477]	WA
Commonwealth Land - [50590]	WA
Commonwealth Land - [50599]	WA
Commonwealth Land - [50591]	WA
Commonwealth Land - [50480]	WA
Commonwealth Land - [50488]	WA
Commonwealth Land - [50482]	WA
Commonwealth Land - [50512]	WA
Commonwealth Land - [50597]	WA
Commonwealth Land - [50595]	WA
Commonwealth Land - [50491]	WA
Commonwealth Land - [50481]	WA
Commonwealth Land - [50462]	WA
Commonwealth Land - [50520]	WA
Commonwealth Land - [50423]	WA
Commonwealth Land - [50444]	WA
Commonwealth Land - [50428]	WA
Commonwealth Land - [50390]	WA
Commonwealth Land - [50427]	WA
Commonwealth Land - [52199]	WA
Commonwealth Land - [50521]	WA
Commonwealth Land - [50641]	WA
Commonwealth Land - [50421]	WA
Commonwealth Land - [50640]	WA

Commonwealth Land Name	State
Commonwealth Land - [50420]	WA
Commonwealth Land - [50609]	WA
Commonwealth Land - [50499]	WA
Commonwealth Land - [50514]	WA
Commonwealth Land - [50490]	WA
Commonwealth Land - [50548]	WA
Commonwealth Land - [50549]	WA
Commonwealth Land - [50544]	WA
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Commonwealth Land - [50552]	WA
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Commonwealth Land - [50541]	WA
Commonwealth Land - [50540]	WA
Commonwealth Land - [50543]	WA
Commonwealth Land - [50542]	WA
Commonwealth Land - [50417]	WA
Commonwealth Land - [50596]	WA
Commonwealth Land - [50556]	WA
Commonwealth Land - [50545]	WA
Commonwealth Land - [50546]	WA

Commonwealth Land Name	State
Commonwealth Land - [50547]	WA
Commonwealth Land - [50636]	WA
Commonwealth Land - [51488]	WA
Commonwealth Land - [50519]	WA
Commonwealth Land - [50445]	WA
Commonwealth Land - [50461]	WA
Commonwealth Land - [50460]	WA
Commonwealth Land - [50513]	WA
Commonwealth Land - [50515]	WA
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)
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	2019/8494	Controlled Action	Assessment
Northerly Street, Vasse, WA			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 Action	Not Controlled	Completed
25 Lot Residential Subdivision	2009/4830 Action	Not Controlled	Completed
Aerial application of mosquito larvicides to Vasse Wonnerup Wetlands, WA	2016/7780 Action	Not Controlled	Completed
APX-West Fibre-optic telecommunications cable system, WA to Singapore	2013/7102 Action	Not Controlled	Completed
Bushfire Mitigation Works - City of Mandurah	2020/8674 Action	Not Controlled	Completed
Busselton to Flinders Bay Rails to Trails Project, WA	2013/6835 Action	Not Controlled	Completed
Cape Naturaliste Road Shared Pathway, Dunsborough, WA	2018/8282 Action	Not Controlled	Completed
Causeway Bridge Duplication, Busselton, WA	2018/8309 Action	Not Controlled	Completed
Caves Road widening project between Dunsborough and Yallingup(20.3 -24.6 SLK), WA	2015/7475 Action	Not Controlled	Completed
Clear Lot 503, 54 Ocean Road Dawesville, WA	2014/7375 Action	Not Controlled	Completed
Construction and operation of an 8 turbine wind farm at Rous Head Harbour, Frema	2003/933 Action	Not Controlled	Completed
Construction of Secret Harbour High School	2004/1489 Action	Not Controlled	Completed
CTBT - Cape Leeuwin Hydroacoustic Station Proposal	2000/27 Action	Not Controlled	Completed
Disposal of residential properties, Fremantle, WA	2019/8593 Action	Not Controlled	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
Eastport canal estate development stage 5	2007/3737 Action	Not Controlled	Completed
Establishment of a National Lifestyle Village	2011/6081 Action	Not Controlled	Completed
Expansion of berthing facilities at Kwinana Bulk Terminal	2006/2509 Action	Not Controlled	Completed
Expansion of existing Ammonium Nitrate Production Facility	2005/1941 Action	Not Controlled	Completed
Expedition 369-Australian Cretaceous Climate and Tectonics, Australian EEZ waters	2017/7891 Action	Not Controlled	Completed
Florida Estate Residential Subdivision Development Stage 13	2011/6045 Action	Not Controlled	Completed
Florida North residential development, Lot 9008, Ocean Road, Dawesville, WA	2015/7462 Action	Not Controlled	Completed
Fremantle Ports Inner Harbour Capital Dredging Proposal	2005/2477 Action	Not Controlled	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 Action	Not Controlled	Completed
INDIGO Central Submarine Telecommunications Cable	2017/8127 Action	Not Controlled	Completed
Kennedy Bay urban development, Port Kennedy, WA	2014/7122 Action	Not Controlled	Completed
Kennedy Park Estate Residential Development	2003/1044 Action	Not Controlled	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 Action	Not Controlled	Completed
Lot 101 Mandurah Road, Madora Bay, WA	2012/6466 Action	Not Controlled	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
Oman Australia Cable Installation, WA	2021/8922 Action	Not Controlled	Completed
Oman Australia Cable - Marine Route Survey	2020/8731 Action	Not Controlled	Completed
Palm Beach Caravan Park Redevelopment, Rockingham, WA	2013/6853 Action	Not Controlled	Completed
Redevelopment of Lots 3 & 4, Kent Street	2007/3243 Action	Not Controlled	Completed
Residential & Light Industrial Development, Vasse WA	2013/6932 Action	Not Controlled	Completed
Residential development, Lot 42, Farmhouse Court, Bovell, WA	2014/7195 Action	Not Controlled	Completed
Re-zoning of Land for Future Residential Development Purposes	2009/4908 Action	Not Controlled	Completed
Rottnest Lodge Redevelopment	2019/8565 Action	Not Controlled	Completed
Seismic Survey, Bremer Basin, Mentelle Basin and Zeewyck Sub-basin	2004/1700 Action	Not Controlled	Completed
Sepia Depression Ocean Outlet Landline Duplication	2012/6248 Action	Not Controlled	Completed
Vasse Hotel and Supermarket Redevelopment	2001/288 Action	Not Controlled	Completed
Warders' Cottages Block 2 'W2'	2022/9148 Action	Not Controlled	Completed
Warders' Cottages W2 minor works, Fremantle, WA	2018/8185 Action	Not Controlled	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	Post-Approval
Action (Particular Manner)			
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	Post-Approval
Action (Particular Manner)			
Road upgrades and walk trail development	2009/4958	Not Controlled Action (Particular Manner)	Post-Approval
South Busselton Primary School	2001/290	Not Controlled	Post-Approval
Action (Particular Manner)			
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	South-west to Geographe Bay
Commonwealth marine environment within and adjacent	South-west to the west coast inshore lagoons
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

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.

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

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

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

Summary Details
Matters of NES
Other Matters Protected by the EPBC Act Extra Information
Caveat Acknowledgements



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, Mororong, 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 within area	Foraging, feeding or related behaviour known to occur

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 within area	Foraging, feeding or related behaviour known to occur
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 Endangered Species or species habitat known to occur within area [832]

Tringa stagnatilis
Marsh Sandpiper, Little Greenshank Roosting known to occur within area [833]

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 WA ISLAND [50117]

Defence - HMAS STIRLING-ROCKINGHAM ;HMAS STIRLING - GARDEN WA ISLAND [50134]

Defence - HMAS STIRLING-ROCKINGHAM ;HMAS STIRLING - GARDEN WA ISLAND [50133]

Defence - HMAS STIRLING-ROCKINGHAM ;HMAS STIRLING - GARDEN WA ISLAND [50131]

Defence - HMAS STIRLING-ROCKINGHAM ;HMAS STIRLING - GARDEN WA ISLAND [50132]

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
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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

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

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)
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	2019/8494	Controlled Action	Assessment
Northerly Street, Vasse, WA			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 Action	Not Controlled	Completed
25 Lot Residential Subdivision	2009/4830 Action	Not Controlled	Completed
Aerial application of mosquito larvicides to Vasse Wonnerup Wetlands, WA	2016/7780 Action	Not Controlled	Completed
APX-West Fibre-optic telecommunications cable system, WA to Singapore	2013/7102 Action	Not Controlled	Completed
Bushfire Mitigation Works - City of Mandurah	2020/8674 Action	Not Controlled	Completed
Busselton to Flinders Bay Rails to Trails Project, WA	2013/6835 Action	Not Controlled	Completed
Cape Naturaliste Road Shared Pathway, Dunsborough, WA	2018/8282 Action	Not Controlled	Completed
Causeway Bridge Duplication, Busselton, WA	2018/8309 Action	Not Controlled	Completed
Caves Road widening project between Dunsborough and Yallingup(20.3 -24.6 SLK), WA	2015/7475 Action	Not Controlled	Completed
Clear Lot 503, 54 Ocean Road Dawesville, WA	2014/7375 Action	Not Controlled	Completed
Construction and operation of an 8 turbine wind farm at Rous Head Harbour, Frema	2003/933 Action	Not Controlled	Completed
Construction of Secret Harbour High School	2004/1489 Action	Not Controlled	Completed
CTBT - Cape Leeuwin Hydroacoustic Station Proposal	2000/27 Action	Not Controlled	Completed
Disposal of residential properties, Fremantle, WA	2019/8593 Action	Not Controlled	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
Eastport canal estate development stage 5	2007/3737 Action	Not Controlled	Completed
Establishment of a National Lifestyle Village	2011/6081 Action	Not Controlled	Completed
Expansion of berthing facilities at Kwinana Bulk Terminal	2006/2509 Action	Not Controlled	Completed
Expansion of existing Ammonium Nitrate Production Facility	2005/1941 Action	Not Controlled	Completed
Expedition 369-Australian Cretaceous Climate and Tectonics, Australian EEZ waters	2017/7891 Action	Not Controlled	Completed
Florida Estate Residential Subdivision Development Stage 13	2011/6045 Action	Not Controlled	Completed
Florida North residential development, Lot 9008, Ocean Road, Dawesville, WA	2015/7462 Action	Not Controlled	Completed
Fremantle Ports Inner Harbour Capital Dredging Proposal	2005/2477 Action	Not Controlled	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 Action	Not Controlled	Completed
INDIGO Central Submarine Telecommunications Cable	2017/8127 Action	Not Controlled	Completed
Kennedy Bay urban development, Port Kennedy, WA	2014/7122 Action	Not Controlled	Completed
Kennedy Park Estate Residential Development	2003/1044 Action	Not Controlled	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 Action	Not Controlled	Completed
Lot 101 Mandurah Road, Madora Bay, WA	2012/6466 Action	Not Controlled	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
Oman Australia Cable Installation, WA	2021/8922 Action	Not Controlled	Completed
Oman Australia Cable - Marine Route Survey	2020/8731 Action	Not Controlled	Completed
Palm Beach Caravan Park Redevelopment, Rockingham, WA	2013/6853 Action	Not Controlled	Completed
Redevelopment of Lots 3 & 4, Kent Street	2007/3243 Action	Not Controlled	Completed
Residential & Light Industrial Development, Vasse WA	2013/6932 Action	Not Controlled	Completed
Residential development, Lot 42, Farmhouse Court, Bovell, WA	2014/7195 Action	Not Controlled	Completed
Re-zoning of Land for Future Residential Development Purposes	2009/4908 Action	Not Controlled	Completed
Rottnest Lodge Redevelopment	2019/8565 Action	Not Controlled	Completed
Seismic Survey, Bremer Basin, Mentelle Basin and Zeewyck Sub-basin	2004/1700 Action	Not Controlled	Completed
Sepia Depression Ocean Outlet Landline Duplication	2012/6248 Action	Not Controlled	Completed
Vasse Hotel and Supermarket Redevelopment	2001/288 Action	Not Controlled	Completed
Warders' Cottages Block 2 'W2'	2022/9148 Action	Not Controlled	Completed
Warders' Cottages W2 minor works, Fremantle, WA	2018/8185 Action	Not Controlled	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	Post-Approval
Action (Particular Manner)			
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	Post-Approval
Action (Particular Manner)			
Road upgrades and walk trail development	2009/4958	Not Controlled Action (Particular Manner)	Post-Approval
South Busselton Primary School	2001/290	Not Controlled	Post-Approval
Action (Particular Manner)			
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

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.

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

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

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

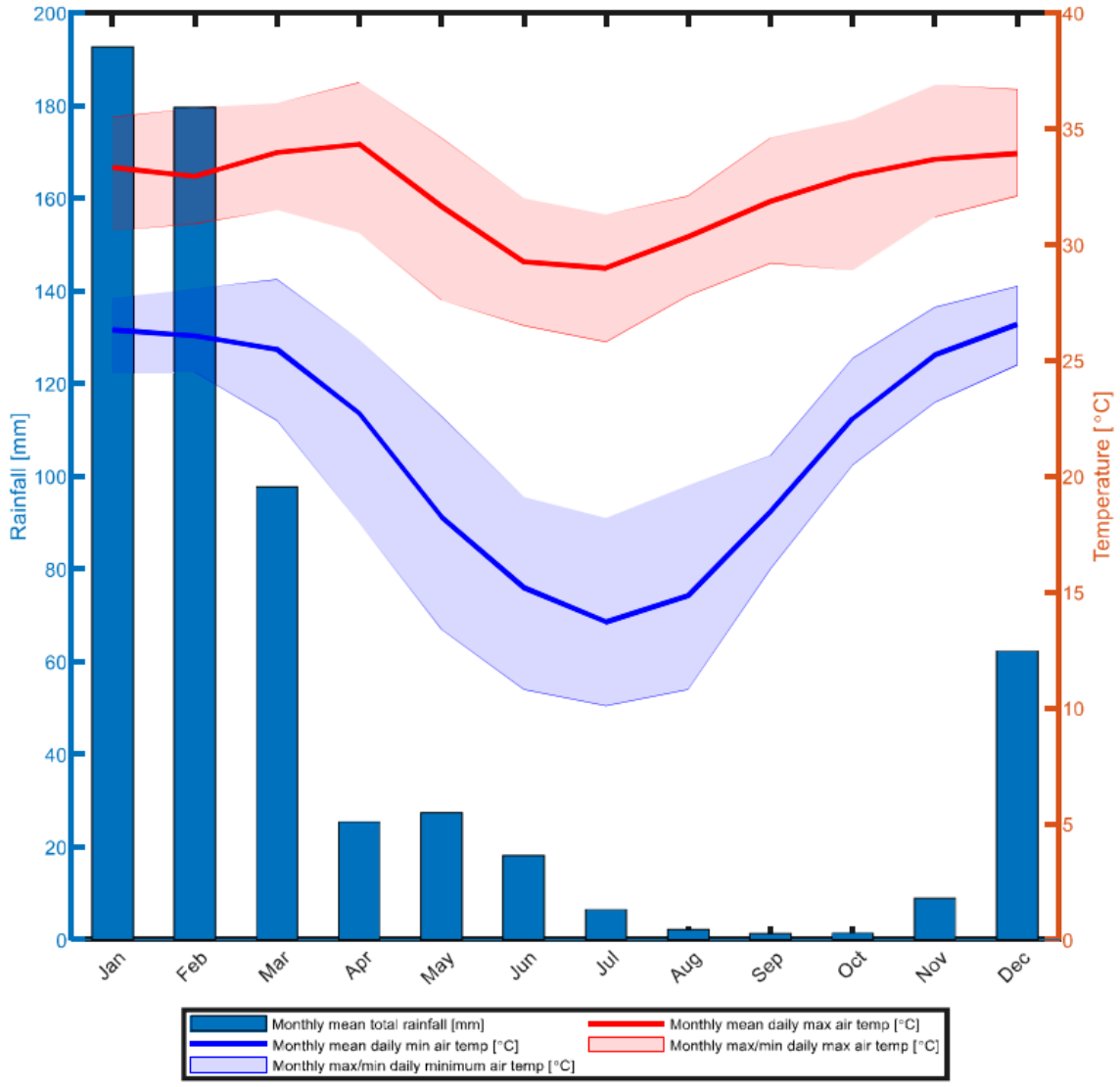


Figure 1. Monthly average total rainfall [mm] and air temperature [°C], calculated based on observations at the Broome Airport weather station from 1939-2020 (Bureau of Meteorology 2020). Bars show the monthly average total rainfall values, and thick blue and red lines denote monthly average daily minimum and maximum air temperatures, respectively. Shaded blue and red areas denote monthly recorded extremes of daily minimum and maximum air temperature, respectively.

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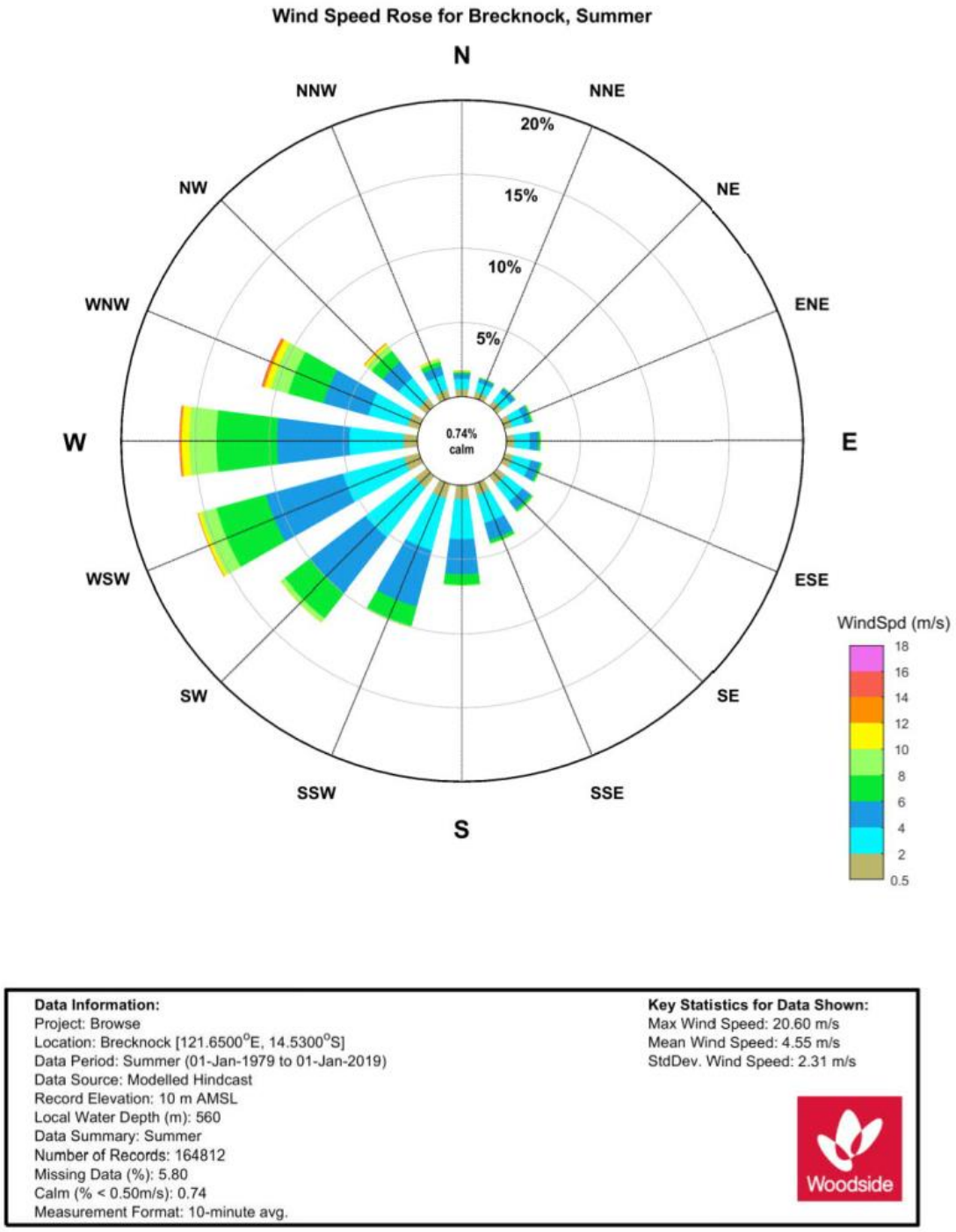


Figure 2. Summer distributions of 10-minute average wind speeds by 22.5° directional sectors at the Brecknock site (Metocean Solutions Ltd, 2019). Note tropical cyclone events were not included in this distribution. Winds at Brecknock in summer are predominantly from the WNW to SW due to the North West Monsoon (WEL, 2019).

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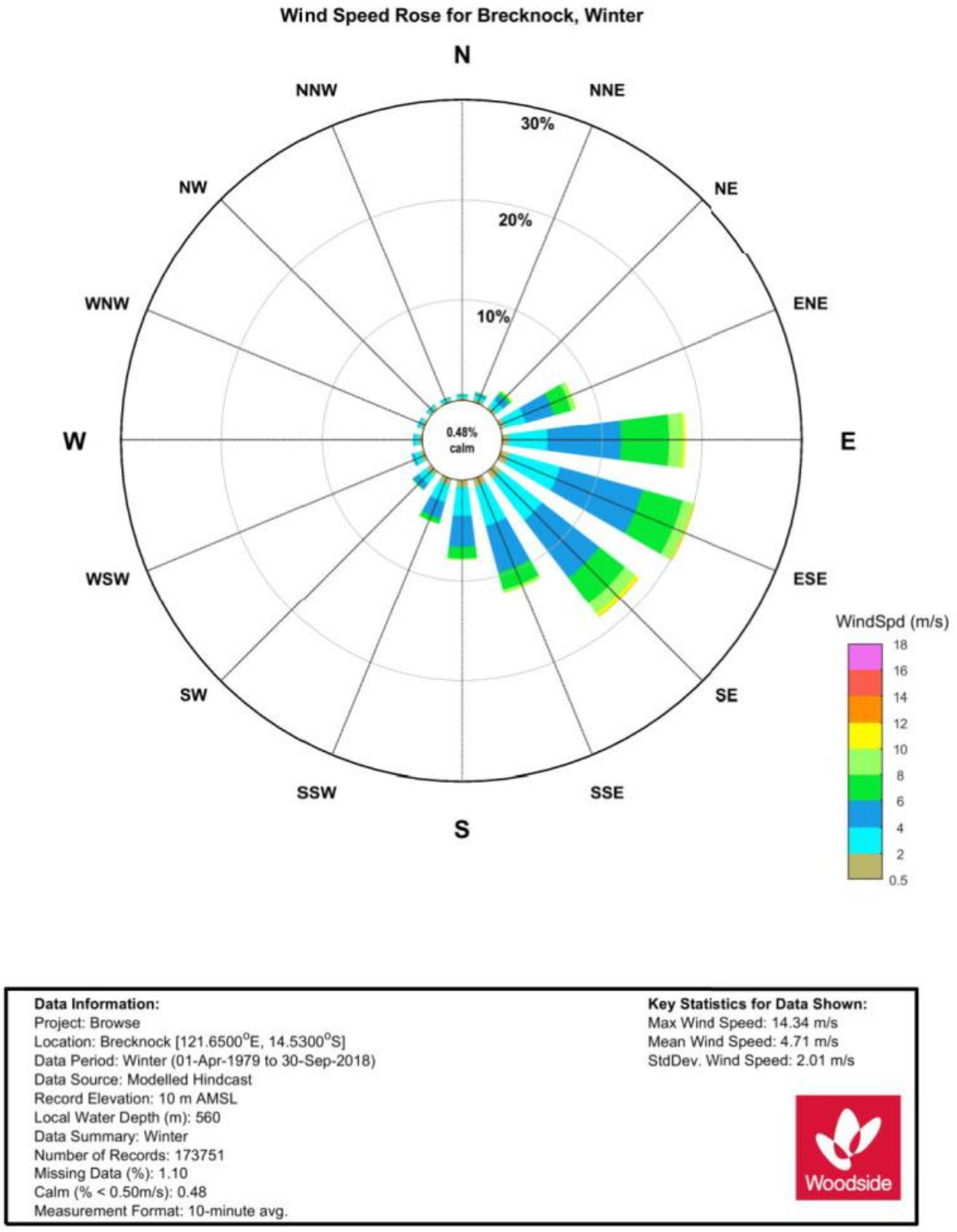


Figure 3. Winter distributions of 10-minute average wind speeds by 22.5° directional sectors at the Brecknock site (Metocean Solutions Ltd, 2019). Note tropical cyclone events were not included in this distribution. Winds at Brecknock in winter are predominantly from the E to SE due to the South East Trade Winds coming from the Australian mainland (WEL, 2019).

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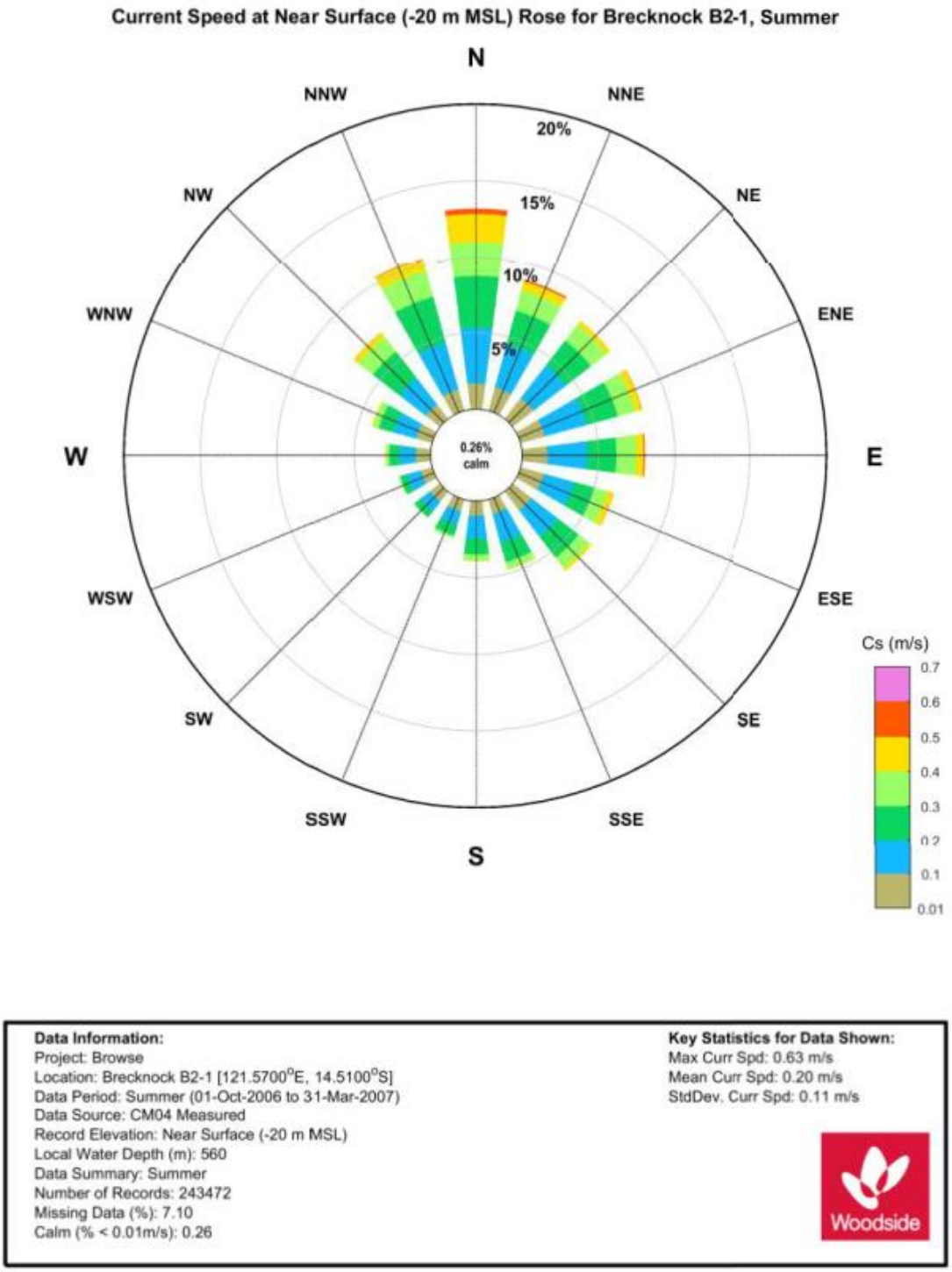


Figure 4. Summer (Nov-Apr) near surface combined frequency of 1-minute mean current speed and direction (towards) measured at Brecknock B2-1 location (cyclones removed) (RPS Metocean Ltd. 2008).

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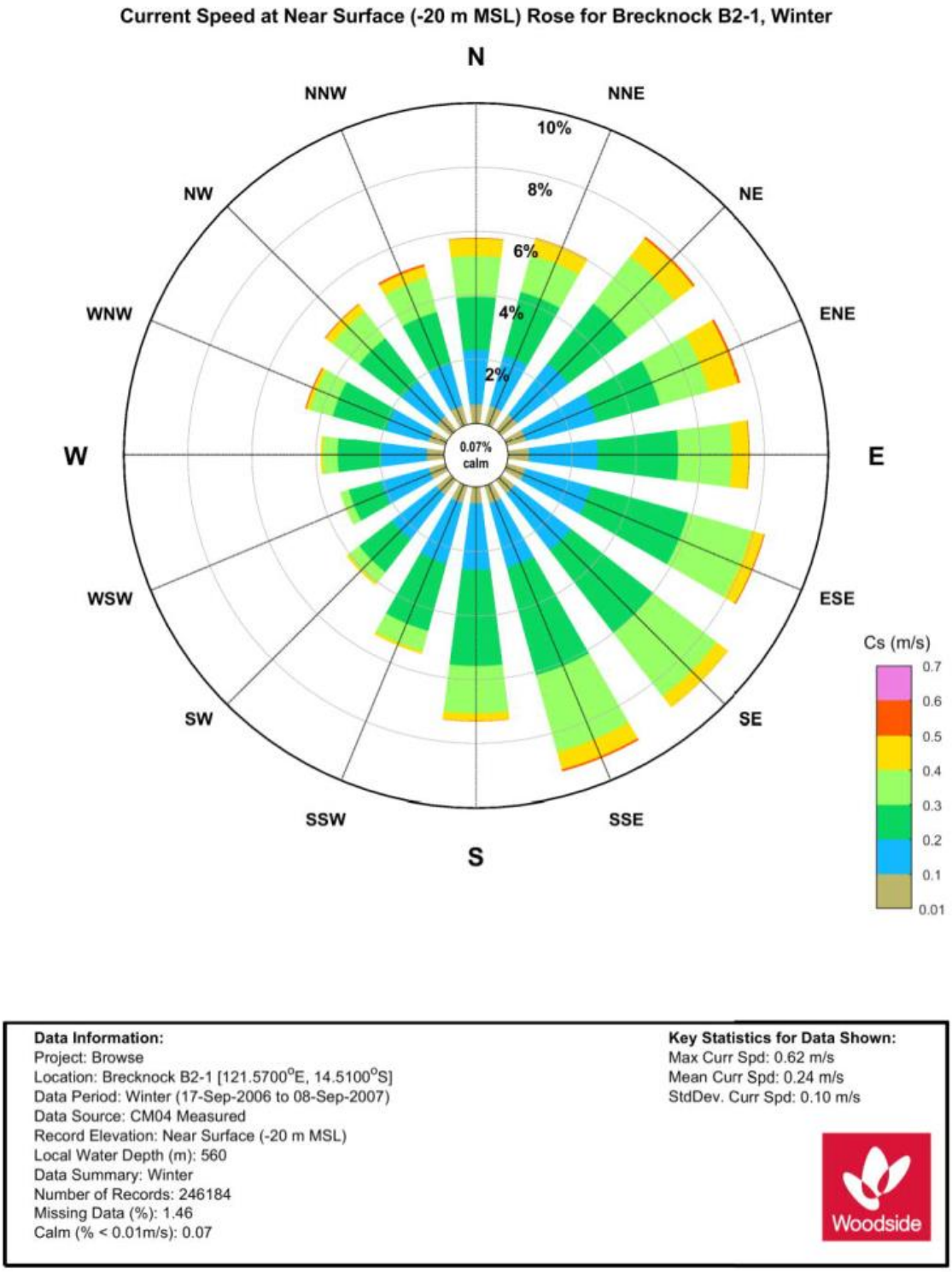


Figure 5. Winter (May-Sep) near surface combined frequency of 1-minute mean current speed and direction (towards) measured at Brecknock B2-1 location (cyclones removed) (RPS Metocean Ltd. 2008).

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North west Shelf/Scarborough

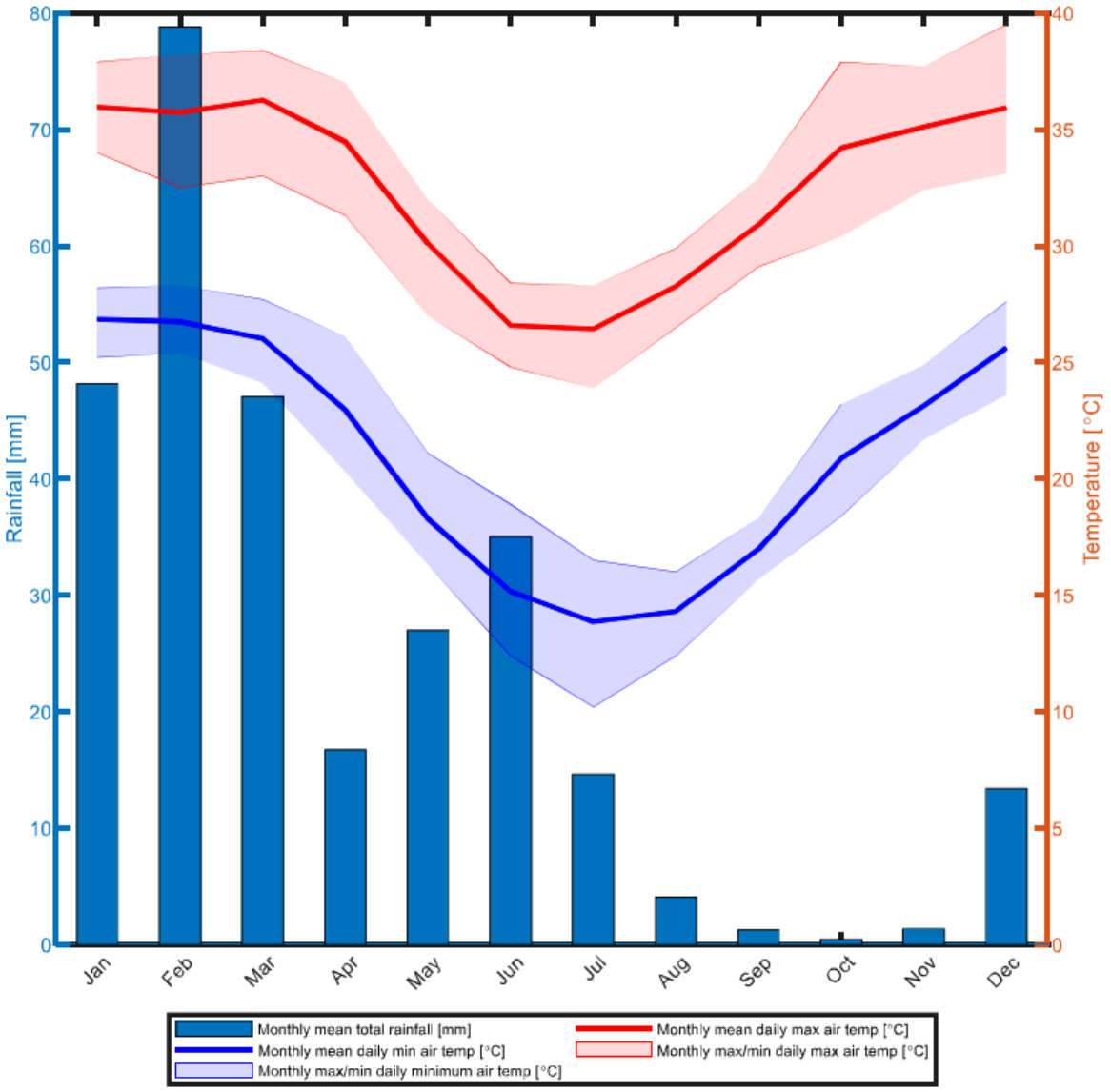


Figure 1. Monthly average total rainfall [mm] and air temperature [°C], calculated based on observations at the Karratha Aero weather station from 1972-2020 and 1993-2020 respectively (Bureau of Meteorology 2020). Bars show the monthly average total rainfall values, and thick blue and red lines denote 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.

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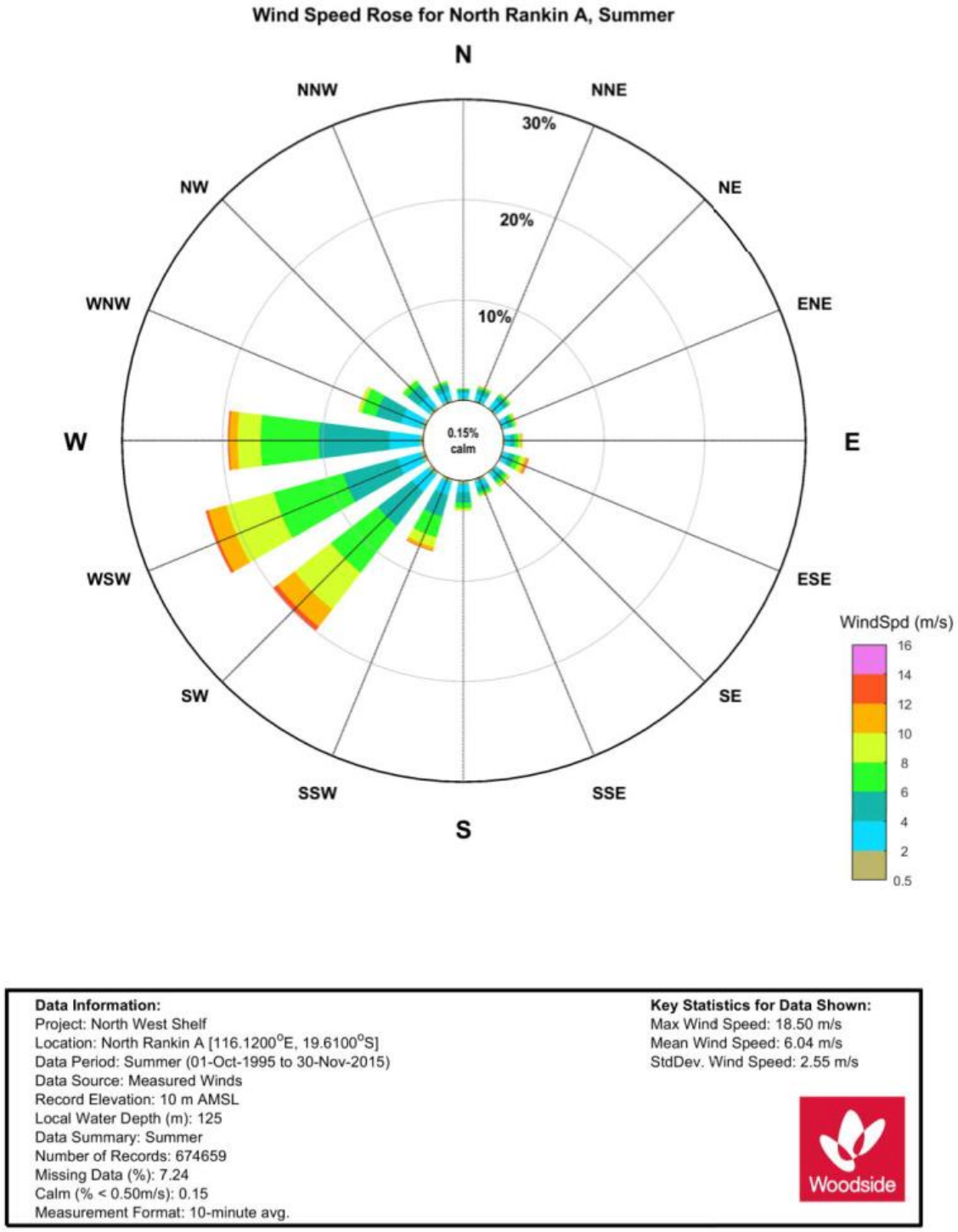


Figure 2. Summer distributions of 10-minute average wind speeds by 22.5° directional sectors at the North Rankin A site (WEL, 2015). Note tropical cyclone events were not included in this distribution. Winds at North Rankin A in summer are characterised by W to SW driven by the North West Monsoon (RPS, 2016).

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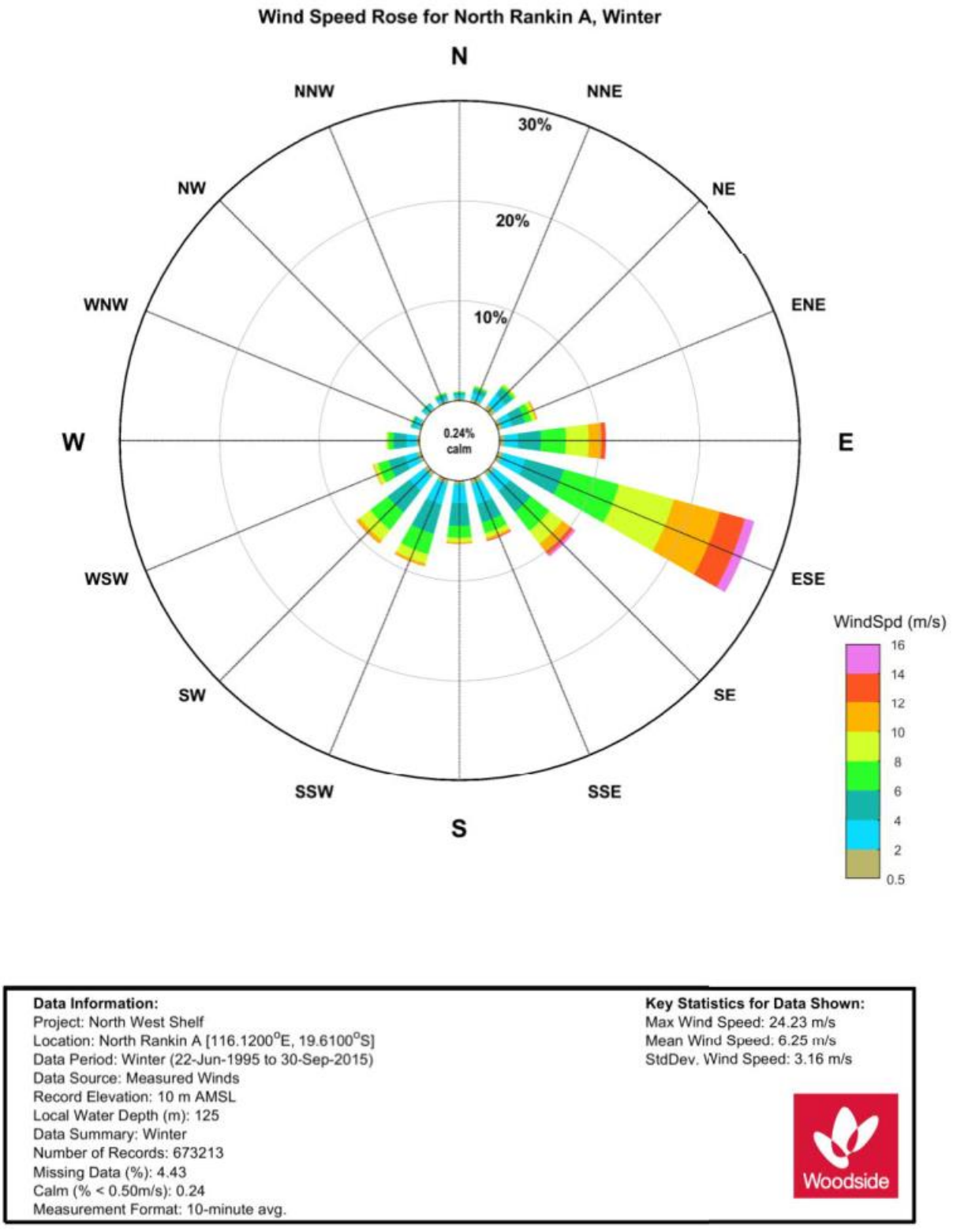


Figure 3. Winter distributions of 10-minute average wind speeds by 22.5° directional sectors at the North Rankin A site (WEL, 2015). Note tropical cyclone events were not included in this distribution. Winds at North Rankin in winter are predominantly influenced by the South East Trade Winds over Australia (RPS, 2016).

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Scarborough

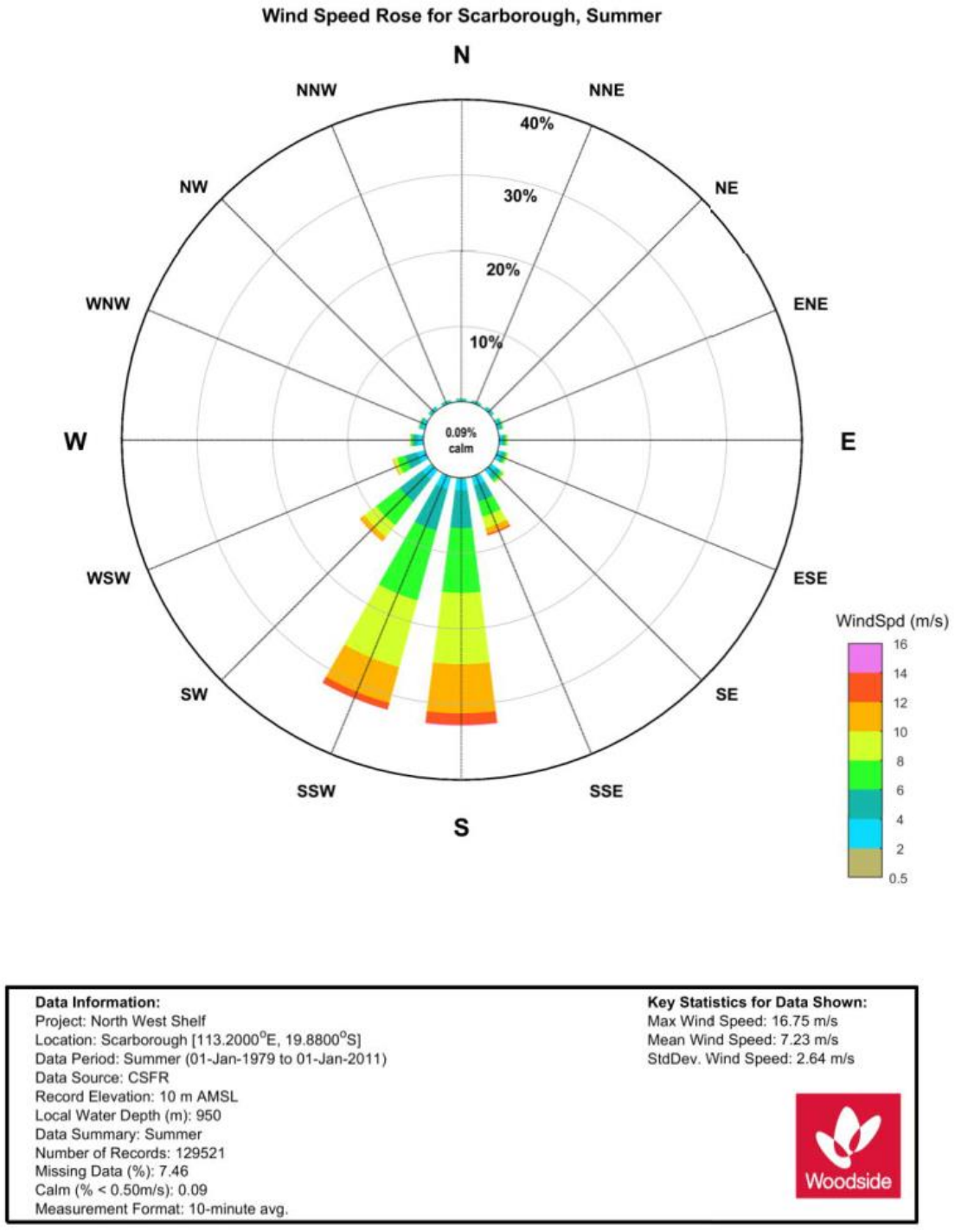


Figure 1. Summer distributions of wind speeds (10-minute at 10m ASL) by 22.5° directional sectors at the Scarborough site (WEL, 2018). Note tropical cyclone events were not included in this distribution. Winds at Scarborough in summer are predominantly from the S to SSW due to a Pilbara Heat Low forming over the northwest coast of Western Australia [R8] SW winds are also experienced at this site due to the monsoon trough.

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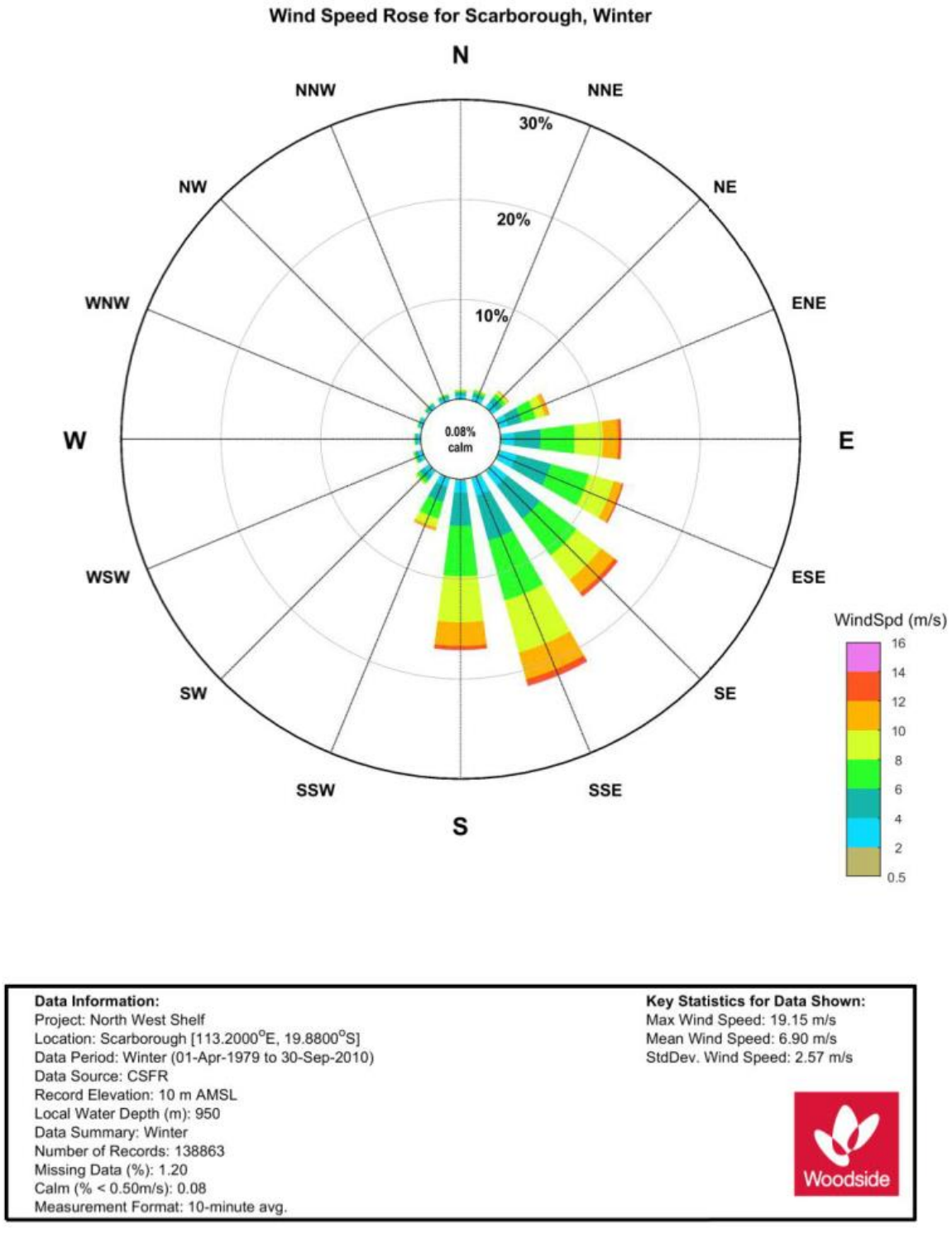


Figure 2. Winter distributions of wind speeds (10-minute at 10 m ASL) by 22.5° directional sectors at the Scarborough site (WEL, 2018). Note tropical cyclone events were not included in this distribution. Winds at Scarborough in winter are predominantly from the S to E driven by the South East Trade Winds over Australia (RPS, 2016)

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North-west Shelf

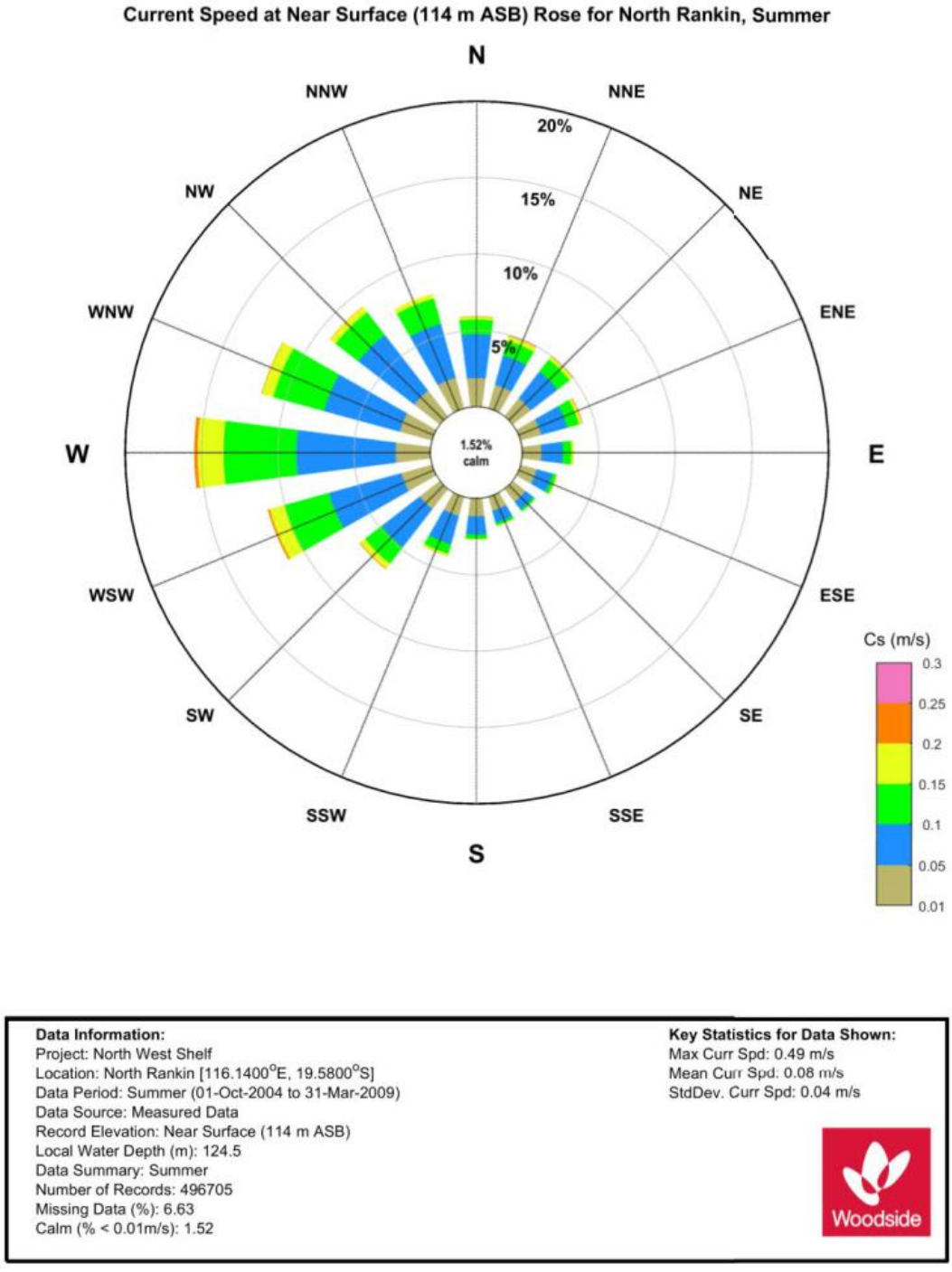


Figure 1. Summer (Nov-Apr) near surface combined frequency of 1-minute mean current speed and direction (towards) measured at the North Rankin location (cyclones removed) (WEL, 2011).

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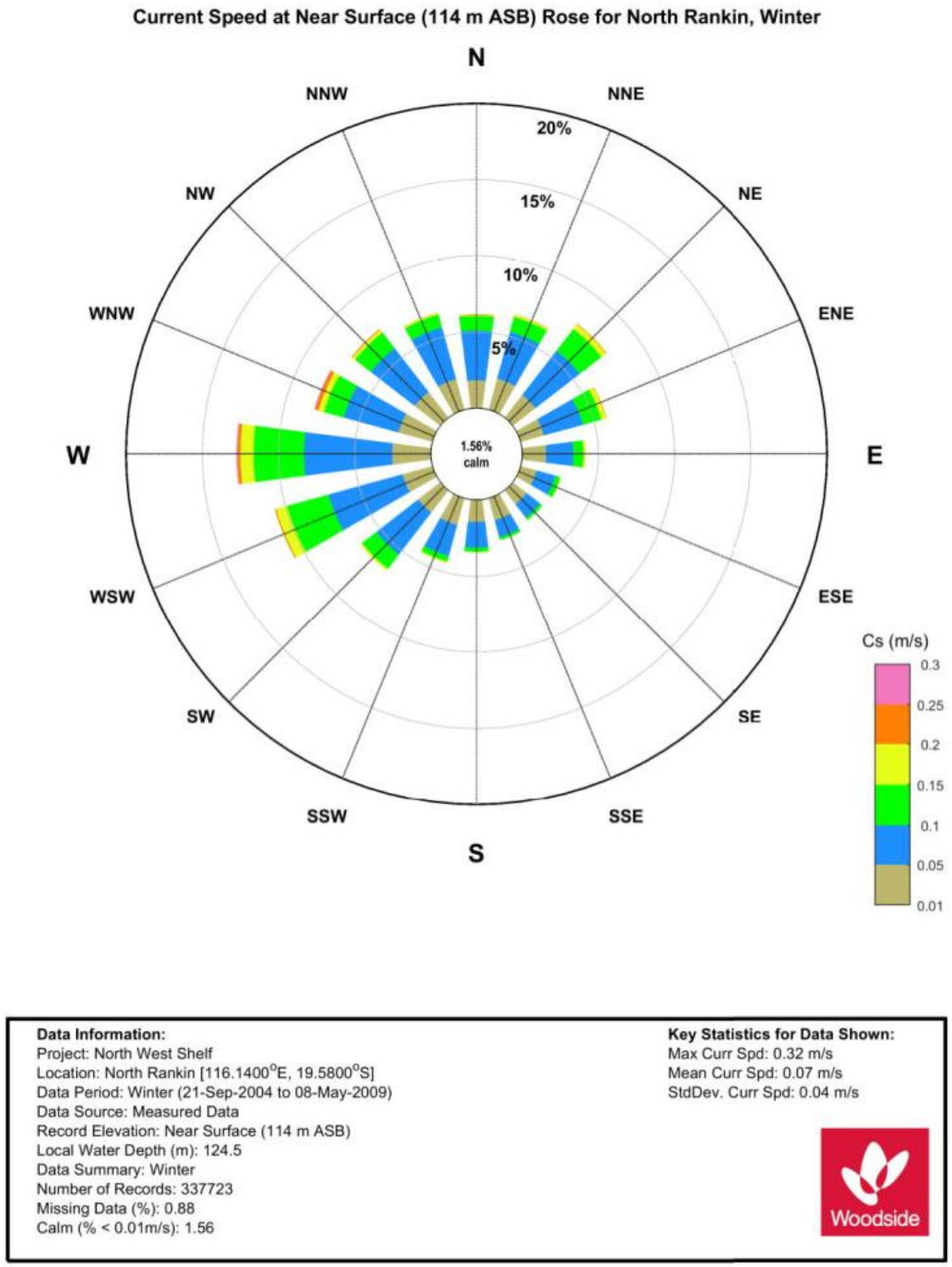


Figure 2. Winter (May-Sep) near surface combined frequency of 1-minute mean current speed and direction (towards) measured at the North Rankin location (cyclones removed) (WEL, 2011).

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Scarborough

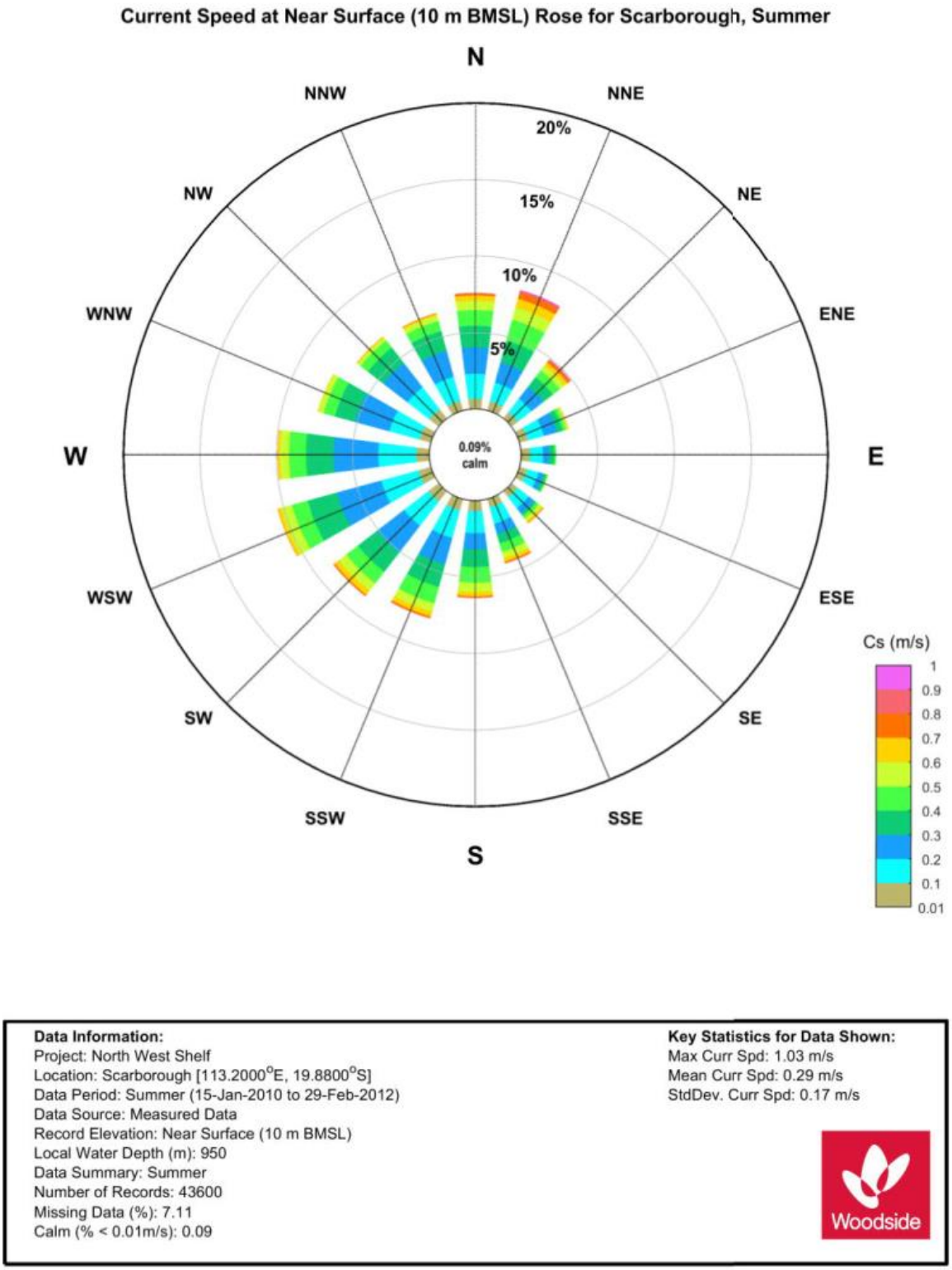


Figure 1. Summer (Nov - April) near surface combined frequency of 1-minute mean current speed and direction (towards) measured at the Scarborough location (cyclones removed) (WEL, 2018).

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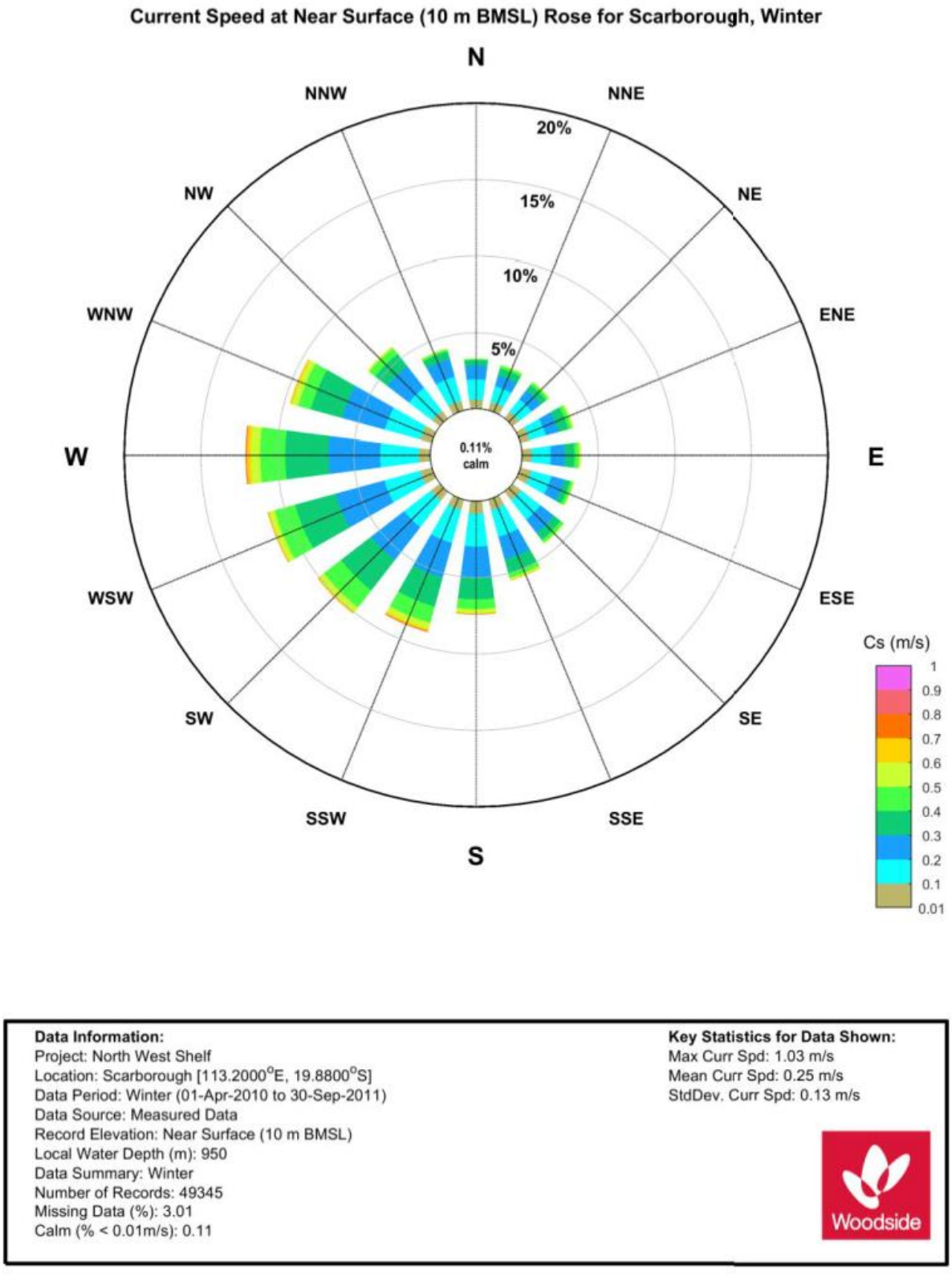


Figure 2. Winter (May-Sep) near surface combined frequency of 1-min mean current speed and direction (towards) measured at the Scarborough location (cyclones removed) (WEL, 2018).

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North-west Cape

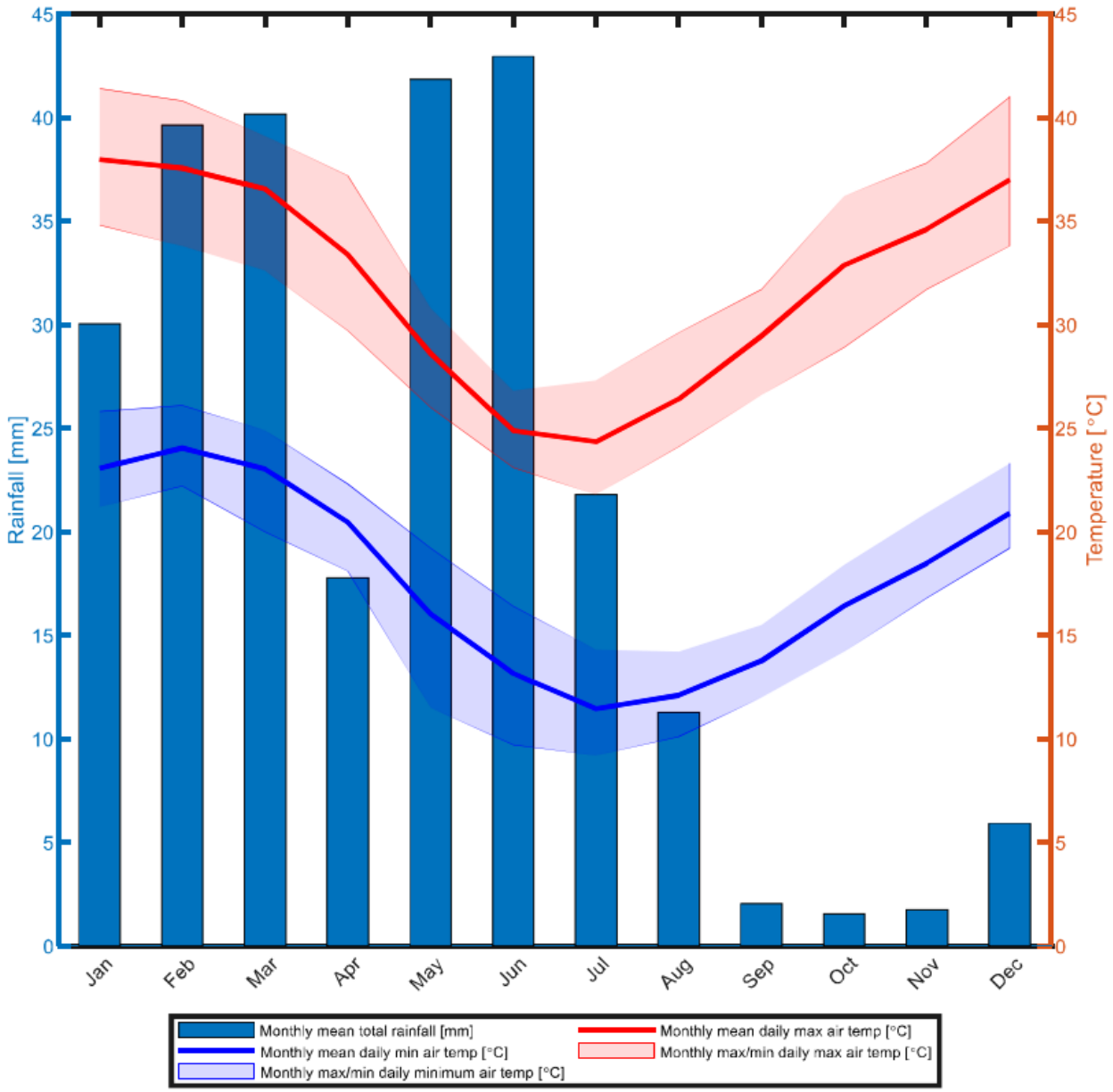


Figure 1. Monthly average total rainfall [mm] and air temperature [°C], calculated based on observations at the Learmonth Airport weather station from 1945-2020 and 1975-2020 respectively (Bureau of Meteorology 2020). Bars show the monthly average total rainfall values, and thick blue and red lines denote 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.

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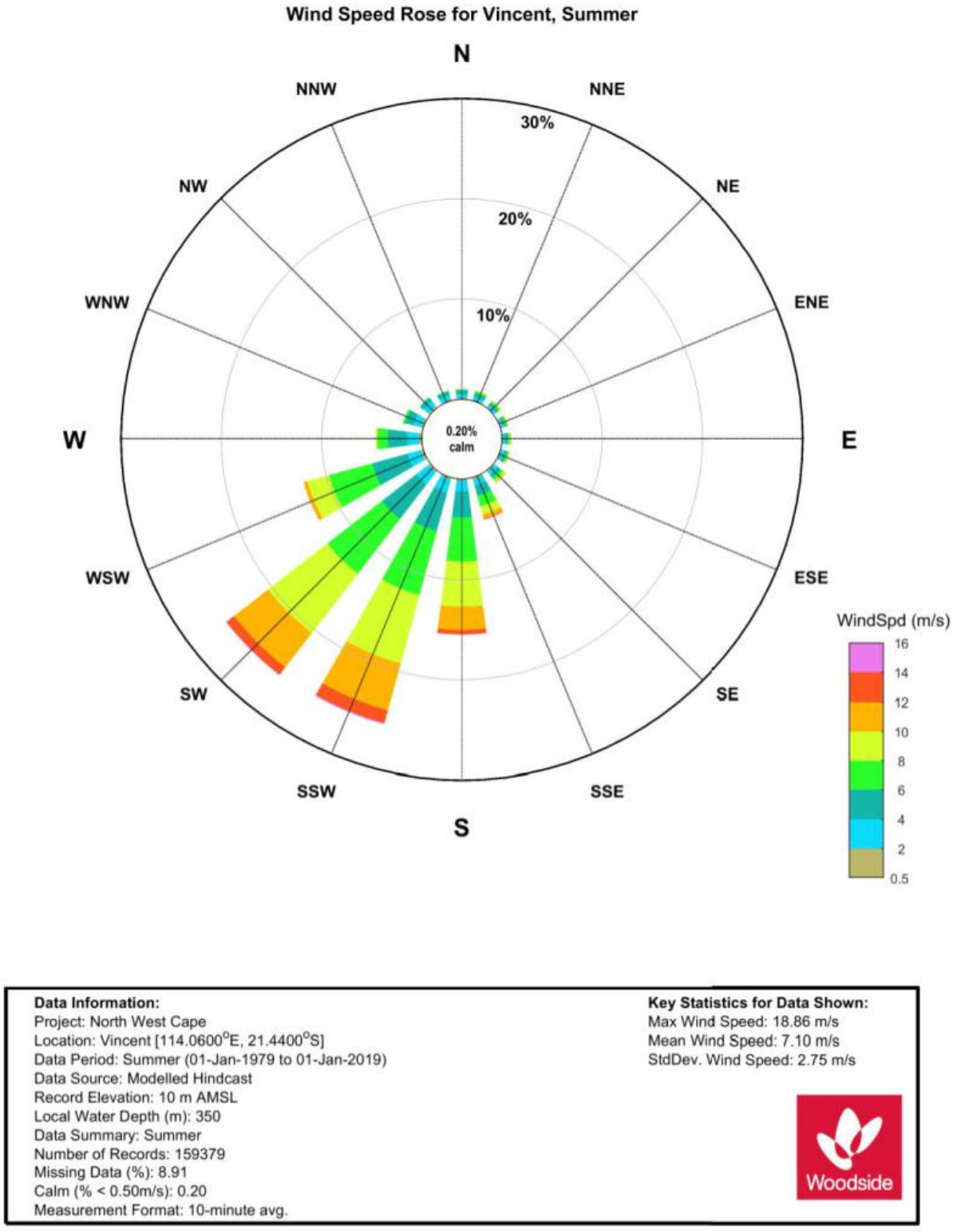


Figure 2. Summer distributions of wind speeds (10-minute at 10 m ASL) by 22.5° directional sectors at the Vincent site (Vincent Metocean). Note tropical cyclone events were not included in this distribution. Winds at Vincent in summer are predominantly from the SW to SSW in summer due to the presence of the Pilbara Heat Low (MetOcean Engineers, 2005).

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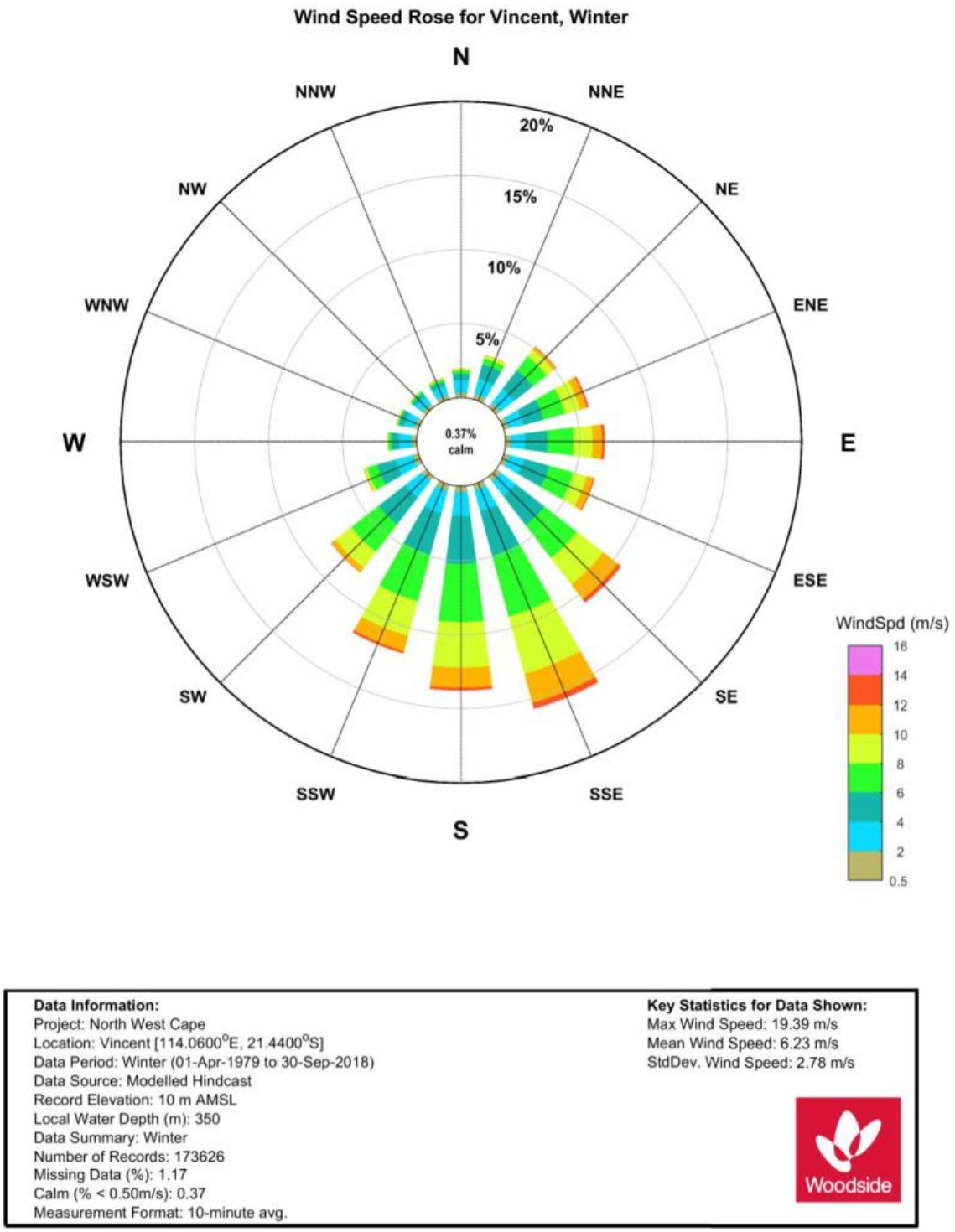


Figure 3. Winter distributions of wind speeds (10-minute at 10 m ASL) 22.5° directional sectors at the Vincent site (Vincent Metocean). Note tropical cyclone events were not included in this distribution. In winter, winds at are predominantly from the S to SE, associated with the South East Trades. Easterly 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).

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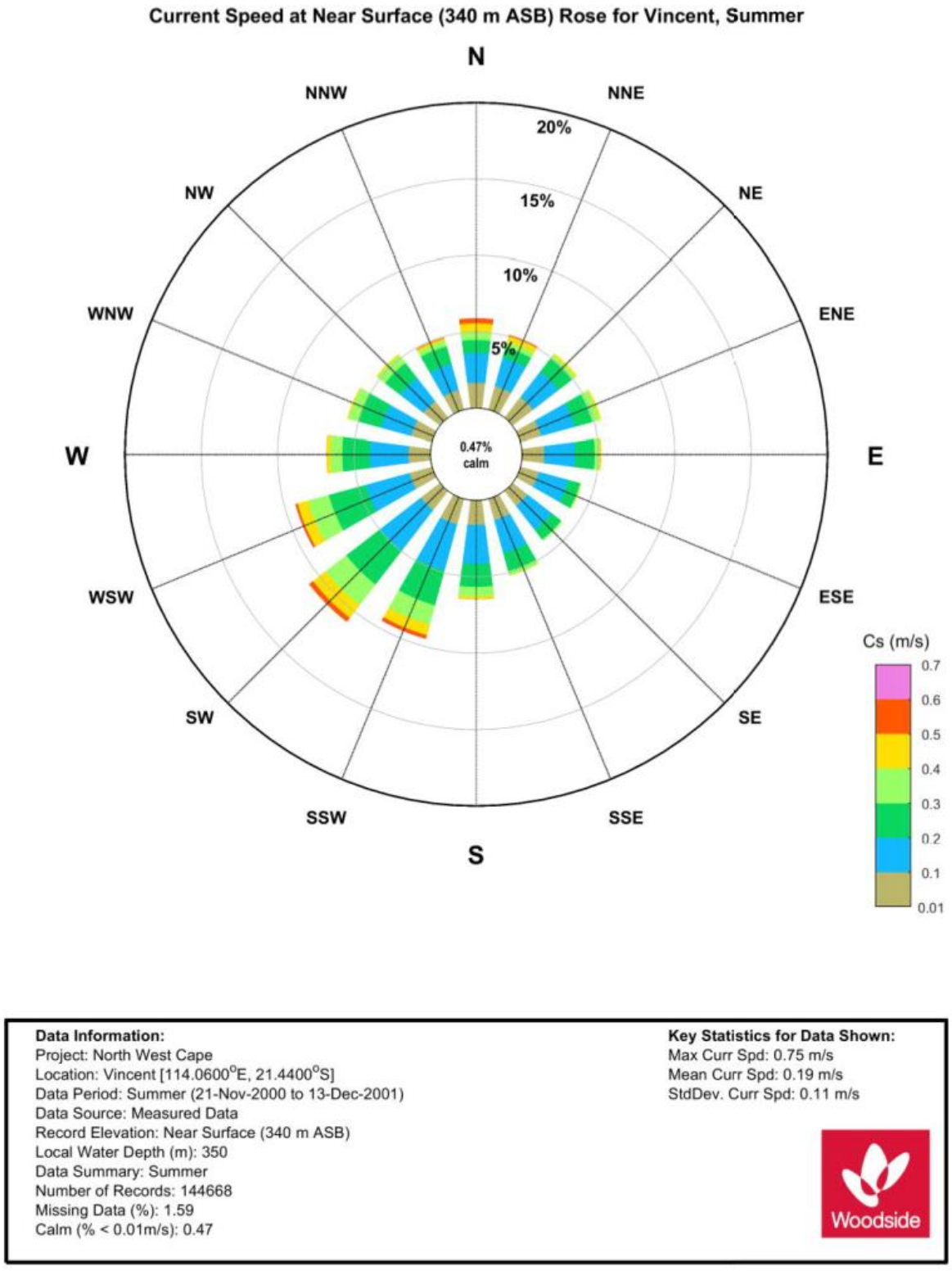


Figure 4. Summer (May - Sep) near surface combined frequency of 1-minute mean current speed and direction (towards) measured at the Vincent location (cyclones removed) (WEL, 2016).

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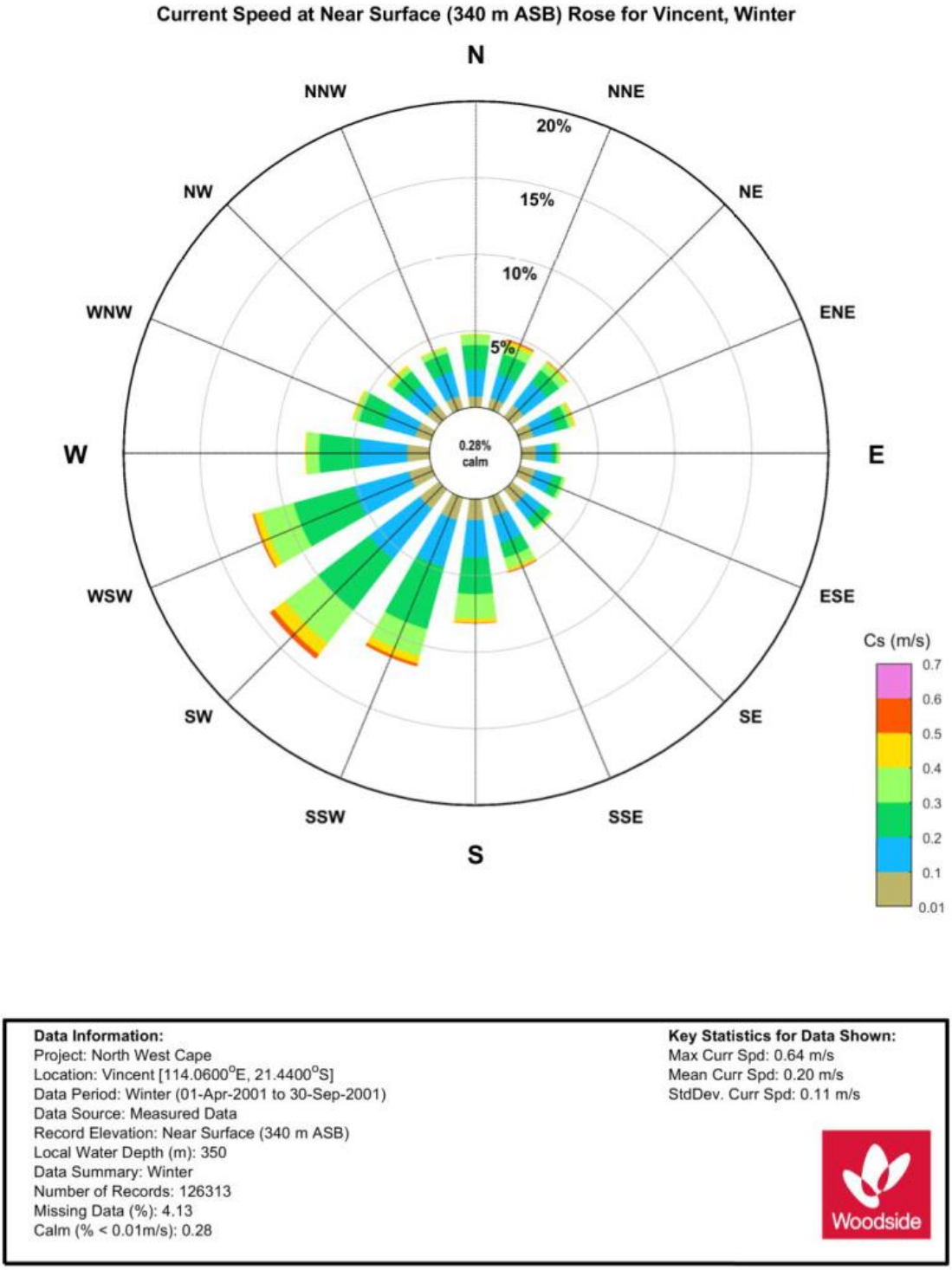


Figure 5. Winter (Nov - Apr) near surface combined frequency of 1-minute mean current speed and direction (towards) measured at the Vincent location (cyclones removed) (WEL, 2016).

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APPENDIX D EPBC ACT PROTECTED MATTERS SEARCH TOOL RESULTS AND ABORIGINAL CULTURAL HERITAGE INQUIRY SYSTEM RESULTS

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D-1 PMST OPERATIONAL AREA

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Australian Government

Department of Climate Change, Energy, the Environment and Water

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-Dec-2025

Summary

Details

- Matters of NES
- Other Matters Protected by the EPBC Act
- Extra Information

Caveat

Acknowledgements

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	2
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	27
Listed Migratory Species:	46

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:	77
Whales and Other Cetaceans:	27
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
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:	None
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	37
Key Ecological Features (Marine):	2
Biologically Important Areas:	9
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Commonwealth Marine Area [Resource Information]

Approval is required for a proposed activity that is located within the Commonwealth Marine Area which has, will have, or is likely to have a significant impact on the environment. Approval may be required for a proposed action taken outside a Commonwealth Marine Area but which has, may have or is likely to have a significant impact on the environment in the Commonwealth Marine Area.

Feature Name
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)

Listed Threatened Species [Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text
BIRD		
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Phaethon lepturus fulvus Christmas Island White-tailed Tropicbird, Golden Bosunbird [26021]	Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
[Phaethon rubricauda westralis](#) Red-tailed Tropicbird (Indian Ocean), Indian Ocean Red-tailed Tropicbird [91824]	Endangered	Species or species habitat likely to occur within area
[Sternula nereis nereis](#) Australian Fairy Tern [82950]	Vulnerable	Breeding known to occur within area
MAMMAL		
[Balaenoptera borealis](#) Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
[Balaenoptera musculus](#) Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
[Balaenoptera physalus](#) Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area
[Orcaella heinsohni](#) Australian Snubfin Dolphin [81322]	Vulnerable	Species or species habitat may occur within area
[Sousa sahulensis](#) Australian Humpback Dolphin [87942]	Vulnerable	Species or species habitat may occur within area
REPTILE		
[Aipysurus apraefrontalis](#) Short-nosed Sea Snake, Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat 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	Congregation or aggregation known to occur within area
[Chelonia mydas](#) Green Turtle [1765]	Vulnerable	Congregation or aggregation known to occur within area

Scientific Name	Threatened Category	Presence Text
Dermochelys coriacea		
Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat likely to occur within area
Eretmochelys imbricata		
Hawksbill Turtle [1766]	Vulnerable	Congregation or aggregation known to occur within area
Natator depressus		
Flatback Turtle [59257]	Vulnerable	Congregation or aggregation known to occur within area
SHARK		
Carcharias taurus (west coast population)		
Grey Nurse Shark (west coast population) [68752]	Vulnerable	Species or species habitat likely to occur within area
Carcharodon carcharias		
White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area
Pristis clavata		
Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Species or species habitat known to occur within area
Pristis pristis		
Largetooth Sawfish, Freshwater Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Endangered	Species or species habitat may occur within area
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
null		

Scientific Name	Threatened Category	Presence Text
[Balaenoptera omurai](#) Omura's Whale [87136]		Species or species habitat likely to occur within area
Migratory Marine Birds		
[Anous stolidus](#) Common Noddy [825]		Species or species habitat may occur within area
[Apus pacificus](#) Fork-tailed Swift [678]		Species or species habitat likely to occur within area
[Calonectris leucomelas](#) Streaked Shearwater [1077]		Species or species habitat likely to occur within area
[Fregata ariel](#) Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area
[Fregata minor](#) Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat may occur within area
[Macronectes giganteus](#) Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
[Phaethon lepturus](#) White-tailed Tropicbird [1014]		Species or species habitat likely to occur within area
[Phaethon rubricauda](#) Red-tailed Tropicbird [994]		Species or species habitat likely to occur within area
[Sterna dougallii](#) Roseate Tern [817]		Foraging, feeding or related behaviour likely to 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 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	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 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	Congregation or aggregation known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Congregation or aggregation 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	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Dugong dugon Dugong [28]		Species or species habitat known to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Congregation or aggregation 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
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	Congregation or aggregation known to occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Vulnerable	Species or species habitat may occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area

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		
Largetooth Sawfish, Freshwater Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Endangered	Species or species habitat may occur within area
Pristis zijsron		
Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Species or species habitat 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]	Vulnerable	Species or species habitat may occur within area
Tursiops aduncus (Arafura/Timor Sea populations)		
Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat likely to occur within area
Migratory Wetlands Species		
Actitis hypoleucos		
Common Sandpiper [59309]		Species or species habitat may occur within area
Calidris acuminata		
Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area
Calidris canutus		
Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area
Calidris ferruginea		
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos		
Pectoral Sandpiper [858]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Numenius madagascariensis		
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pandion haliaetus		
Osprey [952]		Species or species habitat may occur within area

Other Matters Protected by the EPBC Act

Listed Marine Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
Bird		
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
Apus pacificus		
Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine 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

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]		Species or species habitat likely to occur within area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat may occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pandion haliaetus Osprey [952]		Species or species habitat may occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat likely to occur within area
Phaethon lepturus fulvus Christmas Island White-tailed Tropicbird, Golden Bosunbird [26021]	Endangered	Species or species habitat may occur within area
Phaethon rubricauda Red-tailed Tropicbird [994]		Species or species habitat likely to occur within area
Sterna dougallii Roseate Tern [817]		Foraging, feeding or related behaviour likely to occur within area
Fish		
Acentronura larsonae Helen's Pygmy Pipehorse [66186]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Bulbonaricus brauni Braun's Pughead Pipefish, Pug-headed Pipefish [66189]		Species or species habitat may occur within area
Campichthys tricarinatus Three-keel Pipefish [66192]		Species or species habitat may occur within area
Choeroichthys brachysoma Pacific Short-bodied Pipefish, Short-bodied Pipefish [66194]		Species or species habitat may occur within area
Choeroichthys latispinosus Muiron Island Pipefish [66196]		Species or species habitat may occur within area
Choeroichthys suillus Pig-snouted Pipefish [66198]		Species or species habitat may occur within area
Corythoichthys flavofasciatus 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
Doryrhamphus multiannulatus Many-banded Pipefish [66717]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Doryrhamphus negrosensis Flagtail Pipefish, Masthead Island Pipefish [66213]		Species or species habitat may occur within area
Festucalex scalaris Ladder Pipefish [66216]		Species or species habitat may occur within area
Filicampus tigris Tiger Pipefish [66217]		Species or species habitat may occur within area
Halicampus brocki Brock's Pipefish [66219]		Species or species habitat may occur within area
Halicampus grayi Mud Pipefish, Gray's Pipefish [66221]		Species or species habitat may occur within area
Halicampus nitidus Glittering Pipefish [66224]		Species or species habitat may occur within area
Halicampus spinirostris Spiny-snout Pipefish [66225]		Species or species habitat may occur within area
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

Scientific Name	Threatened Category	Presence Text
Hippocampus kuda Spotted Seahorse, Yellow Seahorse [66237]		Species or species habitat may occur within area
Hippocampus planifrons Flat-face Seahorse [66238]		Species or species habitat may occur within area
Hippocampus spinosissimus Hedgehog Seahorse [66239]		Species or species habitat may occur within area
Hippocampus trimaculatus Three-spot Seahorse, Low-crowned Seahorse, Flat-faced Seahorse [66720]		Species or species habitat may occur within area
Micrognathus micronotopterus Tidepool Pipefish [66255]		Species or species habitat may occur within area
Phoxocampus belcheri Black Rock Pipefish [66719]		Species or species habitat may occur within area
Solegnathus hardwickii Pallid Pipehorse, Hardwick's Pipehorse [66272]		Species or species habitat may occur within area
Solegnathus lettiensis Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area
Solenostomus cyanopterus Robust Ghostpipefish, Blue-finned Ghost Pipefish, [66183]		Species or species habitat may occur within area
Syngnathoides biaculeatus Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area
Trachyrhamphus bicoarctatus Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
[Trachyrhamphus longirostris](#) Straightstick Pipefish, Long-nosed Pipefish, Straight Stick Pipefish [66281]		Species or species habitat may occur within area
Mammal		
[Dugong dugon](#) Dugong [28]		Species or species habitat 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 likely to occur within area
[Aipysurus laevis](#) Olive Sea Snake, Olive-brown Sea Snake [1120]		Species or species habitat may occur within area
[Aipysurus mosaicus as Aipysurus eydouxii](#) Mosaic Sea Snake [87261]		Species or species habitat may occur within area
[Aipysurus tenuis](#) Brown-lined Sea Snake, Mjoberg's Sea Snake [1121]		Species or species habitat may occur within area
[Caretta caretta](#) Loggerhead Turtle [1763]	Endangered	Congregation or aggregation known to occur within area
[Chelonia mydas](#) Green Turtle [1765]	Vulnerable	Congregation or aggregation known to occur within area
[Crocodylus porosus](#) Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat likely to occur within area
Emydocephalus annulatus Eastern Turtle-headed Sea Snake [1125]		Species or species habitat may occur within area
Ephalophis greyae as Ephalophis greyi Mangrove Sea Snake [93738]		Species or species habitat may occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Congregation or aggregation 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

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
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 acutorostrata		
Minke Whale [33]		Species or species habitat may occur within area
Balaenoptera borealis		
Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
Balaenoptera edeni		
Bryde's Whale [35]		Species or species habitat likely to occur within area
Balaenoptera musculus		
Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
Balaenoptera omurai		
Omura's Whale [87136]		Species or species habitat likely to occur within area
Balaenoptera physalus		
Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area

Current Scientific Name	Status	Type of Presence
Delphinus delphis Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
Feresa attenuata Pygmy Killer Whale [61]		Species or species habitat may occur within area
Globicephala macrorhynchus Short-finned Pilot Whale [62]		Species or species habitat may occur within area
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
Kogia breviceps Pygmy Sperm Whale [57]		Species or species habitat may occur within area
Kogia sima Dwarf Sperm Whale [85043]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]		Breeding known to occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Vulnerable	Species or species habitat may occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
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]	Vulnerable	Species or species habitat may occur within area
[Stenella attenuata](#) Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area
[Stenella coeruleoalba](#) Striped Dolphin, Euphrosyne Dolphin [52]		Species or species habitat may occur within area
[Stenella longirostris](#) Long-snouted Spinner Dolphin [29]		Species or species habitat may occur within area
[Steno bredanensis](#) Rough-toothed Dolphin [30]		Species or species habitat may occur within area
[Tursiops aduncus](#) Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat 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

Habitat Critical to the Survival of Marine Turtles		[Resource Information]
Scientific Name	Behaviour	Presence
All year (Jun - Aug)		

Scientific Name	Behaviour	Presence
Natator depressus Flatback Turtle [59257]	Nesting	Known to occur
Oct - Feb		
Eretmochelys imbricata Hawksbill Turtle [1766]	Nesting	Known to occur
Oct - Mar		
Chelonia mydas Green Turtle [1765]	Nesting	Known to occur

Extra Information

EPBC Act Referrals [Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status
Browse to North West Shelf Development, Indian Ocean, WA	2018/8319		Approval
DAVROS MC 3D marine seismic survey northwaet of Dampier, WA	2013/7092		Completed
Deep Water Northwest Shelf 2D Seismic Survey	2007/3260		Completed
Development of Mutineer and Exeter petroleum fields for oil production, Permit	2003/1033		Completed
North West Shelf Project Extension, Carnarvon Basin, WA	2018/8335		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

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
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)			
'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
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
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
Decommissioning of the Legendre facilities	2010/5681	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
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 Manner)	Post-Approval
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
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
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

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Westralia SPAN Marine Seismic Survey, WA & NT	2012/6463	Not Controlled Action (Particular Manner)	Post-Approval

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		
Caretta caretta Loggerhead Turtle [1763]	Internesting buffer	Known to occur
Chelonia mydas Green Turtle [1765]	Internesting buffer	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Internesting buffer	Known to occur
Natator depressus Flatback Turtle [59257]	Internesting buffer	Known to occur
Seabirds		
Ardenna pacifica Wedge-tailed Shearwater [84292]	Breeding	Known to occur
Sterna dougallii Roseate Tern [817]	Breeding	Known to occur
Sternula nereis Fairy Tern [82949]	Breeding	Known to occur
Sharks		
Rhincodon typus Whale Shark [66680]	Foraging	Known to occur
Whales		

Scientific Name	Behaviour	Presence
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

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-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
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-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

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Please feel free to provide feedback via the Contact us page.

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Australian Government

Department of Climate Change, Energy, the Environment and Water

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-Dec-2025

Summary

Details

- Matters of NES
- Other Matters Protected by the EPBC Act
- Extra Information

Caveat

Acknowledgements

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	1
National Heritage Places:	1
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	2
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	34
Listed Migratory Species:	59

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at https://www.dcceew.gov.au/parks-heritage/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	96
Whales and Other Cetaceans:	29
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	4
Habitat Critical to the Survival of Marine Turtles:	3

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	2
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	63
Key Ecological Features (Marine):	2
Biologically Important Areas:	27
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

World Heritage Properties		[Resource Information]
Name	State	Legal Status
Murujuga Cultural Landscape	WA	Declared property

National Heritage Places		[Resource Information]
Name	State	Legal Status
Indigenous		
Dampier Archipelago (including Burrup Peninsula)	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)

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 likely to occur within area
Charadrius leschenaultii		
Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Erythrotriorchis radiatus Red Goshawk [942]	Endangered	Species or species habitat may occur within area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat may 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
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat 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 westralis Red-tailed Tropicbird (Indian Ocean), Indian Ocean Red-tailed Tropicbird [91824]	Endangered	Species or species habitat likely to occur within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area
Sternula albifrons Little Tern [82849]	Vulnerable	Species or species habitat may occur within area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Breeding known to occur within area
MAMMAL		
Balaenoptera borealis Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
[Balaenoptera musculus](#)		
Blue Whale [36]	Endangered	Migration route known to occur within area
[Balaenoptera physalus](#)		
Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area
[Orcaella heinsohni](#)		
Australian Snubfin Dolphin [81322]	Vulnerable	Species or species habitat likely to occur within area
[Sousa sahulensis](#)		
Australian Humpback Dolphin [87942]	Vulnerable	Species or species habitat likely to occur within area
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
[Dermochelys coriacea](#)		
Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
[Eretmochelys imbricata](#)		
Hawksbill Turtle [1766]	Vulnerable	Breeding 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
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 clavata		
Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Species or species habitat known to occur within area
Pristis pristis		
Largetooth Sawfish, Freshwater Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Endangered	Species or species habitat may occur within area
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
null		
Balaenoptera omurai		
Omura's Whale [87136]		Species or species habitat likely to occur within area
Migratory Marine Birds		
Anous stolidus		
Common Noddy [825]		Species or species habitat may occur within area
Apus pacificus		
Fork-tailed Swift [678]		Species or species habitat likely to occur within area

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 likely to occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat 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]		Species or species habitat likely to occur within area
Phaethon rubricauda Red-tailed Tropicbird [994]		Species or species habitat likely to occur within area
Sterna dougallii Roseate Tern [817]		Breeding likely to occur within area
Sternula albifrons Little Tern [82849]	Vulnerable	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 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	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	Breeding likely to occur within area
Dugong dugon Dugong [28]		Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
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
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 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]	Vulnerable	Species or species habitat likely to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area
Pristis clavata Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Species or species habitat known to occur within area
Pristis pristis Largetooth Sawfish, Freshwater Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
[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]	Vulnerable	Species or species habitat likely to occur within area
[Tursiops aduncus (Arafura/Timor Sea populations)](#) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat known to occur within area
Migratory Terrestrial Species		
[Hirundo rustica](#) Barn Swallow [662]		Species or species habitat may occur within area
[Motacilla cinerea](#) Grey Wagtail [642]		Species or species habitat may occur within area
[Motacilla flava](#) Yellow Wagtail [644]		Species or species habitat may occur within area
Migratory Wetlands Species		
[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 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 likely to occur within area

Scientific Name	Threatened Category	Presence Text
Calidris melanotos		
Pectoral Sandpiper [858]		Species or species habitat may occur within area
Charadrius leschenaultii		
Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area
Charadrius veredus		
Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area
Glareola maldivarum		
Oriental Pratincole [840]		Species or species habitat may occur within area
Limnodromus semipalmatus		
Asian Dowitcher [843]	Vulnerable	Species or species habitat may occur within area
Limosa lapponica		
Bar-tailed Godwit [844]		Species or species habitat 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

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 known to occur within area

Scientific Name	Threatened Category	Presence Text
Anous stolidus Common Noddy [825]		Species or species habitat may occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area
Ardenna pacifica as Puffinus pacificus Wedge-tailed Shearwater [84292]		Breeding known to 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 likely to occur within area overfly marine area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat likely to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area overfly marine area
Chroicocephalus novaehollandiae as Larus novaehollandiae Silver Gull [82326]		Breeding known to occur within area

Scientific Name	Threatened Category	Presence Text
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat 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
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat may occur within area overfly marine area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area overfly marine area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat 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
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat likely to occur within area
Phaethon lepturus fulvus Christmas Island White-tailed Tropicbird, Golden Bosunbird [26021]	Endangered	Species or species habitat may occur within area
Phaethon rubricauda Red-tailed Tropicbird [994]		Species or species habitat likely to occur within area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area overfly marine area
Sterna dougallii Roseate Tern [817]		Breeding likely to occur within area
Sternula albifrons as Sterna albifrons Little Tern [82849]	Vulnerable	Species or species habitat may occur within area
Sternula nereis as Sterna nereis Fairy Tern [82949]		Breeding known to occur within area

Scientific Name	Threatened Category	Presence Text
[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
Fish		
[Acentronura larsonae](#) Helen's Pygmy Pipehorse [66186]		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
[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

Scientific Name	Threatened Category	Presence Text
Doryrhamphus excisus Bluestripe Pipefish, Indian Blue-stripe Pipefish, Pacific Blue-stripe Pipefish [66211]		Species or species habitat may occur within area
Doryrhamphus janssi Cleaner Pipefish, Janss' Pipefish [66212]		Species or species habitat may occur within area
Doryrhamphus multiannulatus Many-banded Pipefish [66717]		Species or species habitat may occur within area
Doryrhamphus negrosensis Flagtail Pipefish, Masthead Island Pipefish [66213]		Species or species habitat may occur within area
Festucalex scalaris Ladder Pipefish [66216]		Species or species habitat may occur within area
Filicampus tigris Tiger Pipefish [66217]		Species or species habitat may occur within area
Halicampus brocki Brock's Pipefish [66219]		Species or species habitat may occur within area
Halicampus 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 histrix Spiny Seahorse, Thorny Seahorse [66236]		Species or species habitat may occur within area
Hippocampus kuda Spotted Seahorse, Yellow Seahorse [66237]		Species or species habitat may occur within area
Hippocampus planifrons Flat-face Seahorse [66238]		Species or species habitat may occur within area
Hippocampus spinosissimus Hedgehog Seahorse [66239]		Species or species habitat may occur within area
Hippocampus trimaculatus Three-spot Seahorse, Low-crowned Seahorse, Flat-faced Seahorse [66720]		Species or species habitat may occur within area
Micrognathus micronotopterus Tidepool Pipefish [66255]		Species or species habitat may occur within area
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

Scientific Name	Threatened Category	Presence Text
Solenostomus cyanopterus Robust Ghostpipefish, Blue-finned Ghost Pipefish, [66183]		Species or species habitat may occur within area
Syngnathoides biaculeatus Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area
Trachyrhamphus bicoarctatus Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280]		Species or species habitat may occur within area
Trachyrhamphus longirostris Straightstick Pipefish, Long-nosed Pipefish, Straight Stick Pipefish [66281]		Species or species habitat may occur within area
Mammal		
Dugong dugon Dugong [28]		Species or species habitat 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

Scientific Name	Threatened Category	Presence Text
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	Breeding likely to occur within area
Emydocephalus annulatus Eastern Turtle-headed Sea Snake [1125]		Species or species habitat may occur within area
Ephalophis greyae as Ephalophis greyi Mangrove Sea Snake [93738]		Species or species habitat may occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding 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

Scientific Name	Threatened Category	Presence Text
Hydrophis major as Disteira major Olive-headed Sea Snake [93512]		Species or species habitat may occur within area
Hydrophis ornatus Spotted Sea Snake, Ornate Reef Sea Snake [1111]		Species or species habitat may occur within area
Hydrophis peronii as Acalyptophis peronii Horned Sea Snake [93509]		Species or species habitat may occur within area
Hydrophis platura as Pelamis platurus Yellow-bellied Sea Snake [93746]		Species or species habitat may occur within area
Hydrophis stokesii as Astrotia stokesii Stokes' Sea Snake [93510]		Species or species habitat may occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding 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 borealis Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat likely to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Migration route known to occur within area
Balaenoptera omurai Omura's Whale [87136]		Species or species habitat likely to occur within area

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
[Lagenodelphis hosei](#) Fraser's Dolphin, Sarawak Dolphin [41]		Species or species habitat may occur within area
[Megaptera novaeangliae](#) Humpback Whale [38]		Breeding known to occur within area
[Mesoplodon densirostris](#) Blainville's Beaked Whale, Dense-beaked Whale [74]		Species or species habitat may occur within area
[Orcaella heinsohni](#) Australian Snubfin Dolphin [81322]	Vulnerable	Species or species habitat likely to occur within area

Current Scientific Name	Status	Type of Presence
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Peponocephala electra Melon-headed Whale [47]		Species or species habitat may occur within area
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area
Pseudorca crassidens False Killer Whale [48]		Species or species habitat likely to occur within area
Sousa sahulensis Australian Humpback Dolphin [87942]	Vulnerable	Species or species habitat likely to occur within area
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area
Stenella coeruleoalba Striped Dolphin, Euphrosyne Dolphin [52]		Species or species habitat may occur within area
Stenella longirostris Long-snouted Spinner Dolphin [29]		Species or species habitat may occur within area
Steno bredanensis Rough-toothed Dolphin [30]		Species or species habitat may occur within area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
Tursiops aduncus (Arafura/Timor Sea populations) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat known to occur within area

Current Scientific Name	Status	Type of Presence
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area
Ziphius cavirostris Cuvier's Beaked Whale, Goose-beaked Whale [56]		Species or species habitat may occur within area

Australian Marine Parks [Resource Information]

Park Name	Zone & IUCN Categories
Dampier	Habitat Protection Zone (IUCN IV)
Dampier	Multiple Use Zone (IUCN VI)
Montebello	Multiple Use Zone (IUCN VI)
Dampier	National Park Zone (IUCN II)

Habitat Critical to the Survival of Marine Turtles [Resource Information]

Scientific Name	Behaviour	Presence
All year (Jun - Aug)		
Natator depressus Flatback Turtle [59257]	Nesting	Known to occur
Oct - Feb		
Eretmochelys imbricata Hawksbill Turtle [1766]	Nesting	Known to occur
Oct - Mar		
Chelonia mydas Green Turtle [1765]	Nesting	Known to occur

Extra Information

State and Territory Reserves [Resource Information]

Protected Area Name	Reserve Type	State
Unnamed WA36915	Nature Reserve	WA
Unnamed WA40877	5(1)(h) Reserve	WA

EPBC Act Referrals [Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status

Title of referral	Reference	Referral Outcome	Assessment Status
Browse to North West Shelf Development, Indian Ocean, WA	2018/8319		Approval
DAVROS MC 3D marine seismic survey northwaet of Dampier, WA	2013/7092		Completed
Deep Water Northwest Shelf 2D Seismic Survey	2007/3260		Completed
Development of Mutineer and Exeter petroleum fields for oil production, Permit	2003/1033		Completed
North West Shelf Project Extension, Carnarvon Basin, WA	2018/8335		Approval
Project Highclere Cable Lay and Operation	2022/09203		Completed
Controlled action			
Anketell Point Iron Ore Processing & Export Port	2009/5120	Controlled Action	Post-Approval
Construct and operate LNG & domestic gas plant including onshore and offshore facilities - Wheatston	2008/4469	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
Echo-Yodel Production Wells	2000/11	Controlled Action	Post-Approval
Equus Gas Fields Development Project, Carnarvon Basin	2012/6301	Controlled Action	Completed
Eramurra Industrial Salt Project	2021/9027	Controlled Action	Assessment Approach
Pluto Gas Project	2005/2258	Controlled Action	Completed
Not controlled action			
'Goodwyn A' Low Pressure Train Project	2003/914	Not Controlled Action	Completed
Development of iron ore facilities	2013/7013	Not Controlled Action	Completed
Drilling of an exploration well Gats-1 in Permit Area WA-261-P	2004/1701	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
Echo A Development WA-23-L, WA-24-L	2005/2042	Not Controlled Action	Completed
Maia-Gaea Exploration wells	2000/17	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 Expansion and Dredging	2003/1265	Not Controlled Action	Completed
Project Highclere Geophysical Survey	2021/9023	Not Controlled Action	Completed
Searipple gas and condensate field development	2000/89	Not Controlled Action	Completed
sub-sea tieback of Perseus field wells	2004/1326	Not Controlled Action	Completed
Telstra North Rankin Spur Fibre Optic Cable	2016/7836	Not Controlled Action	Completed
To construct and operate an offshore submarine fibre optic cable, WA	2014/7373	Not Controlled Action	Completed
Western Flank Gas Development	2005/2464	Not Controlled Action	Completed
Not controlled action (particular manner)			
'Tourmaline' 2D marine seismic survey, permit areas WA-323-P, WA-330-P and WA-32	2005/2282	Not Controlled Action (Particular Manner)	Post-Approval
"Leanne" offshore 3D seismic exploration, WA-356-P	2005/1938	Not Controlled Action (Particular Manner)	Post-Approval
2D Seismic Survey	2005/2146	Not Controlled Action (Particular Manner)	Post-Approval
2D Seismic Survey Permit Area WA-352-P	2008/4628	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
2D seismic survey within permit WA-291	2007/3265	Not Controlled Action (Particular Manner)	Post-Approval
3D Marine Seismic Survey 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
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
Cue Seismic Survey within WA-359-P, WA-361-P and WA-360-P	2007/3647	Not Controlled Action (Particular Manner)	Post-Approval
Decommissioning of the Legendre facilities	2010/5681	Not Controlled Action (Particular Manner)	Post-Approval
Demeter 3D Seismic Survey, off Dampier, WA	2002/900	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
Fletcher-Finucane Development, WA26-L and WA191-P	2011/6123	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Foxhound 3D Non-Exclusive Marine Seismic Survey	2009/4703	Not Controlled Action (Particular Manner)	Post-Approval
Greater Western Flank Phase 1 gas Development	2011/5980	Not Controlled Action (Particular Manner)	Post-Approval
Harmony 3D Marine Seismic Survey	2012/6699	Not Controlled Action (Particular Manner)	Post-Approval
Judo Marine 3D Seismic Survey within and adjacent to WA-412-P	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
Moosehead 2D seismic survey within permit WA-192-P	2005/2167	Not Controlled Action (Particular Manner)	Post-Approval
Offshore Drilling Campaign	2011/5830	Not Controlled Action (Particular Manner)	Post-Approval
Port Walcott upgrade, dredging & spoil disposal, & channel realignment	2006/2806	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
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
Scarborough Development nearshore component, NWS, WA	2018/8362	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
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
Tidepole Maz 3D Seismic Survey Campaign	2007/3706	Not Controlled Action (Particular Manner)	Post-Approval
Undertake a 3D marine seismic survey	2010/5695	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		
Caretta caretta		
Loggerhead Turtle [1763]	Internesting buffer	Known to occur

Scientific Name	Behaviour	Presence
Caretta caretta Loggerhead Turtle [1763]	Nesting	Known to occur
Chelonia mydas Green Turtle [1765]	Foraging	Known 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]	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]	Migration corridor	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Nesting	Known to occur
Natator depressus Flatback Turtle [59257]	Foraging	Known to occur

Scientific Name	Behaviour	Presence
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
Seabirds		
Ardenna pacifica Wedge-tailed Shearwater [84292]	Breeding	Known to occur
Sterna dougallii Roseate Tern [817]	Breeding	Known to occur
Sternula nereis Fairy Tern [82949]	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]	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

Report of an accident, dangerous occurrence or environmental incident form (FM0831): Form - Report of an Accident Dangerous Occurrence or Environmental Incident (A159980).docx

NOPSEMA Recordable Environmental incident monthly Reporting Form

Monthly Environmental Incident Reports form (A198750).docx

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APPENDIX F STAKEHOLDER CONSULTATION

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Woodside Energy

Appendix F: Angel Carbon Capture and Storage Geophysical and Geotechnical Surveys Environment Plan

January 2026

Revision 0

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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)), 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 Angel Carbon Capture and Storage (CCS) Geophysical and Geotechnical (GPGT) Surveys Environment Plan (EP), Woodside has taken a broad and proactive tiered consultation approach over a period of 17 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.
Broad Understanding	Broad communication activities were undertaken to build awareness of consultation and enable self-identification, supported by targeted education materials.

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.

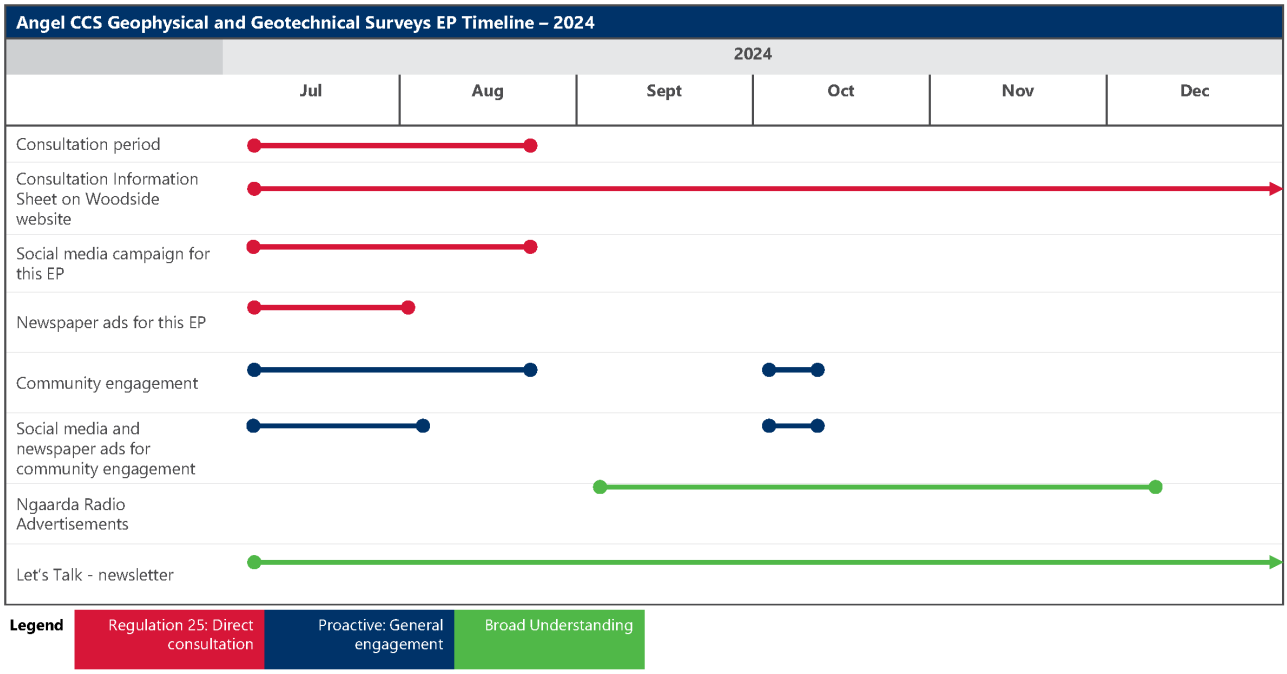
The approach for this included:

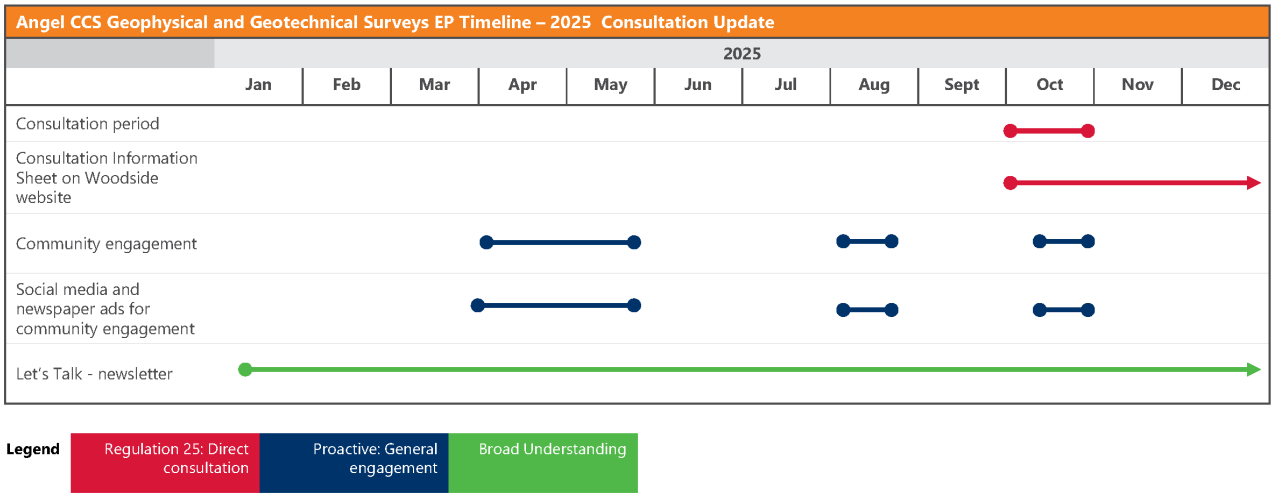
- a consultation period of up to 17 months

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- 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 from the initial consultation period in 2024 and consultation update in 2025:





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1.3 Traditional Custodian consultation approach

Woodside has meaningful long-term relationships with relevant First Nations people 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 Angel CCS GPGT Surveys 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 First Nations people based on availability, cultural protocols and the preferred method of consultation for each relevant person.

Woodside consulted on this EP in 2024, however, due to operational decisions, the EP relating to this consultation was not submitted for assessment. Noting this, Woodside provided an additional opportunity for stakeholders to provide feedback in October 2025.

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, which could be attended by any NGOs including local groups (if NGOs attended these sessions, they did not identify themselves).
- participated in regional community events (which were advertised) in the Pilbara, which could be attended by any NGOs including local groups (if NGOs attended these sessions, they did not identify themselves).

1.5 NGO response

Woodside consulted 7 NGOs at its discretion. During initial consultation for the Angel CCS GPGT Surveys EP in July 2025, no responses from NGOs were received. Following the consultation update in October 2025, Doctors for the Environment Australia (DEA), provided feedback on the surveys, but most feedback focused on the greater CCS topic which is outside the scope of the EP.

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2. RELEVANCY ASSESSMENT

2.1 Assessment of relevant persons for the proposed activity

The result of Woodside's assessment of relevant persons in accordance with regulation 25 (1) of the Environment Regulations is outlined below at Table 1 and Table 2.

Persons or organisations that Woodside assessed as not relevant but nonetheless chose to contact at its discretion in accordance with Section 5.3.7 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 EMBA, shown in Figure 2-1.

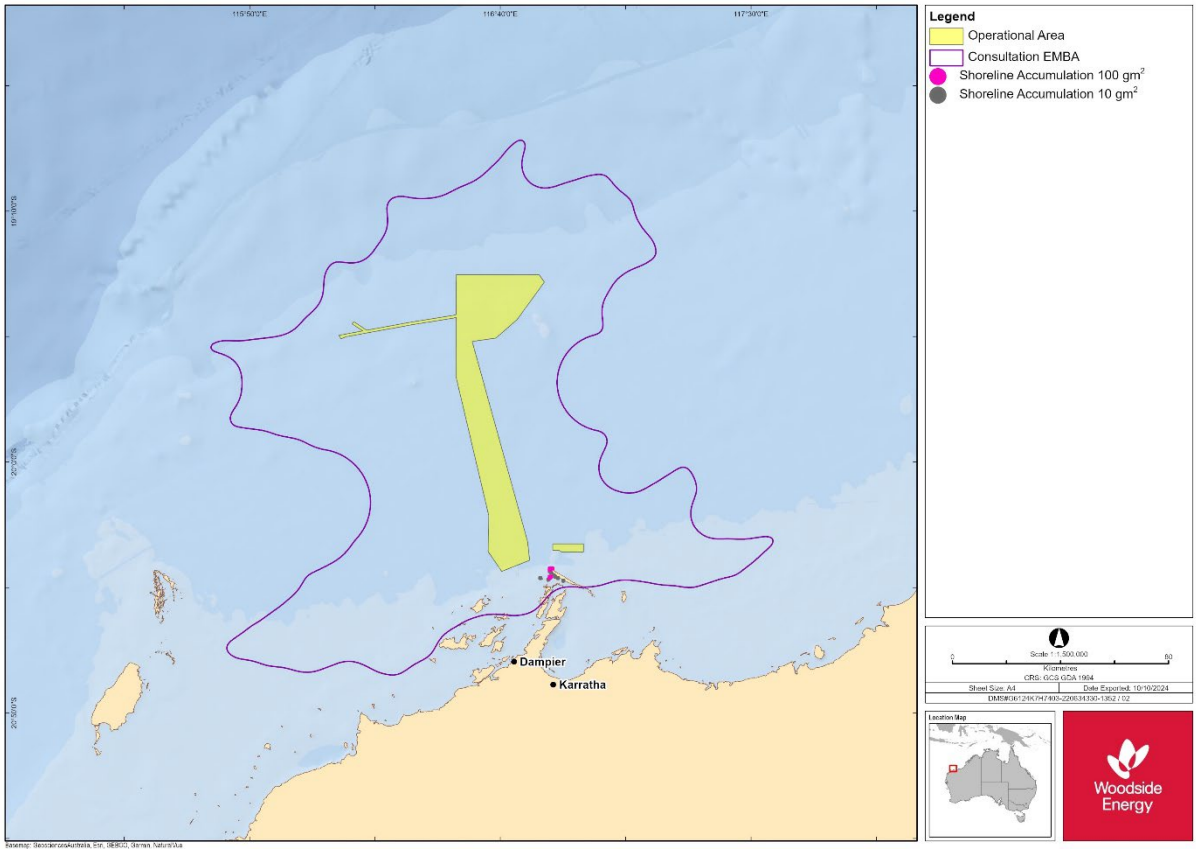


Figure 2-1: Operational Area and EMBA for this EP

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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. No Commonwealth fisheries are active in the Operational Area. The North West Slope Trawl Fishery is active in the EMBA. AFMA's responsibilities may be relevant to the activity as the North West Slope Trawl Fishery is 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
Australian Maritime Safety Authority	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.	Yes

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(AMSA) – Marine Safety		AMSA – MarineSafety's responsibilities may be relevant to the activity as there are proposed vessel activities.	
Department of Agriculture, Fisheries and Forestry (DAFF) – Fisheries	Responsible for implementing Commonwealth policies and programs to support agriculture, fishery, food and forestry industries	Woodside has applied its methodology for 'Government departments / agencies – marine' under regulation 25(1)(a) of the Environment Regulations. No Commonwealth fisheries are active in the Operational Area. The North West Slope Trawl Fishery is active in the EMBA. DAFF – Fisheries responsibilities may be relevant to the activity as the North West Slope Trawl Fishery is 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 Operating Area and 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 (Area 2), Marine Aquarium Fish Managed Fishery, Nickol Bay Prawn Managed Fishery, Onslow Prawn Managed Fishery, Pilbara Crab Managed Fishery, Pilbara Fish Trawl Managed Fishery, Pilbara Trap Managed Fishery, Pilbara Line Fishery and Specimen Shell Managed Fishery are active in the Operational Area. The Mackerel Managed Fishery (Area 2), Marine Aquarium Fish Managed Fishery, Nickol Bay Prawn Managed Fishery, Onslow Prawn Managed Fishery, Pilbara Crab Managed Fishery, Pilbara Fish Trawl Managed Fishery, Pilbara Trap Managed Fishery, Pilbara Line Fishery Specimen Shell Managed Fishery and Western Australia Sea Cucumber 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.	Yes
Department of Transport and Major Infrastructure (DTMI,	Legislated responsibility for oil pollution response in State waters	Woodside has applied its methodology for 'Government departments / agencies – marine' under regulation 25(1)(b) of the Environment Regulations.	Yes

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previously known as Department of Transport/DoT)		The proposed activity has a hydrocarbon spill risk tied to vessel collision, which may require DTMI response in State waters.	
Pilbara Ports	Pilbara Ports encompasses the Ports of Ashburton, Dampier, Port Hedland and Varanus Island. Pilbara Ports oversees the operation of the greenfield ports of Anketell, Balla Balla, Cape Preston East, Cape Preston West and Urala. Pilbara Ports oversees *the Shipping and Pilotage Act 1967* ports of Barrow Island, Cape Preston, Onslow and Port Walcott.	Woodside has applied its methodology for 'Government departments / agencies – marine' under regulation 25(1)(b) of the Environment Regulations. The proposed activity has the potential to impact Pilbara Ports' responsibilities as the EMBA overlaps the Pilbara Ports' area of responsibility.	Yes
Western Australian Museum (WAM)	Manages 200 shipwreck sites of the 1,500 known to be located off the Western Australian coast.	Woodside has applied its methodology for 'Historical cultural heritage groups or organisations' under regulation 25(1)(d) of the Environment Regulations. There are known shipwrecks overlapping the EMBA for which the Western Australian Museum may be responsible.	Yes
Commonwealth and WA State Government Departments or Agencies – Environment			
Clean Energy Regulator (CER)	The Clean Energy Regulator administers schemes legislated by the Australian Government for measuring, managing, reducing or offsetting Australia's carbon emissions, determined by climate change law.	Woodside has applied its methodology for 'Government departments / agencies – environment' under regulation 25(1)(a) of the Environment Regulations. CER's responsibilities are not relevant to this EP as Woodside consults CER for operational EPs in relation to emissions and climate related matters.	No
Department of Agriculture, Fisheries and Forestry (DAFF) – Biosecurity (marine	DAFF administers, implements and enforces the *Biosecurity Act 2015*. The Department requests	Woodside has applied its methodology for 'Government departments / agencies – environment' under regulation 25(1)(a) of the Environment Regulations.	Yes

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pests, vessels, aircraft and personnel)	to be consulted where an activity has the potential to transfer marine pests. DAFF also has inspection and reporting requirements to ensure that all conveyances (vessels, installations and aircraft) arriving in Australian territory comply with international health regulations and that any biosecurity risk is managed. DAFF requests to be consulted where an activity involves the movement of aircraft or vessels between Australia and offshore petroleum activities either inside or outside Australian territory.	DAFF – Biosecurity's responsibilities may be relevant to the proposed activities in the EMBA in the prevention of introduced marine species.	
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	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.	Yes

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	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.		
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 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).	Yes
Department of Water Environment Regulation (DWER)	Responsible for management and regulation of WA's environment and water resources.	DPLH requested DWER be consulted. Woodside has applied its methodology for 'Government departments / agencies – environment' under regulation 25(1)(b) of the Environment Regulations. The department is responsible for WA environment and water regulation, serving as a 'one stop shop' for industry and developers, with the aim of streamlining and simplifying regulation. Woodside chose to contact DWER at its discretion in line with Section 5.3.7.	No.
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. NCWHAC's responsibilities are not relevant to the activity as the EMBA does not overlap the Ningaloo Marine Park.	No
Commonwealth and State Government Departments or Agencies – Industry			
Department of Mines, Petroleum and Exploration (DMPE, formerly known as Department of Energy, Mines, Industry	Department of relevant State Minister	Required to be consulted under regulation 25(1)(c) of the Environment Regulations.	Yes

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Regulation and Safety (DEMIRS))			
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. Woodside chose to contact ASBTIA at its discretion in line with Section 5.3.7.	No
Commonwealth Fisheries Association (CFA)	Represents the interests of commercial fishers with licenses 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. No fisheries are active in the Operational Area. CFA's functions may be relevant to the activity as the North West Slope Trawl Fishery is active in the EMBA.	Yes
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. 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.	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.	No

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		Woodside does not consider that the proposed activity will present a risk to licence holders, given since 1992, the majority of Australian catch has concentrated in south-eastern Australia. (Patterson et al., 2022). In addition, given fishing methods by licence holders for species fished in this fishery (Australia has a 35% share of total global allowable catch of Southern Bluefin Tuna, which is value-added through tuna ranching near Port Lincoln (South Australia), or fishing effort in New South Wales (Australian Southern Bluefin Tuna Industry Association). Woodside chose to contact ASBTIA and Southern Bluefin Tuna Fishery at its discretion in line with Section 5.3.7.	
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. Woodside chose to contact Tuna Australia at its discretion in line with Section 5.3.7.	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 or the EMBA.	No
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. The fishery does not overlap the Operational Area or the EMBA. Woodside chose to contact the fishery at its discretion in line with Section 5.3.7.	No
Western Tuna and Billfish Fishery	Commonwealth commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. Although the fishery overlaps the Operational Area and EMBA, it has not been active in the Operational Area or EMBA within the last 5 years. Woodside chose to contact the fishery at its discretion in line with Section 5.3.7.	No
State Commercial fisheries and peak representative bodies			
Aquaculture Council of Western Australia (ACWA)	State peak body for WA's aquaculture industry.	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under 25(1)(b) of the Environment Regulations. ACWA has been assessed as relevant to the proposed activity, as there are pearl leases active in the EMBA.	YES – added in 2025 consultation

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Western Australian Fishing Industry Council (WAFIC)	Represents the interests of commercial fishers with licences in State waters.	Woodside has applied its methodology for 'Government departments / agencies – marine' under regulation 25(1)(b) of the Environment Regulations. The Mackerel Managed Fishery (Area 2), Marine Aquarium Fish Managed Fishery, Nickol Bay Prawn Managed Fishery, Onslow Prawn Managed Fishery, Pilbara Crab Managed Fishery, Pilbara Trawl Fishery, Pilbara Trap Fishery, Pilbara Line Fishery and Specimen Shell Managed Fishery have been active in the Operational Area within the last five years. The Mackerel Managed Fishery (Area 2), Marine Aquarium Fish Managed Fishery, Nickol Bay Prawn Managed Fishery, Onslow Prawn Managed Fishery, Pilbara Crab Managed Fishery, Pilbara Trawl Fishery, Pilbara Trap Fishery, Pilbara Fishery, Specimen Shell Managed Fishery and Western Australia Sea Cucumber Fishery have been active in the EMBA within the last 5 years. WAFIC's functions may be relevant to the activity as the peak representative body for State fisheries. Under an agreement with Woodside, WAFIC issued consultation materials to relevant commercial fisheries licence holders. Woodside acknowledges WAFIC's consultation guidance and has applied this by consulting, via WAFIC, fisheries that are assessed as having a potential for interaction in the Operational Area. As per WAFIC's Commercial Fishing Consultation Framework for the Offshore Oil and Gas Sector and Consultation Approach for unplanned Events, consultation with State fisheries relevant to the EMBA of the proposed activity would be undertaken only in the event of an unplanned emergency scenario.	Yes
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 within 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 or the EMBA.	No
Gascoyne Demersal Scalefish Fishery	State commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. The fishery does not overlap the Operational Area or the EMBA.	No
Land Hermit Crab Fishery	State commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations.	No

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		The fishery does not overlap the Operational Area or the EMBA.	
Mackerel Managed Fishery (Area 2)	State commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. The fishery overlaps the Operational Area and the EMBA and has been active in the Operational Area and the EMBA within the last 5 years. Woodside acknowledges WAFIC's consultation guidance and has applied this by consulting, via WAFIC, fisheries that are assessed as having a potential for interaction in the Operational Area. As per WAFIC's Commercial Fishing Consultation Framework for the Offshore Oil and Gas Sector and Consultation Approach for Unplanned Events, consultation with State fisheries relevant to the EMBA of the proposed activity would however be undertaken only in the event of an unplanned emergency scenario.	Yes
Marine Aquarium Managed Fishery	State commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. The fishery overlaps the Operational Area and EMBA and has been active in the Operational Area and EMBA within the last 5 years. Woodside acknowledges WAFIC's consultation guidance and has applied this by consulting, via WAFIC, fisheries that are assessed as having a potential for interaction in the Operational Area. Proposed activities include water depths of 0-35 m. As per WAFIC's Commercial Fishing Consultation Framework for the Offshore Oil and Gas Sector and Consultation Approach for Unplanned Events, consultation with State fisheries relevant to the EMBA of the proposed activity would however be undertaken only in the event of an unplanned emergency scenario.	Yes
Nickol Bay Prawn Managed Fishery	State commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. The fishery 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, via WAFIC, fisheries that are assessed as having a potential for interaction in the Operational Area. As per WAFIC's Commercial Fishing Consultation Framework for the Offshore Oil and Gas Sector and Consultation Approach for Unplanned Events, consultation with State fisheries relevant to the EMBA of the proposed activity would however be undertaken only in the event of an unplanned emergency scenario	Yes

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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 is not in the Operational Area or EMBA.	No
Onslow 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 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, via WAFIC, fisheries that are assessed as having a potential for interaction in the Operational Area. As per WAFIC's Commercial Fishing Consultation Framework for the Offshore Oil and Gas Sector and Consultation Approach for Unplanned Events, consultation with State fisheries relevant to the EMBA of the proposed activity would however be undertaken only in the event of an unplanned emergency scenario.	Yes
Pearl Oyster Managed Fishery	State commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. Although the fishery overlaps the Operational Area and EMBA, the fishery has not been active in the Operational Area or EMBA within the last 5 years.	No
Pilbara Crab Managed Fishery	State commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. The fishery 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, via WAFIC, fisheries that are assessed as having a potential for interaction in the Operational Area. As per WAFIC's Commercial Fishing Consultation Framework for the Offshore Oil and Gas Sector and Consultation Approach for Unplanned Events, consultation with State fisheries relevant to the EMBA of the proposed activity would however be undertaken only in the event of an unplanned emergency scenario.	Yes
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.	Yes

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		Woodside acknowledges WAFIC's consultation guidance and has applied this by consulting, via WAFIC, fisheries that are assessed as having a potential for interaction in the Operational Area. As per WAFIC's Commercial Fishing Consultation Framework for the Offshore Oil and Gas Sector and Consultation Approach for Unplanned Events, consultation with State fisheries relevant to the EMBA of the proposed activity would however be undertaken only in the event of an unplanned emergency scenario.	
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, via WAFIC, fisheries that are assessed as having a potential for interaction in the Operational Area. As per WAFIC's Commercial Fishing Consultation Framework for the Offshore Oil and Gas Sector and Consultation Approach for Unplanned Events, consultation with State fisheries relevant to the EMBA of the proposed activity would however 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, via WAFIC, fisheries that are assessed as having a potential for interaction in the Operational Area. As per WAFIC's Commercial Fishing Consultation Framework for the Offshore Oil and Gas Sector and Consultation Approach for Unplanned Events, consultation with State fisheries relevant to the EMBA of the proposed activity would however be undertaken only in the event of an unplanned emergency scenario.	Yes
Shark Bay Crab Managed Fishery	State commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. The fishery is not in the Operational Area or EMBA.	No
Shark Bay Prawn Managed Fishery	State commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. The fishery is not in the Operational Area or EMBA.	No

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Shark Bay Scallop Managed Fishery	State commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. The fishery is not in the Operational Area or EMBA.	No
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. The fishery overlaps the Operational Area and EMBA but has not been active in the Operational Area and EMBA within 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. The fishery overlaps the Operational Area and EMBA and has been active in the Operational Area and EMBA within the last 5 years. While Woodside assessed the fishery as relevant in the Operational Area, WAFIC has advised there is no need to consult this fishery given the proposed activities. As per WAFIC's Commercial Fishing Consultation Framework for the Offshore Oil and Gas Sector and Consultation Approach for Unplanned Events, consultation with State fisheries relevant to the EMBA of the proposed activity would however be undertaken only in the event of an unplanned emergency scenario.	No
West Coast Deep Sea Crustacean Managed Fishery	State commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. The fishery overlaps the Operational Area and EMBA but has not been active in the Operational Area and 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 however be undertaken only in the event of an unplanned emergency scenario.	No
West Coast Demersal Scalefish Fishery	State commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. The fishery does not overlap the Operational Area or EMBA.	No
West Coast Rock Lobster Fishery	State commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations.	No

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		The fishery does not overlap the Operational Area or EMBA.	
Western Australia Sea Cucumber Fishery	State commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. The fishery does not overlap the Operational Area. The fishery overlaps the EMBA and has been active in the EMBA in the past five years. While Woodside assessed the fishery as relevant in the EMBA, WAFIC has advised there is no need to consult this fishery given the proposed activities. As per WAFIC's Commercial Fishing Consultation Framework for the Offshore Oil and Gas Sector and Consultation Approach for Unplanned Events, consultation with State fisheries relevant to the EMBA of the proposed activity would however be undertaken only in the event of an unplanned emergency scenario.	No
Western Rock Lobster Council	Represents the interests of the Western Rock Lobster Managed Fishery.	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. The West Coast Rock Lobster Managed Fishery 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			
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. 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	Yes

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		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, Super Yachts Perth Pty Ltd, The Great Escape 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			
Bounty Oil and Gas	Titleholder or Operator	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit area 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 area overlaps the EMBA and Operational Area.	Yes

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Coastal Oil and Gas / consulted as Fox Resources	Titleholder or Operator	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit area overlaps the EMBA.	Yes
Exxon Mobil Australia Resources Company	Titleholder or Operator	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. 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 area overlaps the EMBA.	Yes
Jadestone	Titleholder or Operator	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit area overlaps the EMBA.	Yes
JX Nippon O&G Exploration (Australia)	Titleholder or Operator	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit area overlaps the EMBA.	Yes
KATO Energy	Titleholder or Operator	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit area overlaps the EMBA.	Yes
KUFPEC	Titleholder or Operator	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit area overlaps the EMBA.	Yes
Longreach Capital Investment/ Beagle No. 1	Titleholder or Operator	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit area overlaps the EMBA.	Yes
Santos Energy	Titleholder or Operator	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit area overlaps the EMBA and Operational Area.	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 area overlaps the EMBA.	Yes

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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 area 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 area overlaps the EMBA.	Yes – added in 2025 with new title G-15-AP
Carbon CQ	Titleholder or Operator	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit area overlaps the EMBA.	Yes - added in 2025 with new title G-15-AP
SK Earthon Australia	Titleholder or Operator	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit area overlaps the EMBA.	Yes - added in 2025 with new title G-15-AP
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			
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 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 Burrup and Maitland Industrial Estates Agreement (BMIEA) or below the low water mark. MAC also owns and co-manages the Murujuga National Park, is responsible for the Dampier Archipelago National Heritage Place and the World Heritage listed Murujuga Cultural Landscape. MAC is also the Nominated Representative Corporation under the BMIEA. The EMBA is coastally adjacent to the Burrup and Maitland Industrial Estates.	Yes

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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/Yindjibarndi People Native Title claim, for which NAC and the Yindjibarndi Aboriginal Corporation are the Registered Native Title Bodies Corporate, overlaps the EMBA. NAC is also party to the Anketell Port, Infrastructure Corridor and Industrial Estates Agreement, which overlaps the EMBA and the RTIO Ngarluma Indigenous Land Use Agreement (Body Corporate Agreement), which is coastally adjacent to the EMBA. The EMBA overlaps the Dampier Marine Park, over which the North West Management Plan 2018 specifies NAC and Yindjibarndi Aboriginal Corporation as representing people who may have cultural interests in the marine park.	Yes
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. The Robe River Kuruma Aboriginal Corporation is party to the KM & YM Indigenous Land Use Agreement 2018, which overlaps 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. 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 KM & YM Indigenous Land Use Agreement 2018 and the Cape Preston Project Deed (YM Mardie ILUA), which overlap the EMBA, and party to the Cape Preston West Export Facility, which is 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, for which NAC and the Yindjibarndi Aboriginal Corporation are the Registered Native Title Bodies Corporate, overlaps the EMBA. The EMBA overlaps the Dampier Marine Park, over which the North West Management Plan 2018 specifies NAC and Yindjibarndi Aboriginal Corporation as representing people who may have cultural interests in the marine park.	Yes
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.	Yes

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		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 Representative Aboriginal/Torres Strait Islander Body (RATSIB) area overlaps the EMBA. 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.	
Yamatji Marlpa Aboriginal Corporation (YMAC)	Native Title Representative Body	Woodside has applied its methodology for 'Native Title Representative Bodies' under regulation 25(1)(d) of the Environment Regulations. YMAC is the Native Title Representative Body for the Yamatji and Pilbara regions of Western Australia. As such, they are not a Prescribed or Registered Native Title Body Corporate but exist to assist Native Title claimants and holders. 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 the specified contact for the Kuruma Marthudunera and Yaburara and Coastal Mardudhunera Indigenous Land Use Agreement, which is overlapped by the EMBA.	Yes
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 NAC; and the Yindjibarndi people settled their Native Title claim and established their nominated representative corporation, the Yindjibarndi Aboriginal Corporation. The NAC 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.	Yes

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Local government and elected Parliamentary representatives, community groups or organisations			
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 of Education, Pilbara Ports, Regional Development Australia, Pilbara Development Commission, Dampier Community Association, City of Karratha, Karratha & Districts Chamber of Commerce and Industry, Horizon Power, Murujuga Aboriginal Corporation (MAC)*. *NFYL and MAC were consulted directly as described above. Under regulation 25(1)(e), Woodside, at its discretion, chose to assess the KLG as a relevant person.	Yes
City of Karratha	Local government governed by the *Local Government Act 1995* representing the suburbs and localities of Baynton, Baynton West, Bulgarra, Cossack, Dampier, Gap Ridge, Karratha, Karratha Industrial Estate, Jingarri, Madigan, Millars Well, Nickol, Pegs Creek, Point Samson, Roebourne, Whim Creek and Wickham.	Woodside has applied its methodology for 'Local government and 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
Karratha & Districts Chamber of Commerce and Industry		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 District Chamber of Commerce and Industry's interests have the potential to be impacted by the proposed activities.	Yes
Other non-government groups or organisations or individuals			

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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 Australian Conservation Foundation's (ACF) relevance for the proposed activity. Woodside has assessed that ACF 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 ACF at its discretion in line with Section 5.3.7.	No
Australian Marine Conservation Society (AMCS)	Non-government organisation	Woodside has applied its methodology for 'Other non-government groups or organisations or individuals' under regulation 25(1)(d) of the Environment Regulations to Australian Marine Conservation Society's (AMCS) relevance for the proposed activity. Woodside has assessed that AMCS 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 (CCWA) 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
Greenpeace Australia Pacific (GAP)	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 GAP's public website material does not demonstrate an interest with 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). Woodside chose to contact GAP at its discretion in line with Section 5.3.7 of the EP.	No
350 Australia (350A)	Non-government organisation	Woodside has applied its methodology for 'Other non-government groups or organisations or individuals' under regulation 25(1)(d) of the Environment Regulations to 350 Australia's (350A) relevance for the proposed activity. Woodside has assessed that 350A does not have a publicly available statement (or purpose), website or social media material that demonstrates its functions, interests or activities are	No

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		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).	
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 (ACCR) relevance for the proposed activity. Woodside has assessed that ACCR 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
Climate Council	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 Climate Council's relevance for the proposed activity. Woodside has assessed that Climate Council 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).	No
Doctors for the Environment Australia (DEA)	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 Doctors for the Environment Australia's (DEA) relevance for the proposed activity. Woodside has assessed that DEA 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 DEA at its discretion in line with Section 5.3.7.	No
Friends of Australian Rock Art. Inc (FARA)	Non-government organisation	Woodside has applied its methodology for 'Other non-government groups or organisations or individuals' under regulation 25(1)(d) of the Environment Regulations to Friends of Australian Rock Art. Inc's (FARA) relevance for the proposed activity. Woodside has assessed that FARA 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).	No

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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. 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.	No
Sea Shepherd Australia (SSA)	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 Sea Shepherd Australia's (SSA) relevance for the proposed activity. Woodside has assessed that SSA 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).	No
The Wilderness Society (TWS)	Non-government organisation	Woodside has applied its methodology for 'Other non-government groups or organisations or individuals' under regulation 25(1)(d) of the Environment Regulations to The Wilderness Society's (TWS) relevance for the proposed activity. Woodside has assessed that TWS 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).	No
World Wildlife Fund (WWF) 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 World Wildlife Fund (WWF) Australia's relevance for the proposed activity. Woodside has assessed that WWF Australia 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).	No
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 Friends of the Earth Australia's relevance for the proposed activity. Woodside has assessed that Friends of the Earth Australia 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	No

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		activities in accordance with the intended outcome of consultation (as set out in Section 5.3.4).	
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 Maritime Union of Australia's (MUA) relevance for the proposed activity. Woodside has assessed that MUA 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).	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. There are known Telstra communication cables that intersect within the Operational Area.	Yes
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 Vocus communication cables that intersect within the Operational Area. Woodside chose to contact Vocus at its discretion in line with Section 5.3.7 of the EP.	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 is no known research being undertaken by AIMS that intersects within the EMBA. Woodside chose to contact AIMS at its discretion in line with Section 5.3.7 of the EP.	No
Commonwealth Scientific and Industrial Research Organisation (CSIRO)	Research institute	Woodside has applied its methodology for 'Research institutes and local conservation groups or organisations' under regulation 25(1)(d) of the Environment Regulations. There is no known research being undertaken by CSIRO that intersects within the EMBA. Woodside chose to contact CSIRO at its discretion in line with Section 5.3.7 of the EP.	No
Western Australian Marine Science Institution (WAMSI)	Research institute	Woodside has applied its methodology for 'Research institutes and local conservation groups or organisations' under regulation 25(1)(d) of the Environment Regulations. There is no known research being undertaken by WAMSI that intersects within the EMBA. Woodside chose to contact WAMSI at its discretion in line with Section 5.3.7 of the EP.	No

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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 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 ECU that intersects within the EMBA.	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 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. CCG's conservation activities do not have the potential to intersect with the EMBA as the EMBA does not overlap the North West Cape.	No
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 do not have the potential to intersect with the EMBA as the EMBA does not overlap the North West Cape or Ningaloo Reef.	No
Other First Nations Groups			
Save Our Songlines (SOS) and/ or [Individual 1]	Representatives of Non-Government Organisation SOS and/ or [Individual 1]	Woodside has applied its methodology for 'Traditional Custodians and nominated representative corporations' and 'Other non-government groups or organisations' under regulation 25(1)(d) of the Environment Regulations to determine SOS and/ or [Individual 1] relevance for the proposed activity.	Yes

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		SOS and/ or [Individual 1] stated interest is to stop or pause Scarborough gas and to stop new industry on the Burrup; and oppose planned expansion of the Burrup Hub industry by Woodside, Perdaman and Yara. In addition, their stated interests also include the protection of Murujuga rock art. As SOS have raised concerns relating to the processing of greenhouse gases on Murujuga, Woodside considers that SOS and/ or [Individual 1] are relevant for this activity.	

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3. CONSULTATION ACTIVITIES

3.1 Angel CCS GPGT Surveys EP consultation activities

Woodside has been conducting extensive consultation with relevant persons and other parties for this EP since July 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 activities.

A broad consultation process has been undertaken with relevant persons for the Angel CCS GPGT Surveys EP. Consultation aims to be inclusive, transparent, voluntary, respectful and two-way. Consultation was undertaken by email, letter, phone call and/or meetings and through advertising.

3.2 Discharging Regulation 25 of the Environment Regulations

Woodside advertised the planned activities proposed for this EP in national, state and relevant local newspapers as per the table below (also see Record of Consultation, reference 6.5). Regional newspapers do not require subscription and are available directly to households.

No direct comments or feedback were received from the advertisements.

Newspaper	Coverage and readership	Publication dates
The Australian	National (464,000)	8 July 2024
The West Australian	Regional (WA) (349,000)	8 July 2024
Pilbara News	Local (WA) (17,611)	10 July 2024
Midwest Times	Local (WA) (50,534)	10 July 2024
North West Telegraph	Local (WA) (8,154)	10 July 2024
Kimberley Echo	Local (WA) (480)	11 July 2024
National Indigenous Times	National	30 July 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 (8 July 2024), the stakeholder Consultation Information Sheet (CIS) has been available on Woodside's website. The consultation update issued starting on 1 October 2025, included a new CIS which is also available on Woodside's website. The Woodside Consultation Information Sheets include a toll-free 1800 phone number and Woodside's feedback email address (feedback@woodside.com) and later, the updated email address consultation@feedback.woodside.com.

The Woodside Consultation Activities webpage, (available by QR code on 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-focused 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 6.1.4), GIS shape files, shipwreck information (Record of Consultation, reference 6.1.5.), a submarine communication cable map (Record of Consultation, reference 6.1.6) and a defence zone map (Record of Consultation, reference 6.1.3).

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The relevant persons had two 30-day periods in which to provide feedback, given the initial consultation in July 2024 and consultation update in October 2025.

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 5.3.7 in the EP) or self-identified and Woodside assessed as not relevant are summarised at Appendix F, Table 3.

From 8 July 2024, Woodside commenced a geotargeted sponsored social media campaign (Record of Consultation, reference 6.7) covering 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	Dates	Impact
Meta: Facebook & Instagram	Karratha/Pilbara	8 July 2024 - 10 August 2024	Reach: 118,882 Frequency: 1.97 Impressions: 233,807 Clicks: 577 Click Through Rate 0.48%:

Below is a summary of comments and reactions to the social media campaign. Please note comments and reactions are not available for Instagram.

Platform	Number of reactions	Number of comments	Comments Relevant to EP
Meta - Facebook	74 👍 1 share	11 comments	0

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 6.8. 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)
26 July 2024	Karratha	Community pop-up at Lo's Cafe

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3-4 August 2024	Karratha	FeNaCING Festival 2024
24-25 August 2024	Onslow	Onslow Mack10 Fishing Competition
26-28 August 2024	Karratha	DNA Conference
12 October 2024	Dampier	Dampier Beachside Markets
2 November 2024	Dampier	Dampier Beachside Markets
19 March 2025	Dampier	Dampier Community Association “Who’s who in the hood”
6 April 2025	Dampier	Dampier Beachside Markets
4 May 2025	Dampier	Dampier Beachside Markets
15-16 May 2025	Karratha	Red Earth Arts Festival (REAF)
2-3 August 2025	Karratha	FeNaCING Festival 2024
18 October 2025	Dampier	Dampier Beachside Markets

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. The Karratha CLG was relevant for this EP (see 4.9.2 below for consultation summary).

3.3.3 Let’s Talk – EP Newsletter

In July 2024, Edition 3 of Woodside’s EP-focused newsletter *Let’s Talk* helped reach existing and potential stakeholders to inform relevant persons about its EP consultation. The newsletter shared updates about EP consultation activities, including the Angel CCS GPGT Surveys EP, case studies on effective consultation with relevant persons and other EP-focused updates such as upcoming events where Woodside personnel were consulting with the local community. It was distributed in a variety of locations as well as across digital platforms including via website at www.woodside.com, and social media platforms. People can also subscribe to receive it (Record of Consultation, reference 6.9.1).

Woodside also publishes the Karratha Community Update newsletter which includes a QR code and encourages people to go to the Woodside Consultation Activities webpage to subscribe and find information about EPs (Record of Consultation, reference 6.9.2).

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 5.5 of the EP).

Consultation undertaken specifically with Traditional Custodians for this EP includes direct engagement with nominated representative bodies via the contact listed on the Office of the Registrar of Indigenous Corporations (ORIC) website, requesting advice on how they would like to

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be engaged and asking whether other members and/or individuals should be consulted. This has resulted in:

- meetings with directors, Elders and any nominated representatives, on Country or in Perth
- requests and offers of resourcing to enable and support consultation
- exchange of written feedback and correspondence
- Summary Information Sheets, developed and reviewed by Woodside's First Nations team in collaboration with technical experts to ensure content is appropriate to the intended recipients, was provided to relevant Traditional Custodian groups (Record of Consultation, reference 6.1.2) and phone calls to provide context to the consultation made.

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, in-person visits.

Consultation meetings with attendees decided by Traditional Custodian groups and supported by senior Woodside representatives, subject matter experts and First Nations 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)
- meeting reasonable 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 (30 July 2024) (Record of Consultation, 6.5.1.7)
- advertising on Ngaarda radio, the only licensed Aboriginal broadcaster in the Pilbara (26 August 2024 – 30 November 2024).

Newspaper	Coverage	Publication dates
National Indigenous Times	National	30 July 2024
Ngaarda Radio	National	26 August 2024 – 30 November 2024

Woodside also ran a geotargeted sponsored social media campaign (Record of Consultation, reference 6.4) to various communities that are coastally adjacent to the EMBA for the proposed activities. The wide-reaching campaign brought the proposed activity to the attention of persons who may be interested and advised persons or organisations how they can find out about Woodside's proposed activities by visiting Woodside's website, which details the intent of consultation with relevant persons under the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023* (Cth).

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These social media posts were developed with input from Indigenous representatives. Social media is a highly effective means to engage Indigenous audiences as outlined in Indigenous Digital Life (Professor Carlson, 2021). Advertisements used language and information appropriate to Indigenous audiences and feedback from community engagements indicates a high level of penetration for this process.

Woodside has employed a diverse range of techniques to allow relevant persons to become aware of the proposed activity and how it may affect their functions, activities or interests, and to understand their ability to provide feedback. The combination of Prescribed Body Corporate (PBC) engagement meetings, traditional print media, social media and face-to face community interaction was designed with input from Indigenous representatives and adapted to the audience, so that it provides a wide-ranging opportunity to consult.

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4. TABLE 2: CONSULTATION REPORT WITH RELEVANT PERSONS OR ORGANISATIONS

The black numbering **(N)** in the 'Summary of information provided and record of consultation for this EP' in Table 2 denotes an item raised by a stakeholder. The green numbering **(N)** in this section denotes Woodside's response to that issue.

4.1 COMMONWEALTH AND WA STATE GOVERNMENT DEPARTMENTS OR AGENCIES – MARINE

4.1.1 Australian Border Force (ABF)

Summary of information provided and record of consultation for this EP:

- On 8 July 2024, Woodside emailed the ABF advising of the proposed activity (Record of Consultation, reference 6.1.7), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*.
- On 23 July 2024, Woodside sent an email reminder to ABF, following up on the proposed activity (Record of Consultation, reference 6.2.1) and included a link to the Consultation Information Sheet on Woodside's website.
- On 1 October 2025, Woodside emailed ABF a consultation update (Record of Consultation, reference 6.3.3) and provided a Consultation Information Sheet (Record of Consultation, reference 6.3.1)
- On 21 October 2025, Woodside sent an email reminder to ABF following up on the proposed activity (Record of Consultation 6.4.1)

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim	Woodside's Statement of 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 7.8.1 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 Environment Regulations and considers consultation with ABF for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP, and further summarised in the Consultation Approach above. Specifically:

Sufficient Information

Woodside has given ABF sufficient information to allow ABF to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

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- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since July 2024 and an updated Consultation Information Sheet has been available on the Woodside website since October 2025. Woodside gave this information to ABF on 8 July 2024, marking the commencement of consultation on this EP. Woodside emailed an updated Consultation Information Sheet to ABF on 1 October 2025, marking an additional 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 GPGT Survey Program, 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.
  - 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 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 two 30-day periods for consultation.
- It has been 17 months since consultation commenced.
- 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 7 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 one targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and of consultation.
- In the absence of feedback, Woodside sent a follow-up consultation email on 23 July 2024 and on 21 October 2025, 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 required as ABF did not provide feedback for this EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.

The measures and controls described in this EP address the potential impact from the proposed activity on ABF's functions, interests or activities.

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4.1.2 Australian Communications and Media Authority (ACMA)

Summary of information provided and record of consultation for this EP:

- On 8 July 2024, Woodside emailed ACMA advising of the proposed activity (Record of Consultation, reference 6.1.8), provided a Consultation Information Sheet, a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*, and map of submarine communications cables (Record of Consultation, reference 6.1.6).
- On 12 July 2024, ACMA emailed to thank Woodside for the opportunity to comment (SI Report, reference 3.1) and:
  - Provided background on ACMA's responsibilities as covered in Schedule 3A to the *Telecommunications Act 1997*.
  - **(1)** Confirmed the Operational Area is clear of existing ACMA protection zones.
  - **(2)** Noted Woodside's awareness of cables in the area operated by Telstra and Vocus.
  - **(3)** Recommended contacting the AHO for cable locations.
  - **(4)** Advised no additional consultation for this activity was needed.
- On 16 July 2024, Woodside thanked ACMA for its response (SI Report, reference 3.2) and:
  - Noted ACMA's roles and responsibilities.
  - **(1)** Confirmed the advice on the protection zones.
  - **(2)** Acknowledged the existing cable systems of Telstra and Vocus and confirmed they received consultation materials.
  - **(3)** Confirmed that AHO received consultation materials and could be contacted further.
  - **(4)** Recognised that ACMA did not require further consultation on this EP.
- On 1 October 2025, Woodside emailed ACMA a consultation update (Record of Consultation, reference 6.3.4) and provided a Consultation Information Sheet (Record of Consultation, reference 6.3.1).
- On 21 October 2025, Woodside sent an email reminder to ACMA following up on the proposed activity (Record of Consultation 6.4.1).

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim	Woodside's Statement of Response	Inclusion in Environment Plan
(1) EP Operational Area not in vicinity of protection zones.	**(1)** Woodside noted ACMA's confirmation that the Operational Area is not in the vicinity of existing protection zones.	**(1)** Woodside acknowledged the advice regarding existing protection zones.	**(1)** Not required.
(2) Operational Area is in vicinity of submarine cables.	**(2)** Woodside noted ACMA's advice that the Operational Area was in the vicinity of submarine cables.	**(2)** Woodside confirmed it consulted Telstra and Vocus.	**(2)** Not required.
(3)	**(3)**	**(3)**	**(3)** Not required.

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Contact AHO for further assistance with cable identification.	Woodside noted ACMA's recommendation to contact the AHO for further assistance identifying cables.	Woodside confirmed AHO had been consulted and could be contacted for cable identification.	
(4) No further consultation required.	**(4)** Woodside accepts that ACMA does not require further consultation.	**(4)** 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, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8.1 of this EP).	No additional controls or measures are required.

Outcomes of Consultation

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with ACMA for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:

Sufficient Information

Woodside has given ACMA sufficient information to allow ACMA to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since July 2024 Woodside gave this information to ACMA on 8 July 2024, marking the commencement of consultation on this EP. A consultation update was sent to ACMA on 1 October 2025. 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 GPGT Survey Program, 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.
  - 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.
- On 12 July 2024, ACMA 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.
- Woodside provided additional information to ACMA on 16 July to respond to points raised.

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Reasonable Period

Woodside allowed ACMA a reasonable period for consultation in the preparation of this EP has been provided 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 two 30 day periods for consultation.
- In this context, Woodside allowed ACMA a reasonable period for consultation in preparation of the EP as evidenced by ACMA's response on 12 July 2024.

Reasonable Opportunity

Woodside allowed Woodside allowed ACMA a reasonable opportunity for consultation in the preparation of this EP because:

- Woodside published advertisements in 7 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 one targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and of consultation.
- Woodside hosted regional community information sessions and attended community events in Karratha, Dampier and Onslow which featured EP and consultation information.
- Woodside considers a reasonable opportunity was provided to ACMA as evidenced by its response on 12 July 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 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 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 8 July 2024, Woodside emailed AFMA advising of the proposed activity (Record of Consultation, reference 6.1.9), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*.
- On 23 July 2024, Woodside sent an email reminder to AFMA, following up on the proposed activity (Record of Consultation, reference 6.2.1) and included a link to the Consultation Information Sheet on Woodside's website.
- On 1 October 2025, Woodside emailed AFMA a consultation update (Record of Consultation, reference 6.3.5) and provided a Consultation Information Sheet (Record of Consultation, reference 6.3.1)
- On 14 October 2025, AFMA thanked Woodside for the opportunity to comments (SI Report reference, 36.1) and:
  - **(1)** Noted it had no feedback on the EP.

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- **(2)** Requested to be included in future consultation.
- (**3**) Confirmed the Commonwealth fisheries identified in consultation were correct and encouraged direct engagement.

- **(1)** On 16 October, Woodside thanked AFMA for confirming no feedback (SI Report, 36.2) and:
  - **(2)** Confirmed AFMA would receive any updates as well as notifications.
  - **(3)** Noted AFMA's confirmation on the identified Commonwealth fisheries and engagement.

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim	Woodside's Statement of Response	Inclusion in Environment Plan
(1) No feedback on EP.	**(1)** Woodside understands AFMA has no feedback.	**(1)** Woodside confirmed AFMA had no feedback.	**(1)** Not required.
(2) Interested in future consultation.	**(2)** Woodside notes that AFMA is interested in future consultation and provides activity notifications as standard practice to AFMA.	**(2)** Woodside confirmed AFMA would receive activity notifications and any updates to project.	**(2)** See Section 7.10 Ongoing Consultation, Table 7.5 and Section 6.8.1, P.S. 1.2. of the EP.
(3) Encouraged direct engagement with Commonwealth fisheries.	**(3)** Woodside appreciates AFMA's confirmation that its identification of fisheries is correct and also knows the fisheries were consulted.	**(3)** Woodside appreciated the confirmation from AFMA and noted ongoing engagement.	**(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, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8.1 of 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 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

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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 July 2024. Woodside gave this information to AFMA on 8 July 2024, marking the commencement of consultation on this EP. Woodside issued a consultation update on 1 October 2025. 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 GPGT Survey Activity, 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.
  - 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 a reasonable period for consultation in the preparation of this EP has been provided 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 two 30 day periods for consultation.
- It has been 17 months since consultation commenced.
- In this context, Woodside allowed AFMA a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

Woodside allowed 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 7 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 one targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and of consultation.
- Woodside hosted regional community information sessions and attended community events in Karratha, Dampier and Onslow which featured EP and consultation information.
- In the absence of feedback, Woodside sent a follow-up consultation email on 23 July 2024, reminding AFMA of the opportunity to provide feedback which it did on 14 October 2025.

Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- AFMA provided feedback but 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:

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- Responded to feedback from AFMA
- Made no changes or inclusions to the EP as a result of consultation with AFMA because appropriate measures are already included in the EP as AFMA notification is a standard practice in the EP.

4.1.4 Australian Hydrographic Office (AHO)

Summary of information provided and record of consultation for this EP:

- On 8 July 2024, Woodside emailed AHO advising of the proposed activity (Record of Consultation, reference 6.1.10), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*, GIS shapefiles and vessel density map.(Record of Consultation, reference 6.1.4)
- On 9 July 2024, AHO emailed Woodside to acknowledge receipt of information and noted:
  - **(1)** Supplied data would be used to update Navigational Charting products which adhere to national and international standards (SI Report, reference 2.1).
- On 9 July 2024, Woodside thanked AHO for its acknowledgement of the consultation information provided (SI Report, reference 2.2) and:
  - **(1)** Noted the data supplied will support Navigational Charting product updates.
- On 1 October 2025, Woodside emailed AHO a consultation update on the EP (Record of Consultation, reference 6.3.6) since consultation first took place in July 2024. Woodside provided an overview of activities with updated timing for planned GPGT survey activities. Woodside attached an updated Consultation Information Sheet.
- On 2 October 2025, AHO thanked Woodside for the opportunity to comment (SI Report, reference 2.3) and:
  - **(2)** Noted it had no concerns with the activities proposed.
  - **(3)** Requested notifications once activity is due to begin and provided a link to its Fact Sheet: Reporting Maritime Activities Affecting Safety of Navigation. (SI Report, reference 2.3.1).
- On 2 October 2025, Woodside replied to AHO (SI Report, reference 2.4) and:
  - **(2)** Thanked AHO for confirming it had no concerns with the activities.
  - **(3)** Confirmed it would provide AHO with Start of Activity Notifications at least four weeks prior to commencement of activities.

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim	Woodside's Statement of Response	Inclusion in Environment Plan
(1) Supplied data supports Navigational Charting updates.	**(1)** Woodside recognises its data on vessel activity and GIS shapefiles contributes to ongoing updates to AHO's Navigational Charting products.	**(1)** Woodside confirmed how AHO would use the provided data.	**(1)** Not required.
(2) Confirmed no concerns with proposed activities.	**(2)** Woodside accepts that AHO has no concerns with the survey activities.	**(2)** Woodside confirmed AHO had no concerns with the proposed activities.	**(2)** Not required.

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(3) Requested to be updated once activity is due to begin.	**(3)** Woodside understands AHO needs to be notified ahead of activity start and follows standard practice to notify AHO at least four weeks ahead of commencement of activities.	**(3)** Woodside confirmed it would notify AHO at least four weeks prior to commencement of survey activities.	**(3)** See Ongoing Consultation Section 7.10 , Table 7.5 and Section 6.8.1, P.S. 1.2. of the EP.
While feedback has been received, there were no objections or claims.	Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24.	Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should further feedback be received, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8.1 of 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 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 July 2024. Woodside gave this information to AHO on 8 July 2024, marking the commencement of consultation on this EP. Woodside issued a consultation update on 1 October 2025. 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 GPGT Survey Program, 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.
- 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.
- On 9 July 2024, AHO 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.
- Woodside responded to AHO on 9 July 2024.

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- Woodside sent a consultation update in October 2025 which included a new Consultation Information Sheet and provided an overview of the survey activities and updated timing.

Reasonable Period

Woodside allowed a reasonable period for consultation in the preparation of this EP has been provided 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 the initial 2024 consultation and an additional 30 days for the consultation update which started in October 2025.
- In this context, Woodside allowed AHO a reasonable period for consultation in preparation of the EP as evidenced by AHO's response on 9 July 2024 and on 2 October 2025 for the updated consultation.

Reasonable Opportunity

Woodside allowed Woodside allowed AHO a reasonable opportunity for consultation in the preparation of this EP because:

- Woodside published advertisements in 7 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 one targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and of consultation.
- Woodside hosted regional community information sessions and attended community events in Karratha, Dampier and Onslow which featured EP and consultation information.
- Woodside considers a reasonable opportunity was provided to AHO as evidenced by its response on 9 July 2024 and again on 2 October 2025 following the consultation update.

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 as AHO notification is a standard practice 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:

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- On 8 July 2024, Woodside emailed AMSA – Marine Pollution advising of the proposed activity (Record of Consultation, reference 6.1.12), provided a Consultation Information Sheet, vessel density map, GIS shapefiles and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*.
- On 23 July 2024, Woodside sent an email reminder to AMSA – Marine Pollution, following up on the proposed activity (Record of Consultation, reference 6.2.1) and included a link to the Consultation Information Sheet on Woodside's website.
- On 21 August 2024, Woodside emailed AMSA – Marine Pollution and reshared a link to the Consultation Information, attached the Oil Pollution First Strike Plan (Appendix I) and requested feedback. (SI Report, reference 24.1)
- On 1 October 2025, Woodside emailed AMSA – Marne Pollution a consultation update (Record of Consultation, reference 6.3.8) and provided a Consultation Information Sheet (Record of Consultation, reference 6.3.1)
- On 21 October 2025, Woodside sent an email reminder to AMSA – Marine Pollution following up on the proposed activity (Record of Consultation 6.4.1)

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim	Woodside's Statement of Response	Inclusion in Environment Plan
No feedback, objections or claims received despite follow-up.	Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24.	Woodside engages in ongoing consultation throughout the life of an EP. Should 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 7.8.1 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 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 July 2024. Woodside gave this information to AMSA – Marine Pollution on 8 July 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 GPGT Survey Activity, 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.

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- 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 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.
- It has been 17 months since consultation commenced.
- In this context, Woodside allowed AMSA – Marine Pollution a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

Woodside allowed AMSA – Marine Pollution a reasonable opportunity for consultation in the preparation of this EP because:

- Woodside published advertisements in 7 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 one targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and of consultation.
- Woodside hosted regional community information sessions and attended community events in Karratha, Dampier and Onslow which featured EP and consultation information.
- In the absence of feedback, Woodside sent a follow-up consultation email on 23 July 2024 and on 21 October 2025, reminding AMSA – Marine Pollution of the opportunity to provide feedback.
- Woodside sent its Oil Pollution First Strike plan to AMSA – Marine Pollution on 21 August 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 required 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) – Maritime Safety

Summary of information provided and record of consultation for this EP:

- On 8 July 2024, Woodside emailed AMSA – Maritime Safety advising of the proposed activity (Record of Consultation, reference 6.1.11), provided a Consultation Information Sheet, vessel density map, GIS shapefiles and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*.
- On 19 July 2024, AMSA – Maritime Safety emailed to thank Woodside for information on operations and activities tied to the EP (SI Report, reference 5.1) and:

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- **(1)** Provided three PDFs detailing vessel traffic supported by Woodside GIS shapefiles, noting heavy vessel traffic and crossing of charted shipping areas during activities.
- Thanked Woodside for noting considerations in consultation email including:
  - **(2)** Requested Woodside notify AMSA's Response Centre (ARC) 24-48 hours before operations commence and to contact the AHO no less than four working weeks before operations commence.
  - **(3)** Reminded Woodside of compliance with International Rules for Preventing Collisions at Sea and that vessels should exhibit appropriate lights and shapes to reflect the nature of operation and advised that Woodside should evaluate and implement adequate anti-collision measures.
- **(4)** Suggested AMSA's special data gateway and portal for data sets and maps.

- On 23 July 2024, Woodside emailed to thank the AMSA – Maritime Safety team for their feedback on the EP (SI Report, reference 5.2) and:
  - (1) Acknowledged AMSA's PDFs which detail vessel traffic and charted shipping fairways.
  - (2) Confirmed notifications including notifying AMSA's ARC 24-48 hours before operations commence and notifying AHO no less than four working weeks before operations commence.
  - (3) Confirmed compliance with International Rules for Preventing Collisions at Sea (COLREGs).
  - (4) Noted availability of shipping data from AMSA's spatial data gateway and portal.
- On 1 October 2025, Woodside emailed AMSA – Maritime Safety a consultation update on the EP (Record of Consultation, reference 6.3.7) since consultation first took place in July 2024. Woodside provided an overview of activities with updated timing for planned GPGT survey activities. Woodside attached an updated Consultation Information Sheet (Record of Consultation, reference 6.3.1).
- On 2 October 2025, AMSA – Maritime Safety thanked Woodside for the information on the timing updates (SI Report, reference 5.3) and:
  - (**1)** Informed that heavy vessel traffic and support craft are in the area and provided PDFs of the area with Angel CCS Operational Area.
  - **(2)** Provided notification protocol with AMSA with email and phone number and information vessel operator needs to provide AMSA and asked that AHO be contacted at least four working weeks before operations commence.
  - **(3)** Noted lighting requirements and shapes to comply with COLREGS.
  - **(4)** Confirmed availability of shipping date via AMSA's spatial data gateway and portal.
- On 3 October 2025, Woodside thanked AMSA for review of the update (SI Report, reference 5.4) and:
  - (1) Noted receipt of the PDFs and that heavy vessels traffic would be encountered in the area.
  - (2) Confirmed notifications for AMSA and AHO.
  - (3) Acknowledged the COLREGs guidance and confirmed it was mandated on Woodside chartered vessels.
  - (4) Noted availability of shipping data from AMSA's spatial data gateway and portal.

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim	Woodside's Statement of Response	Inclusion in Environment Plan
(1) Noted heavy vessel traffic and sent maps.	**(1)** Woodside noted AMSA's point on heavy traffic and maps provided and was	**(1)**	**(1)** Not required.

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	aware of vessel activity from its shipping lane file.	Woodside acknowledge the map detailing the vessel traffic and shipping fairways.	
(2) Requested notifications for AMSA and AHO.	**(2)** Woodside is aligned with the notifications needed for AMSA and AHO and considers this a standard practice.	**(2)** Woodside confirmed notifications would be sent to AMSA, 24-48 hours prior to commencement of operations and AHO, no less than four working weeks before operations commence.	**(2)** Refer to Ongoing Consultation Section 7.10 Table 7-5 covering notifications for ongoing consultation in the EP.
(3) Flagged safe vessel operations considerations.	**(3)** Woodside complies with the International Rules for Preventing Collisions at Sea.	**(3)** Woodside confirmed it is compliant with the International Rules for Preventing Collisions at Sea.	**(3)** See Section 6.8.1. PS 1.1 of the EP.
(4) Access to data sets and maps	**(4)** Woodside noted availability of data and maps through AMSA's spatial gateway and portal.	**(4)** Woodside confirmed understanding that data sets and maps were available from AMSA's spatial gateway and portal.	**(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, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8.1 of 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 AMSA – Maritime 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 July 2024 Woodside gave this information to AMSA – Maritime Safety on 8 July 2024, marking the commencement of consultation on this EP. The Consultation Information Sheet included:

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  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the GPGT Survey Program, 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.
  - 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.
- On 16 July 2024 AMSA – Maritime Safety shared its feedback, claims or objections regarding this activity, indicating the information provided was sufficient to enable AMSA – Maritime Safety to make an informed assessment of the possible consequences of the activity on its functions, interests or activities.
- Woodside responded to AMSA – Maritime Safety on 23 July 2024.
- Woodside sent a consultation update in October 2025 which included a new Consultation Information Sheet and provided an overview of the survey activities and updated timing.

Reasonable Period

Woodside allowed AMSA – Maritime Safety a reasonable period for consultation in the preparation of this EP because:

- A consultation period was stated in the initial correspondence to AMSA – Maritime 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 – Maritime Safety 30 days for the initial 2024 consultation and an additional 30 days for the consultation update which started in October 2025.
- In this context, Woodside allowed AMSA – Maritime Safety a reasonable period for consultation in preparation of the EP as evidenced by AMSA – Maritime Safety's response on 16 July 2024 and again on 2 October 2025 following the consultation update.
-

Reasonable Opportunity

Woodside allowed AMSA – Marine Safety reasonable opportunity for consultation in the preparation of this EP because:

- Woodside published advertisements in 7 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 one targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and of consultation.
- Woodside hosted regional community information sessions and attended community events in Karratha, Dampier and Onslow which featured EP and consultation information.
- Woodside considers a reasonable opportunity was provided to AMSA – Maritime Safety as evidenced by its response on 16 July 2024 and again on 2 October 2025 following the consultation update.

Outcomes of Consultation:

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

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- AMSA – Maritime 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 – Maritime Safety.
  - Made no changes or inclusions to the EP as a result of consultation with AMSA – Maritime Safety because appropriate measures are already included in the EP and AMSA notification is standard practice.

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 8 July 2024, Woodside emailed DAFF 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 23 July 2024, Woodside sent an email reminder to DAFF, following up on the proposed activity (Record of Consultation, reference 6.2.1) and included a link to the Consultation Information Sheet on Woodside's website.
- On 1 October 2025, Woodside emailed DAFF-Fisheries a consultation update (Record of Consultation, reference 6.3.9) and provided a Consultation Information Sheet (Record of Consultation, reference 6.3.1)
- On 21 October 2025, Woodside sent an email reminder to DAFF-Fisheries following up on the proposed activity (Record of Consultation 6.4.1)

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim	Woodside's Statement of 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 7.8.1 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 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 sufficient information to allow DAFF to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

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- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since July 2024. Woodside gave this information to DAFF - Fisheries on 8 July 2024, and an updated Consultation Information Sheet has been available on the Woodside website since October 2025. Woodside gave this information to DAFF-Fisheries on 8 July 2024, marking the commencement of consultation on this EP. Woodside emailed an updated Consultation Information Sheet to DAFF-Fisheries on 1 October 2025, marking an additional 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 GPGT Survey Activity, 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.
  - 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 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 two 30-day periods for consultation.
- It has been 17 months since consultation commenced.
- In this context, Woodside allowed DAFF - Fisheries a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

Woodside allowed DAFF - Fisheries a reasonable opportunity for consultation in the preparation of this EP because:

- Woodside published advertisements in 7 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 one targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and of consultation.
- Woodside hosted regional community information sessions and attended community events in Karratha, Dampier and Onslow which featured EP and consultation information.
- In the absence of feedback, Woodside sent a follow-up consultation email on 23 July 2024 and on 21 October 2025, 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 required 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.

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4.1.8 Department of Defence (DoD)

Summary of information provided and record of consultation for this EP:

- On 8 July 2024, Woodside emailed the DoD advising of the proposed activity (Record of Consultation, reference 6.1.14), provided a Consultation Information Sheet, Defence Area map and a link to NOPSEMA's brochure Consultation on offshore petroleum environment plans: Information for the community.
- On 23 July 2024, Woodside sent an email reminder to the DoD following up on the proposed activity (Record of Consultation, reference 6.2.1) and included a link to the Consultation Information Sheet on Woodside's website.
- On 1 August 2024, the DoD thanked Woodside for its email (SI Report, reference 4.1) and provided feedback noting:
  - **(1)** Location of the activity areas are not within training areas and restricted airspace.
  - **(2)** Potential presence of unexploded ordinance (UXO) on and in the seafloor, and that Woodside must take responsibility for any associated risks tied to the location, identification, removal or damage of UXO in area.
  - **(3)** DoD's notification requirements including liaison with the Australian Hydrographic Service/Office (AHS/AHO).
- On 2 August 2024, Woodside thanked DoD for its feedback (SI Report, reference 4.2) and confirmed:
  - (1) Guidance area is outside of training areas and restricted airspace.
  - (2) Guidance regarding location, identification, removal or damage to equipment from unexploded ordinances.
  - (3) AHO had been engaged for this activity and included in activity notification protocols.
- On 1 October 2025, Woodside emailed DoD a consultation update (Record of Consultation, reference 6.3.10) and provided a Consultation Information Sheet (Record of Consultation, reference 6.3.1)
- On 21 October 2025, Woodside sent an email reminder to DoD following up on the proposed activity (Record of Consultation 6.4.1).

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim	Woodside's Statement of Response	Inclusion in Environment Plan
(1) Confirmed activities outside of training areas / restricted airspace.	**(1)** Woodside's Defence Area Map suggested potential interaction with a training area, so accept the confirmation that activities are outside of training areas and restricted airspace.	**(1)** Woodside acknowledged the activities are outside of DoD training areas and restricted airspace.	**(1)** Not required.
(2) Flagged risks tied to potential UXO in area.	**(2)** Woodside is aware of the risks associated with UXO in the activity area. The risk of encountering UXO in the Operational Area very low.	**(2)** Woodside confirmed it noted the DoD's advice with respect to the risk, location, identification, removal or damage from UXO.	**(2)** Not required.

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(3) Noted need to notify AHO.	**(3)** Woodside has consulted AHO and will send relevant notifications.	**(3)** Woodside advised the AHO had been engaged by Woodside for these activities and was included in Woodside's activity notification protocols.	**(3)** Woodside will provide notifications to AHO as set out in Section 7.10, Table 7.5 of the EP.
While feedback has been received, there were no objections or claims.	Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24.	Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should further feedback be received, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8.1 of 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 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 July 2024 and an updated Consultation Information Sheet has been available on the Woodside website since October 2025. Woodside gave this information to DoD on 8 July 2024, marking the commencement of consultation on this EP. Woodside emailed an updated Consultation Information Sheet to DoD on 1 October 2025, marking an additional 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 GPGT Survey Program, 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.
  - 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.
- On 1 August 2024, DoD shared its feedback, claims or objections regarding this activity, indicating the information provided was sufficient to enable DoD to make an informed assessment of the possible consequences of the activity on its functions, interests or activities.

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- Woodside provided additional information on 2 August 2024.

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 two 30-day periods for consultation.
- In this context, Woodside allowed DoD a reasonable period for consultation in preparation of the EP as evidenced by DoD's response on 1 August 2024.

Reasonable Opportunity

Woodside allowed DoD a reasonable opportunity for consultation in the preparation of this EP because:

- Woodside published advertisements in 7 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 one targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and of consultation.
- Woodside hosted regional community information sessions and attended community events in Karratha, Dampier and Onslow which featured EP and consultation information.
- Woodside considers a reasonable opportunity was provided to DoD as evidenced by its response on 1 August 2024.
- In the absence of feedback for the activity update, Woodside sent a follow-up consultation email on 21 October 2025, 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:

- DoD 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 DoD 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 DoD 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.

4.1.9 Department of Planning, Lands and Heritage (DPLH)

Summary of information provided and record of consultation for this EP:

- On 8 July 2024, Woodside emailed the DPLH 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 23 July 2024, Woodside sent an email reminder to DPLH, following up on the proposed activity (Record of Consultation, reference 6.2.1) and included a link to the Consultation Information Sheet on Woodside's website.

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- On 1 October 2025, Woodside emailed DPLH a consultation update (Record of Consultation, reference 6.3.13) and provided a Consultation Information Sheet (Record of Consultation, reference 6.3.1).
- On 16 October 2025, DPLH thanked Woodside for the opportunity to comment (SI Report, reference 31.1) and:
  - **(1)** Noted the Operational Area is in Commonwealth waters and had no comments to provide.
  - **(2)** Recommended State's Department of Water and Environmental Regulations (DWER) and the federal Department of Climate Change, Energy, the Environment and Water (DCCEW) be consulted regarding the environmental disturbances and impacts.
  - **(1)** Confirmed DPLH had no comment regarding the updated start date.
- On 17 October 2025, Woodside thanked DPLH for its response (SI Report 31.2) and:
  - **(1)** Acknowledged DPLH had no comments for this EP.
  - **(2)** Confirmed DCCEEW had been consulted and consultation was extended to DWER as recommended by DLPH.

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim	Woodside's Statement of Response	Inclusion in Environment Plan
(1) Confirmed no comments for EP.	**(1)** Woodside accepts that DPLH had no comments for this EP.	**(1)** Woodside acknowledged that DPLH had no comments to provide.	**(1)** Not required.
(2) Asked that DCCEEW and DWER be consulted.	**(2)** Woodside understands DPLH's request to include DCCEEW and DWER in consultation.	**(2)** Woodside confirmed DCCEEW had been consulted and that consultation was extended to DWER as recommended.	**(2)** See Appendix F Sections 4.2.3,
While feedback has been received, there were no objections or claims.	Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24.	Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should further feedback be received, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8.1 of 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 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

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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 July 2024 and an updated Consultation Information Sheet has been available on the Woodside website since October 2025. Woodside gave this information to DPLH on 9 July 2024, marking the commencement of consultation on this EP. Woodside emailed an updated Consultation Information Sheet to DPLH on 1 October 2025, marking an additional 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 GPGT Survey Activity, 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.
  - 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 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 two 30-day periods for consultation.
- It has been 17 months since consultation commenced.
- In this context, Woodside allowed DPLH a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity:

Woodside allowed DPLH a reasonable opportunity for consultation in the preparation of this EP because:

- Woodside published advertisements in 7 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 one targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and of consultation.
- Woodside hosted regional community information sessions and attended community events in Karratha, Dampier and Onslow which featured EP and consultation information.
- In the absence of feedback, Woodside sent a follow-up consultation email on 23 July 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 required 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.

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4.1.10 Department of Primary Industries and Regional Development (DPIRD)

Summary of information provided and record of consultation for this EP:

- On 8 July 2024, Woodside emailed DPIRD 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 9 July 2024, Woodside forwarded email to another contact at DPIRD given primary contact was on leave (SI Report, reference 26.1).
- On 23 July 2024, Woodside sent an email reminder to DPIRD, following up on the proposed activity (Record of Consultation, reference 6.2.1) and included a link to the Consultation Information Sheet on Woodside's website.
- On 1 October 2025, Woodside emailed DPIRD a consultation update (Record of Consultation, reference 6.3.11) and provided a Consultation Information Sheet (Record of Consultation, reference 6.3.1).
- On 21 October 2025, Woodside sent an email reminder to DPIRD following up on the proposed activity (Record of Consultation 6.4.1)

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim	Woodside's Statement of 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 7.8.1 of this EP).	No additional measures or controls are required. DPIRD will receive start and end of activity notifications per standard procedure in Table 7-5 in Section 7.10 of the EP.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with 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 July 2024 and an updated Consultation Information Sheet has been available on the Woodside website since October 2025. Woodside gave this information to DPIRD on 9 July 2024, marking the commencement of consultation on this EP. Woodside emailed an updated Consultation Information Sheet to DPIRD on 1 October 2025, marking an additional consultation on this EP The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.

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- A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the GPGT Survey Activity, 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.
- 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 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 two 30-day periods for consultation.
- It has been 17 months since consultation commenced.
- In this context, Woodside allowed DPIRD a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

Woodside allowed DPIRD a reasonable opportunity for consultation in the preparation of this EP because:

- Woodside published advertisements in 7 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 one targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and of consultation.
- Woodside hosted regional community information sessions and attended community events in Karratha, Dampier and Onslow which featured EP and consultation information.
- In the absence of feedback, Woodside sent a follow-up consultation email on 23 July 2024 and again on 21 October 2025, reminding DPIRD of the opportunity to provide feedback.

Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- No additional measures were required as DPIRD did not provide feedback for this EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.

The measures and controls described in this EP address the potential impact from the proposed activity on DPIRD's functions, interests or activities.

4.1.11 Department of Transport and Major Infrastructure (DTMI), known in 2024 as Department of Transport (DoT)

Summary of information provided and record of consultation for this EP:

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- On 9 July 2024, Woodside emailed DoT (now known in 2025 as DTMI so all following references will reflect this) advising of the proposed activity (Record of Consultation, reference 6.1.16), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*.
- On 15 July 2024, DTMI thanked Woodside for the update and would await additional consultation (SI Report, reference 6.1).
- On 17 July 2024, Woodside thanked DTMI for its response and noted it would await any further consultation (SI Report, reference 6.2).
- On 20 August 2024, Woodside emailed DTMI to provide Oil Pollution First Strike Plan (FSP) and requested feedback for consultation (SI Report, reference 6.3).
- **(1)** On 20 September 2024, DTMI emailed to thank Woodside for FSP and confirmed it had no comment on it (SI Report, reference 6.4).
- (1) On 20 September 2024, Woodside emailed DTMI and thanked it for the review of the FSP and noted that the DTMI had no comment on it (SI Report, reference 6.5).
- On 1 October 2025, Woodside emailed DTMI a consultation update (Record of Consultation, reference 6.3.12) and provided a Consultation Information Sheet (Record of Consultation, reference 6.3.1).
- On 21 October 2025, Woodside sent an email reminder to DTMI following up on the proposed activity (Record of Consultation 6.4.1).

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim	Woodside's Statement of Response	Inclusion in Environment Plan
(1) Confirmed no comment on the FSP.	**(1)** Woodside understands the DTMI had no comment on the FSP.	**(1)** Woodside acknowledged that DTMI had no comment on the FSP.	**(1)** Not required
While feedback has been received, there were no objections or claims.		Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should further feedback be received, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8.1 of 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 DTMI for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:

Sufficient Information

Woodside has given DTMI sufficient information to allow DTMI to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since July 2024 and an updated Consultation Information Sheet has been available on the Woodside website since October 2025. Woodside gave this information to DTMI on 9 July 2024, marking the commencement of consultation

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on this EP. Woodside emailed an updated Consultation Information Sheet to DTMI on 1 October 2025, marking an additional 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 GPGT Survey Program, 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.
- 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.

- On 15 July 2024, DTMI shared its feedback, claims or objections regarding this activity, indicating the information provided was sufficient to enable DTMI to make an informed assessment of the possible consequences of the activity on its functions, interests or activities.
- Woodside responded to DTMI on 17 July and provided additional information on 20 August 2024.In October 2025, Woodside provided consultation update to DTMI.

Reasonable Period

Woodside allowed DTMI a reasonable period for consultation in the preparation of this EP because:

- A consultation period was stated in the initial correspondence to DTMI advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed DTMI two 30-day periods for consultation.
- In this context, Woodside allowed DTMI a reasonable period for consultation in preparation of the EP as evidenced by DTMI's response on 15 July 2024.

Reasonable Opportunity

Woodside allowed DTMI a reasonable opportunity for consultation in the preparation of this EP because:

- Woodside published advertisements in 7 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 one targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and of consultation.
- Woodside hosted regional community information sessions and attended community events in Karratha, Dampier and Onslow which featured EP and consultation information.
- Woodside considers a reasonable opportunity was provided to DTMI as evidenced by its response on 15 July 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:

- DTMI provided feedback but no objections or claims. In line with the intended outcome of consultation as set out in Section 5.2 and regulations 25 and 34(g). Woodside has:
  - Responded to feedback from DTMI.
  - Made no changes or inclusions to the EP as a result of consultation with DTMI because appropriate measures are already included in the EP.

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Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.

4.1.12 Pilbara Ports

Summary of information provided and record of consultation for this EP:

- On 8 July 2024, Woodside emailed Pilbara Ports advising of the proposed activity (Record of Consultation, reference 6.1.7), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*.
- On 23 July 2024, Woodside sent an email reminder to Pilbara Ports, following up on the proposed activity (Record of Consultation, reference 6.2.1) and included a link to the Consultation Information Sheet on Woodside's website.
- On 1 October 2025, Woodside emailed Pilbara Ports a consultation update (Record of Consultation, reference 6.3.3) and provided a Consultation Information Sheet (Record of Consultation, reference 6.3.1)
- On 21 October 2025, Woodside sent an email reminder to Pilbara Ports following up on the proposed activity (Record of Consultation 6.4.1)

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim	Woodside's Statement of 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 7.8.1 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 Environment Regulations and considers consultation with Pilbara Ports for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:

Sufficient Information

Woodside has given Pilbara Ports sufficient information to allow Pilbara Ports to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since July 2024 and an updated Consultation Information Sheet has been available on the Woodside website since October 2025. Woodside gave this information to Pilbara Ports on 8 July 2024, marking the commencement of consultation on this EP. Woodside emailed an updated Consultation Information Sheet to Pilbara Ports on 1 October 2025, marking an additional consultation on this EP The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.

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- A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the GPGT Survey Activity, 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.
- 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 Pilbara Ports a reasonable period for consultation in the preparation of this EP because:

- A consultation period was stated in the initial correspondence to Pilbara Ports advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed Pilbara Ports two 30-day periods for consultation.
- It has been 17 months since consultation commenced.
- In this context, Woodside allowed Pilbara Ports a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

Woodside allowed Pilbara Ports reasonable opportunity for consultation in the preparation of this EP because:

- Woodside published advertisements in 7 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 one targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and of consultation.
- Woodside hosted regional community information sessions and attended community events in Karratha, Dampier and Onslow which featured EP and consultation information.
- In the absence of feedback, Woodside sent a follow-up consultation email on 23 July 2024 and on 21 October 2025, reminding Pilbara Ports 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 Pilbara Ports did not provide feedback for this EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.

The measures and controls described in this EP address the potential impact from the proposed activity on Pilbara Ports' functions, interests or activities.

4.1.13 Western Australian Museum (WAM)

Summary of information provided and record of consultation for this EP:

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- On 9 July 2024, Woodside emailed the WAM advising of the proposed activity (Record of Consultation, reference 6.1.18), 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 23 July 2024, Woodside sent an email reminder to WAM, following up on the proposed activity (Record of Consultation, reference 6.2.1) and included a link to the Consultation Information Sheet on Woodside's website.
- On 1 October 2025, Woodside emailed WAM a consultation update (Record of Consultation, reference 6.3.14 and provided a Consultation Information Sheet (Record of Consultation, reference 6.3.1)
- On 21 October 2025, Woodside sent an email reminder to WAM following up on the proposed activity (Record of Consultation 6.4.1)

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim	Woodside's Statement of 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 7.8.1 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 Environment Regulations and considers consultation with WAM for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:

Sufficient Information

Woodside has given WAM sufficient information to allow WAM to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since July 2024 and an updated Consultation Information Sheet has been available on the Woodside website since October 2025. Woodside gave this information to WAM on 8 July 2024, marking the commencement of consultation on this EP. Woodside emailed an updated Consultation Information Sheet to WAM on 1 October 2025, marking an additional 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 GPGT Survey Activity, 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.
  - 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.

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Reasonable Period

Woodside allowed WAM a reasonable period for consultation in the preparation of this EP because:

- A consultation period was stated in the initial correspondence to WAM advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed WAM two 30 day periods for consultation.
- It has been 17 months since consultation commenced.
- In this context, Woodside allowed WAM a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

Woodside allowed WAM a reasonable opportunity for consultation in the preparation of this EP because:

- Woodside published advertisements in 7 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 one targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and of consultation.
- In the absence of feedback, Woodside sent a follow-up consultation email on 23 July 2024 and on 21 October 2025, reminding WAM of the opportunity to provide feedback.

Outcomes of Consultation

- No additional measures were required as WAM 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 WAM'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 8 July 2024, Woodside emailed DAFF 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 23 July 2024, Woodside sent an email reminder to DAFF, following up on the proposed activity (Record of Consultation, reference 6.2.1) and included a link to the Consultation Information Sheet on Woodside's website.
- On 1 October 2025, Woodside emailed DAFF a consultation update (Record of Consultation, reference 6.3.9) and provided a Consultation Information Sheet (Record of Consultation, reference 6.3.1)
- On 21 October 2025, Woodside sent an email reminder to DAFF following up on the proposed activity (Record of Consultation 6.4.1)

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Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim	Woodside's Statement of 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 7.8.1 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 Environment Regulations and considers consultation with DAFF 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 sufficient information to allow DAFF 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 July 2024 and an updated Consultation Information Sheet has been available on the Woodside website since October 2025. Woodside gave this information to DAFF on 8 July 2024, marking the commencement of consultation on this EP. Woodside emailed an updated Consultation Information Sheet to DAFF on 1 October 2025, marking an additional 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 Activity, 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.
  - 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 DAFF a reasonable period for consultation in the preparation of this EP because:

- A consultation period was stated in the initial correspondence to DAFF 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 two 30-day periods for consultation.
- It has been 17 months since consultation commenced.

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- In this context, Woodside allowed DAFF a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

Woodside allowed DAFF a reasonable opportunity for consultation in the preparation of this EP because:

- Woodside published advertisements in 7 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 one targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and of consultation.
- Woodside hosted regional community information sessions and attended community events in Karratha, Dampier and Onslow which featured EP and consultation information.
- In the absence of feedback, Woodside sent a follow-up consultation email on 23 July 2024 and another on 21 October 2025, reminding DAFF 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 DAFF 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'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 8 July 2024, Woodside emailed the DBCA advising of the proposed activity (Record of Consultation, reference 6.1.7), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*.
- On 23 July 2024, Woodside sent an email reminder to DBCA following up on the proposed activity (Record of Consultation, reference 6.2.1) and included a link to the Consultation Information Sheet on Woodside's website.
- On 9 August 2024, DBCA thanked Woodside for providing information on the EP (SI Report, reference 13.1) and:
  - **(1)** Noted there are ecologically important areas located in the vicinity of proposed activities and EMBA and there is potential for activities to be affected by a hydrocarbon release and surveys have potential to impact marine fauna.
  - **(2)** Would like to have confidence that Woodside has established appropriate baseline survey data on the current state of areas supporting important ecological values and any current contamination present within the EMBA.
  - **(3)** It undertook monitoring in marine parks and reserves and published monitoring reports which were available on its website, however Woodside should be aware this monitoring was targeted to inform DBCA's values and objectives and was 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.

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- (**5)** Referenced best practice management for underwater noise management per *EPBC Act Policy Statement 2.1*, including:
  - Establish noise impact thresholds for particular species.
  - Set management zones with low-power or shut-down zones and observation procedures for pre-start-up, soft-start and stop work as standard practice
  - Station qualified Marine Fauna Observers (MFOs) on vessels at all times.
- Noted emergency response contacts and procedures in event of hydrocarbon release, including:
  - (**6)** in the event of a hydrocarbon release, it was requested that Woodside notify DBCA's Pilbara regional office as soon as practicable on (08) 9182 2000 and commit to clean-up and monitoring.
  - **(7)** 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.
  - **(8)** 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.

- On 11 September 2024, Woodside emailed DBCA to thank them for its email (SI Report, reference 13.2) and:
  - **(1)** Acknowledged there are areas of ecological importance near the proposed Operational Area and EMBA and the values and sensitivities of these areas and associated flora and fauna will be documented in Section 4 of the EP. Section 6 will assess risks and impacts from planned and unplanned activities including from a hydrocarbon spill in the event of vessel collision.
  - **(2,3)** Advised its oil spill scientific monitoring program, under the Joint Industry OSM Framework (AEP, 2021) would provide for a quantitative assessment of the overall environmental impacts in the event of an unplanned hydrocarbon release and it has an information system to track current existing environment knowledge.
  - **(4)** Woodside has considered DCCEEW's Environment and Water's National Light Pollution Guidelines for Wildlife, and vessels will implement plan which aligns with these recommendations. Lighting on vessels will be limited to the minimum required for navigational and safety requirements.
  - **(5)** Controls will be implemented to manage potential impacts and risks to marine fauna from underwater noise emissions, and to support the noise assessment, modelling has been commissioned which will be in the EP and it will comply with regulatory requirements for interactions with marine fauna.
  - **(5)** Observation procedures include implementation of observation zones of 150 m for 30 minutes prior to start-up and vessels will have onboard crew trained in marine fauna observation.
  - **(6)** DBCA Pilbara regional office phone number is included as part of notifications in the Oil Pollution First Strike Plan (FSP) and Woodside's oil spill scientific monitoring program (SMP) is executed under the Joint Industry OSM Framework (AEP, 2021) and provides for overall environmental impacts in events of an unplanned hydrocarbon release. Within the plan are links to existing Operational Plans and Tactical Response Plans to mobilise response sources immediately, including Operational Monitoring, Scientific Monitoring and Shoreline Clean up where required.
  - **(7)** Understands DBCA will not implement an oiled wildlife plan on behalf of a titleholder and acknowledged its cost recovery arrangements are in line with Section 9 of the DoT Offshore Petroleum Industry Guidance Note 2020.
  - **(8)** Woodside references the Offshore Petroleum Industry Guidance Note in DoT correspondence and FSP is largely based on requirements set out in Offshore Petroleum Industry Guidance Note.
- On 1 October 2025, Woodside emailed DBCA a consultation update (Record of Consultation, reference 6.3.40) and provided a Consultation Information Sheet (Record of Consultation, reference 6.3.1)
- On 21 October 2025, Woodside sent an email reminder to DBCA following up on the proposed activity (Record of Consultation 6.4.1)

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- On 28 October 2025, DBCA thanked Woodside for the information on activities (SI Report, reference 13.3) and
  - **(9)** Confirmed no further comments to add beyond advice provided previously in 2024 (SI Report, reference 13.1) in relation to the *Conservation and Land Management Act 1984 and Biodiversity Conservation Act 2016.*
  - **(10)** Asked that specific email continue to be used for all correspondence.
- On 3 November 2025, Woodside thanked DBCA for its review of the consultation update (SI Report, reference 13.4) and:
  - **(9)** Noted DBCA had no further comments and confirmed previously feedback was summarised in Appendix F of the EP.
  - **(10)** Confirmed Woodside will continue to send consultation correspondence to DBCA's provided email.

Summary of Feedback	Woodside's Assessment of Merits of Feedback	Woodside's Response	Inclusion in Environment Plan
(1) Activities may affect ecologically important areas and marine fauna.	**(1)** Woodside acknowledges areas of ecological importance in close proximity to proposed Operational Area and within EMBA.	**(1)** Woodside affirmed there are controls in place to manage any risks or impact associated with the activities in the areas of ecological importance in the proximity of the EP Operational Area and EMBA and has Oil Pollution Emergency Plan in event of hydrocarbon spill from a vessel collision.	**(1)** The EP demonstrates that the proposed activities are outside the boundaries of a proclaimed Australian Marine Park (AMP) and considers there are no credible risks as part of planned activities that have potential to impact the values of the AMP **(**Section 6 of the EP). While impacts to the AMP are possible in the highly unlikely event of a vessel collision resulting in release of marine diesel, Woodside identifies and manages all impacts and risks on AMP values to an acceptable level and has considered all options to avoid or reduce them to As Low As Reasonably Practical (ALARP), as demonstrated in Section 6.7 of the EP.
(2) Establish baseline survey data on activities areas.	**(2)** Woodside maintains knowledge 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.	**(2)** Woodside confirmed it has an information system to track current existing environment knowledge that is regularly updated which covers topics including *EPBC Act Matters of National Ecological Significance* and *WA Biodiversity Conservation Act 2016*. Its oil spill scientific monitoring program provides for quantitative assessment of	**(2)** Appendix G of the EP covers that under the Operational and Scientific Monitoring (OSM) Program, executed under the Joint Industry OSM Framework (AEP, 2021).

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		overall environmental impacts in the event of an unplanned hydrocarbon release.	
(3) Encourages implementation of Before-After Control-Impact (BACI) framework.	**(3)** 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.	**(3)** 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 Area.	**(3)** Appendix H (Annex C) of EP covers that during a spill event, the first-strike monitoring capability will be prioritised to those receptors with insufficient baseline data to collect baseline data post-spill pre-impact i.e. Before-After-Impact-Control (BACI). Locations with hydrocarbon contact predicted within 7 days for priority first-strike baseline monitoring are listed.
(4) Management of light pollution.	**(4)** Woodside noted DCCEEW's National Light Pollution Guidelines for Wildlife and that its impact assessment for light emissions is based on these recommendations.	(**4)** 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 in Section 6.8.5 of EP.
(5) Management of underwater noise and observation procedures.	**(5)** Woodside noted DBCA advice that marine fauna has the potential to be sensitive to underwater noise and confirms it has assessed potential impacts and risk which will be managed through controls as well as learnings from modelling that will be undertaken for the EP.	**(5)** Woodside acknowledged DBCA advice that marine fauna has the potential to be sensitive to underwater noise and confirmed it will have controls in place to manage impacts and risks in the EP and is also commissioning noise modelling, the results of which will be included in the EP.	**(5)** Underwater noise and observation procedures are included in Section 6.8.3 and 6.8.4 of EP
(6) Notify DBCA Pilbara office in event of hydrocarbon release.	**(6)** 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.	**(6)** Woodside confirmed the DBCA Pilbara phone number had been incorporated as part of the Oil Pollution First Strike Plan.	**(6)** DBCA's Pilbara phone number has been incorporated into the Oil Pollution First Strike Plan for this EP (see Appendix H of EP).

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(7) No oiled wildlife response.	**(7)** 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.	**(7)** Woodside confirmed that DBCA would not implement an oiled wildlife management response on behalf of a petroleum operator.	**(7)** Woodside's Oiled Wildlife Response is included in the Oil Spill Preparedness and Response Mitigation Assessment for this EP (see Appendix G).
(8) Refer to DoT's guidance on Marine Oil Pollution.	**(8)** Woodside appreciates the recommendation to refer to 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.	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.	**(8)** Not required.
(9) No additional feedback beyond what was previously provided.	**(9)** Woodside understands DBCA has no additional feedback.	**(9)** Woodside confirmed DBCA had no feedback beyond what was previously provided in 2024 and that would be summarised in Appendix F.	**(9)** Not required.
(10) Requested consultation correspondence be sent to DBCA email.	**(10)** Woodside uses the recommended email for consultation.	**(10)** Woodside confirmed it will continue to use the recommended email for correspondence.	**(10)** 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, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8.1 of this EP).	No additional controls or measures are required.

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Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with DBCA for the purpose of regulation 25 complete. Sufficient information, a reasonable period and 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 July 2024 Woodside gave this information to DBCA on 8 July 2024 and an updated Consultation Information Sheet has been available on the Woodside website since October 2025. Woodside gave this information to DBCA on 8 July 2024, marking the commencement of consultation on this EP . Woodside emailed an updated Consultation Information Sheet to DBCA on 1 October 2025, marking an additional 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 GPGT Survey Program, 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.
  - 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.
- On 9 August 2024, DBCA shared its feedback, claims or objections regarding this activity, indicating the information provided was sufficient to enable DBCA to make an informed assessment of the possible consequences of the activity on its functions, interests or activities.
- Woodside provided additional information on 11 September 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 two 30 day periods for consultation.
- In this context, Woodside allowed DBCA a reasonable period for consultation in preparation of the EP as evidenced by DBCA's response on 9 August 2024.

Reasonable Opportunity

Woodside allowed DBCA a reasonable opportunity for consultation in the preparation of this EP because:

- Woodside published advertisements in 7 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 one targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and of consultation.
- Woodside hosted regional community information sessions and attended community events in Karratha, Dampier and Onslow which featured EP and consultation information.

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- Woodside considers a reasonable opportunity was provided to DBCA as evidenced by its response on 9 August 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 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 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 9 July 2024, Woodside emailed the DCCEEW advising of the proposed activity (Record of Consultation, reference 6.1.20), 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 23 July 2024, Woodside sent an email reminder to DCCEEW, following up on the proposed activity (Record of Consultation, reference 6.2.1) and included a link to the Consultation Information Sheet on Woodside's website.
- On 1 October 2025, Woodside emailed DCCEEW a consultation update (Record of Consultation, reference 6.3.15) and provided a Consultation Information Sheet (Record of Consultation, reference 6.3.1)
- On 21 October 2025, Woodside sent an email reminder to DCCEEW following up on the proposed activity (Record of Consultation 6.4.1)

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim	Woodside's Statement of 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 7.8.1 of this EP).	No additional measures or controls are required.

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Summary Report – Consultation Complete	

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with DCCEEW for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:

Sufficient Information

Woodside has given DCCEEW sufficient information to allow DCCEEW to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since July 2024 and an updated Consultation Information Sheet has been available on the Woodside website since October 2025. Woodside gave this information to DCCEEW on 8 July 2024, marking the commencement of consultation on this EP. Woodside emailed an updated Consultation Information Sheet to DCCEEW on 1 October 2025, marking an additional 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 GPGT Survey Activity, 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.
  - 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 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 two 30-day periods for consultation.
- It has been 17 months since consultation commenced.
- In this context, Woodside allowed DCCEEW a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

Woodside allowed DCCEEW a reasonable opportunity for consultation in the preparation of this EP because:

- Woodside published advertisements in 7 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 one targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and of consultation.
- Woodside hosted regional community information sessions and attended community events in Karratha, Dampier and Onslow which featured EP and consultation information.
- In the absence of feedback, Woodside sent a follow-up consultation email on 23 July 2024 and again on 21 October 2025, reminding DCCEEW of the opportunity to provide feedback.

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Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- No additional measures were required 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 8 July 2024, Woodside emailed the DNP 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 23 July 2024, Woodside sent an email reminder to DNP, following up on the proposed activity (Record of Consultation, reference 6.2.1) and included a link to the Consultation Information Sheet on Woodside's website.
- On 27 October 2024, DNP emailed to thank Woodside for opportunity to comment (SI Report, reference 29.1) and:
  - **(1)** Noted that no DNP authorisations are needed as the planned activities do not overlap any Australian Marine Parks (AMPs).
  - **(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 ALARP.
    - Clearly demonstrates the activity would not be inconsistent with the North-west Marine Parks Network Management Plan 2018.
  - **(3)** Asked for clarification on Operational Area for the activity and noted what activities it considers the OA to encompass including operational activities such as line turns / repositioning, deployment and recovery, equipment maintenance and crew change.
  - (**4)** Provided the requirements for emergency responses.
- On 14 November 2024, Woodside thanked DNP for its feedback (SI Report, reference 29.2) and:
  - **(1)** Noted DNP's confirmation that planned activities don't overlap any AMP.
  - **(2)** Confirmed that Woodside considered the recommended DNP and NOPSEMA guidance note 'Petroleum Activities and Australian Marine Parks' and preparations for the EP's survey activities included identification and management of impacts and risks and considered all options to avoid or reduce them to ALARP.
  - **(3)** Confirmed the Operational Area for the activity program does not overlap any Australian Marine Parks, noted the distances to nearest AMPs and responded that:
    - Vessels associated with the survey activity will comply with EP when within the Operational Area.

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- Vessels transiting to or from the OA are outside the scope of the EP and will comply with applicable requirements for safe vessel operations.
- Vessels associated with the activity will not enter an AMP at any time, unless there is an emergency situation.

- **(4)** Woodside will notify DNP in the event of an activity change resulting in an overlap or new impact on an AMP and for emergency responses, Woodside will notify the 24-hour Marine Compliance Duty Officer.
- On 1 October 2025, Woodside emailed DNP a consultation update on the EP (Record of Consultation, reference 6.3.16) since consultation first took place in July 2024. Woodside provided an overview of activities with updated timing for planned GPGT survey activities. Woodside attached an updated Consultation Information Sheet.
- On 7 October, DNP thanked Woodside for opportunity to comment on the EP (SI Report, reference 29.3) and:
  - **(1)** Noted updated timing is in same seasonal window and planned activities don't overlap any Australian Marine Parks, so no authorisations are needed.
  - **(5)** Confirmed no additional comments aside from those provided in 27 October 2024 correspondence.
- On 8 October 2025, Woodside thanked DNP for review (SI Report 29.4) and:
  - **(1)** Understood DNP's note that activity is in same seasonal window and there is no overlap with any Australian Marine Parks, so no authorisations are needed.
  - **(5)** Accepted that DNP had no further comments beyond what was shared on 27 October 2024.

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim	Woodside's Statement of Response	Inclusion in Environment Plan
(1) Confirmed activities don't overlap AMPs.	**(1)** Woodside noted there were no authorisation requirements from the DNP.	**(1)** 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 has considered the *'Petroleum Activities and Australian Marine Parks'* guidance note to assess and manage impacts and risks to AMPs.	**(2)** 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 Australian Marine Park values (including ecosystem values) to an ALARP and acceptable level and that the activity is not inconsistent with the management plan (see Section 6.8 of the EP).
(3) Asked for clarification on the Operational Area and provided what it considers Operational Area to encompass.	**(3)** Woodside noted that the Operational Area is 150 m north of the Dampier Habitat Protection Zone (borrow ground) and ~7.5 km west of Dampier Habitat Protection Zone. Any project vessels associated with the activity will comply	**(3)** Woodside confirmed the location of the Operational Area and noted that support vessels will comply with the EP once they enter the Operational Area and while transiting to and from, vessels will comply with applicable maritime	**(3)** Adopted a control in Section 6.8.2 of the EP, as referenced as C 2.6, such that survey vessels will not enter the Dampier AMP at any time (unless there is an emergency that requires it).

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	with the EP when within the Operating Area defined by Woodside and when vessels are transiting to and from the Operational Area will comply with applicable maritime regulations, laws and other requirements for safe vessel operation.	regulations, laws and other requirements. Woodside added a control that no vessels associated with the activity will enter the marine park at any time unless there is an emergency situation.	
(4) Provided guidance for emergency response.	**(4)** Woodside will notify DNP in the event of relevant changes to the activity, or for emergency responses.	**(4)** Woodside confirmed it would notify DNP if activities changed and resulted in an overlap with or new impact to a marine park, or for emergency responses**.**	**(4)** Woodside will provide notification of significant change, as appropriate, to relevant persons as referenced in Section 7.10 Table 7-5 of 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).
(5) No additional comments beyond ones provided in October 2024.	**(5)** Woodside understands DNP has no additional comments and recognises the comments previously shared during the first consultation in 2024l	**(5)** Woodside confirmed that DNP had no further comments beyond what was provided during the 2024 consultation.	**(5)** Not required.
While feedback has been received, there were no objections or claims.	.	Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should further feedback be received, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8.1 of 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 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**			

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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 July and an updated Consultation Information Sheet has been available on the Woodside website since October 2025. Woodside gave this information to DNP on 8 July 2024, marking the commencement of consultation on this EP . Woodside emailed an updated Consultation Information Sheet to DNP on 1 October 2025, marking an additional 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 GPGT Survey Program, 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.
  - 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.
- On 27 October 2024, DNP shared its feedback, claims or objections regarding this activity, indicating the information provided was sufficient to enable DNP to make an informed assessment of the possible consequences of the activity on its functions, interests or activities.
- Woodside provided additional information on 14 November 2024.
- Woodside sent a consultation update in October 2025 which included a new Consultation Information Sheet and provided an overview of the survey activities and updated timing.

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 two 30 day periods for consultation and accepted and responded to the feedback sent on 27 October 2024. Woodside provided an additional 30 days for the consultation update which started in October 2025.
- In this context, Woodside allowed DNP a reasonable period for consultation in preparation of the EP as evidenced by DNP's response on 27 October 2024 and its second response on 7 October following the consultation update on 1 October 2025.

Reasonable Opportunity

Woodside allowed DNP a reasonable opportunity for consultation in the preparation of this EP because:

- Woodside published advertisements in 7 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 one targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and of consultation.
- Woodside hosted regional community information sessions and attended community events in Karratha, Dampier and Onslow which featured EP and consultation information.
- Woodside considers a reasonable opportunity was provided to DNP as evidenced by its response on 27 October 2024 and again on 7 October 2025.

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Outcomes of Consultation:

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- DNP provided feedback regarding the proposed activities in this EP. 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 and assessed the merits of any objection or claim about the adverse impact of activities to which this EP relates.
  - As a result of DNP's feedback, adopted a control in Section 6 of the EP, as referenced as C 2.6, such that survey vessels will not enter the Dampier AMP at any time (unless there is an emergency that requires it).

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

4.3 COMMONWEALTH AND STATE GOVERNMENT DEPARTMENTS OR AGENCIES – INDUSTRY

4.3.1 Department of Mines, Petroleum and Exploration (DMPE), (known in 2024 as Department of Energy, Mines, Industry Regulation and Safety (DEMIRS))

Summary of information provided and record of consultation for this EP:

- On 8 July 2024, Woodside emailed DEMIRS (which will be called DMPE moving forward) advising of the proposed activity (Record of Consultation, reference 6.1.7), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*.
- On 23 July 2024, Woodside sent an email reminder to DMPE, following up on the proposed activity (Record of Consultation, reference 6.2.1) and included a link to the Consultation Information Sheet on Woodside's website.
- On 1 October 2025, Woodside emailed DMPE a consultation update (Record of Consultation, reference 6.3.3) and provided a Consultation Information Sheet (Record of Consultation, reference 6.3.1)
- On 21 October 2025, Woodside sent an email reminder to DMPE following up on the proposed activity (Record of Consultation 6.4.1)

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim	Woodside's Statement of 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 7.8.1 of this EP).	No additional measures or controls are required. DMPE will receive start and end of activity notifications as a standard procedure based on regulation 54 in Table 7-5 in Section 7.10 of the EP.

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Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with DMPE for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:

Sufficient Information

Woodside has given DMPE sufficient information to allow DMPE to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since July 2024. Woodside gave this information to DMPE on 8 July 2024 and an updated Consultation Information Sheet has been available on the Woodside website since October 2025. Woodside gave this information to DMPE on 8 July 2024, marking the commencement of consultation on this EP. Woodside emailed an updated Consultation Information Sheet to DMPE on 1 October 2025, marking an additional 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 GPGT Survey Activity, 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.
  - 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 DMPE a reasonable period for consultation in the preparation of this EP because:

- A consultation period was stated in the initial correspondence to DMPE advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed DMPE 30 days for consultation.
- It has been 17 months since consultation commenced.
- In this context, Woodside allowed DMPE a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

Woodside allowed DMPE a reasonable opportunity for consultation in the preparation of this EP because:

- Woodside published advertisements in 7 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 one targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and of consultation.
- Woodside hosted regional community information sessions and attended community events in Karratha, Dampier and Onslow which featured EP and consultation information.
- In the absence of feedback, Woodside sent a follow-up consultation email on 23 July 2024 and on 21 October 2025, reminding DMPE of the opportunity to provide feedback.

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Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- No additional measures were required as DMPE did not provide feedback for this EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.

The measures and controls described in this EP address the potential impact from the proposed activity on DMPE's functions, interests or activities.

4.3.2 Department of Industry, Science and Resources (DISR)

Summary of information provided and record of consultation for this EP:

- On 8 July 2024, Woodside emailed DISR advising of the proposed activity (Record of Consultation, reference 6.1.7), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*.
- On 23 July 2024, Woodside sent an email reminder to DISR, following up on the proposed activity (Record of Consultation, reference 6.2.1) and included a link to the Consultation Information Sheet on Woodside's website.
- On 1 October 2025, Woodside emailed DISR a consultation update (Record of Consultation, reference 6.3.3) and provided a Consultation Information Sheet (Record of Consultation, reference 6.3.1)
- On 21 October 2025, Woodside sent an email reminder to DISR following up on the proposed activity (Record of Consultation 6.4.1)

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim	Woodside's Statement of 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 7.8.1 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 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:

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- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since July 2024. Woodside gave this information to DISR on 8 July 2024 and an updated Consultation Information Sheet has been available on the Woodside website since October 2025. Woodside gave this information to DISR on 8 July 2024, marking the commencement of consultation on this EP . Woodside emailed an updated Consultation Information Sheet to DISR on 1 October 2025, marking an additional 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 GPGT Survey Activity, 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.
  - 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 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 two 30-day periods for consultation.
- It has been 17 months since consultation commenced.
- In this context, Woodside allowed DISR a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

Woodside allowed DISR a reasonable opportunity for consultation in the preparation of this EP because:

- Woodside published advertisements in 7 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 one targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and of consultation.
- Woodside hosted regional community information sessions and attended community events in Karratha, Dampier and Onslow which featured EP and consultation information.
- In the absence of feedback, Woodside sent a follow-up consultation email on 23 July 2024 and on 21 October 2025, 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 required 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.

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4.4 COMMONWEALTH COMMERCIAL FISHERIES AND REPRESENTATIVE BODIES

4.4.1 Commonwealth Fisheries Association (CFA)

Summary of information provided and record of consultation for this EP:

- On 8 July 2024, Woodside emailed CFA advising of the proposed activity (Record of Consultation, reference 6.1.22), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*.
- On 23 July 2024, Woodside sent an email reminder to CFA, following up on the proposed activity (Record of Consultation, reference 6.2.1) and included a link to the Consultation Information Sheet on Woodside's website.
- On 1 October 2025, Woodside emailed CFA a consultation update (Record of Consultation, reference 6.3.17 and provided a Consultation Information Sheet (Record of Consultation, reference 6.3.1).
- On 21 October 2025, Woodside sent an email reminder to CFA following up on the proposed activity (Record of Consultation 6.4.1).

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim	Woodside's Statement of 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 7.8.1 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 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 July 2024. Woodside gave this information to CFA on 8 July 2024, and an updated Consultation Information Sheet has been available on the Woodside website since October 2025. Woodside gave this information to CFA on 8 July 2024, marking the commencement of consultation on this EP. Woodside emailed an updated Consultation Information Sheet to CFA on 1 October 2025, marking an additional consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.

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- A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the GPGT Survey Activity, 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.
- 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 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 two 30-day periods for consultation.
- It has been 17 months since consultation commenced.
- In this context, Woodside allowed CFA a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity to Provide Feedback

Woodside allowed CFA a reasonable opportunity for consultation in the preparation of this EP because:

- Woodside published advertisements in 7 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 one targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and of consultation.
- Woodside hosted regional community information sessions and attended community events in Karratha, Dampier and Onslow which featured EP and consultation information.
- In the absence of feedback, Woodside sent a follow-up consultation email on 23 July 2024 and on 21 October 2025, 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 required 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

Summary of information provided and record of consultation for this EP:

- On 8 July 2024, Woodside emailed North West Slope Trawl Fishery licence holders advising of the proposed activity (Record of Consultation, reference 6.1.22), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*.

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- On 23 July 2024, Woodside sent an email reminder to North West Slope Trawl Fishery licence holders following up on the proposed activity (Record of Consultation, reference 6.2.1) and included a link to the Consultation Information Sheet on Woodside's website.
- On 1 October 2025, Woodside emailed North West Slope Trawl Fishery a consultation update (Record of Consultation, reference 6.3.17) and provided a Consultation Information Sheet (Record of Consultation, reference 6.3.1).
- On 21 October 2025, Woodside sent an email reminder to North West Slope Trawl Fishery following up on the proposed activity (Record of Consultation 6.4.1).

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim	Woodside's Statement of 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 7.8.1 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 Environment Regulations and considers consultation with North West Slope Trawl Fishery licence holders for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:

Sufficient Information

Woodside has given North West Slope Trawl Fishery licence holders sufficient information to 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 July 2024. Woodside gave this information to North West Slope Trawl Fishery licence holders on 8 July 2024, and an updated Consultation Information Sheet has been available on the Woodside website since October 2025. Woodside gave this information to North West Slope Trawl Fishery licence holders on 8 July 2024, marking the commencement of consultation on this EP. Woodside emailed an updated Consultation Information Sheet to North West Slope Trawl Fishery licence holders on 1 October 2025, marking an additional 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 GPGT Survey Activity, 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.
  - 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

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Woodside allowed North West Slope Trawl Fishery licence holders a reasonable period for consultation in the preparation of this EP because:

- A consultation period was stated in the initial correspondence to North West Slope Trawl Fishery licence holders advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed North West Slope Trawl Fishery licence holders two 30-day periods for consultation.
- It has been 17 months since consultation commenced.
- In this context, Woodside allowed North West Slope Trawl Fishery licence holders a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity to Provide Feedback

Woodside allowed North West Slope Trawl Fishery licence holders a reasonable opportunity for consultation in the preparation of this EP because:

- Woodside published advertisements in 7 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 one targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and of consultation.
- Woodside hosted regional community information sessions and attended community events in Karratha, Dampier and Onslow which featured EP and consultation information.
- In the absence of feedback, Woodside sent a follow-up consultation email on 23 July 2024 and on 21 October 2025, reminding North West Slope Trawl Fishery licence holders of the opportunity to provide feedback.

Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- No additional measures were required as North West Slope Trawl Fishery licence holders did not provide feedback for this EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.

The measures and controls described in this EP address the potential impact from the proposed activity on North West Slope Trawl Fishery licence holders' functions, interests or activities.

4.5 STATE COMMERCIAL FISHERIES AND REPRESENTATIVE BODIES

4.5.1 Western Australian Fishing Industry Council (WAFIC)

Summary of information provided and record of consultation for this EP:

- On 9 July 2024, Woodside emailed WAFIC advising of the proposed activity (SI Report, 11.1), provided a Consultation Information Sheet, list of fisheries to contact and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*.
- **(1)** On 9 July 2024, WAFIC emailed to thank Woodside for the email and said it would action the request to contact relevant fisheries (SI Report, reference (11.2).
- **(1)** On 10 July 2024, Woodside emailed to thank WAFIC for the update (SI Report, reference 11.3).
- **(1)** On 12 July 2024, WAFIC advised it would action the request when a colleague was back in the office (SI Report, reference 11.4).

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- **(1)** On 12 July 2024, Woodside thanked WAFIC for update and confirmed it was fine to action request upon the colleague's return (SI Report, reference 11.5) and offered to extend the consultation timeframe by a week so the fisheries would have access to full 30 days to provide feedback.
- On 15 July 2024, Woodside reached out again to WAFIC and offered to extend date for feedback. (SI Report, reference 11.6).

  (1) On 15 July 2024, WAFIC emailed to confirm it would send information out to fisheries that day (SI Report, reference 11.7) and thanked Woodside for extending the date for feedback.
- **(1)** On 15 July 2024, Woodside replied to thank WAFIC for sending information to the fisheries (SI Report, reference 11.8).
- **(1)** On 15 July 2024, WAFIC forwarded the Angel CCS GPGT Survey EP consultation material which was sent to relevant state fisheries (SI Report, reference 11.9).
- On 15 July 2024, WAFIC emailed Woodside (SI Report, reference, 11.10) and confirmed:
  - **(1)** It sent consultation information to relevant license holders for the EP and confirmed Specimen Shell Managed Fishery was not deemed relevant by WAFIC, and that it would provide feedback on 16 August 2024.
- **(1)** On 15 July 2024, Woodside thanked WAFIC for distributing consultation information for this and another EP (SI Report, reference 11.11).
- **(2)** On 16 August 2024, WAFIC emailed to confirm it did not receive any feedback from fisheries on the EP (SI Report, reference 11.12) and:
  - **(3)** Asked how Woodside monitored the discharge of drill cuttings and impact of drill cuttings associated with the surveys and about safety risk of fishing in area of drill cuttings and risk of catch contamination.
  - **(4)** Asked about impacts of activities on water quality.
  - **(5)** Requested notifications on vessel operations and activities.
- **(2)** On 30 August 2024, Woodside replied to WAFIC and thanked it for the update that there was no feedback from license holders (SI report, reference 11.13) and:
  - **(3)** Noted its assessment of risks and impacts and applied controls to manage drill cuttings from geotechnical seabed coring and said that no significant impacts to fish tied to seabed coring were anticipated.
  - **(4)** Included that only environmentally acceptable drill fluids are discharged to sea and toxic effects in vicinity of drill cuttings is low any impact to water quality was predicted to be localised and short-term with measures and controls in place to manage impacts and risks to ALARP and acceptable levels.
  - **(5)** Affirmed Woodside would provide notifications for start-up and completion of survey activities.
- **(6)** On 3 September 2024, WAFIC emailed to thank Woodside for responding to its feedback and confirmed it had no further comments (SI Report, reference 11.14).
- **(6)** On 11 September 2024, Woodside thanked WAFIC for its feedback (SI Report, reference 11.15).
- On 1 October 2025, Woodside emailed WAFIC a consultation update (SI Report, reference 11.16) and provided a Consultation Information Sheet (CIS) (Record of Consultation, reference 6.3.1) and request to contact the State Fishery license holders.
- **(1)** On 1 October 2025, WAFIC said it would share the activity update with State Fishery license holders (SI Report, reference 11.17) and later confirmed the send of the email and CIS attachment (SI Report, reference 11.18).
- **(1)** On 1 October 2025, Woodside thanked WAFIC for sending the consultation information (SI Report, reference 11.19).
- **(2)** On 31 October, WAFIC confirmed no feedback was received from the State Fishery licence holders (SI Report reference 11.20) and:
  - **(7)** Requested details of the compensation protocol Woodside intends to apply under the EP as WAFIC had concerns tied to potential damage or loss of commercial fishing gear due to survey activities.
- On 16 December, Woodside thanked WAFIC for confirming no feedback was received from State Fishery licence holders (SI Report, reference 11.21) and:

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- (7) Confirmed that Woodside was preparing an update to its co-existence approach with commercial fishers in Australia and it would be shared with WAFIC when final.

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim	Woodside's Statement of Response	Inclusion in Environment Plan
(1) Confirmed consultation information was sent to fisheries/licence holders.	**(1)** Woodside notes relevant state fishery license holders would be consulted through WAFIC.	**(1)** Woodside thanked WAFIC for distributing consultation information to relevant fishery licence holders and noted there was no feedback or concerns from industry.	**(1)** Not required.
(2) No feedback from fishing industry members.	**(2)** Woodside notes that WAFIC did not get any feedback from its fishing industry members.	**(2)** Woodside acknowledged that WAFIC did not receive any feedback resulting from consultation with fishing industry members.	**(2)** Not required.
(3) Requested information on drill cuttings impact.	**(3)** Woodside assesses potential risks and impacts to seabed from geotechnical surveys and applies controls to manage impact of drill cuttings.	**(3)** Woodside noted its assessment of risks and impacts and has applied controls to manage drill cuttings from the geotechnical activities and also noted there should be no significant impact to fish as a result of the activity.	**(3)** Refer to Section 6.8.2 of the EP.
(4) Consideration of the cumulative impacts on water quality from activities.	**(4)** Woodside assesses the risks and impacts on water quality from the surveys and applies controls to manage impacts and risks to ALARP and acceptable levels.	**(4)** Woodside addressed concerns on impact to water quality noting it would be localised and short-term with measures and controls in place to manage impacts and risks to ALARP and acceptable levels	**(4)** Refer to Section 6.8 and 6.9 of the EP.
(5) Requested notifications.	**(5)** Woodside understands WAFIC needs to be notified given activities will take place in areas where state fisheries are active.	**(5)** Woodside confirmed WAFIC would receive start of activity notifications.	**(5)** Woodside will provide notifications to WAFIC as set out in Section 7.10, Table 7-5 of the EP.

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(6) No further comments.	**(6)** Woodside confirms it addressed WAFIC feedback in prior correspondence and understands that WAFIC has no further comments on the activities.	**(6)** Woodside noted that WAFIC had no further comments on the planned activities.	**(6)** Not required.
(7) Requested compensation protocol details regarding potential loss of commercial fishing gear	**(7)** Woodside is updating its co-existence agreement which addresses a compensation protocol available to fisheries.	**(7)** Woodside confirmed it was updating its co-existence agreement and would send to WAFIC when finalised.	**(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, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8.1 of this EP).	Woodside has assessed the potential for interaction with State-managed fisheries in Section 6.6.1 of the EP. No additional controls or measures are required.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with 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 July 2024. Woodside gave this information to WAFIC on 9 July 2024, marking the commencement of consultation on this EP. Woodside issued a consultation update on 1 October 2025. 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 GPGT Survey Program, 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.

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- 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.

- On 16 August 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 30 August 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 two 30 day periods for consultation and consultation with relevant state fisheries.
- In this context, Woodside allowed WAFIC a reasonable period for consultation in preparation of the EP as evidenced by WAFIC's response on 16 August 2024 and again on 31 October 2025.

Reasonable Opportunity

Woodside allowed WAFIC a reasonable opportunity for consultation in the preparation of this EP because:

- Woodside published advertisements in 7 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 one targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and of consultation.
- Woodside considers a reasonable opportunity was provided to WAFIC as evidenced by its response on 16 August 2024 and 31 October 2025.

Outcomes of Consultation:

- WAFIC 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 WAFIC and assessed the merits of any objection or claim about the adverse impact of activities to which this EP relates.
  - As a result of WAFIC's feedback requesting activity notifications, this was added to Section 7.10, 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.

4.5.2 Marine Aquarium Managed Fishery, Mackerel Managed Fishery (Area 2), Nickol Bay Prawn Managed Fishery, Onslow Prawn Managed Fishery (Areas 1 and 2), Pilbara Crab Managed Fishery, Pilbara Line Fishery, Pilbara Trap Fishery, Pilbara Trawl Fishery

Summary of information provided and record of consultation for this EP:

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- On 15 July 2024, WAFIC, on behalf of Woodside, emailed Marine Aquarium Managed Fishery, Mackerel Managed Fishery (Area 2), Nickol Bay Prawn Managed Fishery, Onslow Prawn Managed Fishery (Areas 1 and 2), Pilbara Crab Managed Fishery, Pilbara Line Fishery, Pilbara Trap Fishery, Pilbara Trawl Fishery (fishery licence holders) advising of the proposed activity (SI Report, reference 11.8), and provided a Consultation Information Sheet.
- On 16 August 2024, WAFIC emailed Woodside reporting that no feedback had been received for this activity from licence holders (SI Report, reference 11.11).
- On 1 October 2025, WAFIC, on behalf of Woodside, emailed the fishery licence holders a consultation update (SI Report, reference 11.17) and provided a Consultation Information Sheet (CIS) (Record of Consultation, reference 6.3.1) and request to contact the State Fishery license holders.
- On 1 October 2025, Woodside thanked WAFIC for sending the information to state fishery licence holders (SI Report, reference 11.18).
- On 31 October, WAFIC confirmed no feedback was received from the State Fishery licence holders (SI Report reference 11.19).

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim	Woodside's Statement of 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 7.8.1 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 Environment Regulations and considers consultation through WAFIC with fishery licence holders for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:

Sufficient Information

Woodside has given fisher licence holders sufficient information 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 July 2024. Woodside via WAFIC gave this information to fishery licence holders on 15 July 2024, and an updated Consultation Information Sheet has been available on the Woodside website since October 2025.Woodside via WAFIC emailed an updated Consultation Information Sheet to fishery licence holders on 1 October 2025, marking an additional 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 GPGT Survey Activity, 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.

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- 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 fishery licence holders a reasonable period for consultation in the preparation of this EP because:

- A consultation period was stated in the initial correspondence to fishery licence holders advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside's methodology allows a 30-day consultation period and Woodside, through WAFIC, allowed fishery licence holders two 30-day periods for consultation.
- It has been 17 months since consultation commenced.
- In this context, Woodside allowed fishery licence holders a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

Woodside allowed fishery licence holders a reasonable opportunity for consultation in the preparation of this EP because:

- Woodside published advertisements in 7 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 one targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and of consultation.
- Woodside hosted regional community information sessions and attended community events in Karratha, Dampier and Onslow which featured EP and consultation information.

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 fishery licence holders did not provide feedback for this EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.

The measures and controls described in this EP address the potential impact from the proposed activity on fishery licence holders' functions, interests or activities.

4.5.3 Aquaculture Council of Western Australia (ACWA)

Summary of information provided and record of consultation for this EP:

- On 1 October 2025, Woodside, emailed ACWA a consultation update (Record of Consultation, reference 6.3.42) and provided a Consultation Information Sheet (CIS) (Record of Consultation, reference 6.3.1).
- On 21 October 2025, Woodside emailed a reminder to ACWA about consultation. (Record of Consultation, reference 6.4.1)

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Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim	Woodside's Statement of 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 7.8.1 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 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 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 consultation update has been publicly available on the Woodside website since October 2025. Woodside emailed an updated Consultation Information Sheet to ACWA on 1 October 2025, marking an additional 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 GPGT Survey Activity, 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.
  - 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 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 a 30 day period for consultation.
- It has been 17 months since consultation commenced for the EP, but 2 months for the consultation update where ACWA was added to consultation.
- In this context, Woodside allowed ACWA a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

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Woodside allowed ACWA a reasonable opportunity for consultation in the preparation of this EP because:

- Woodside published advertisements in 7 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 one targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and of consultation.
- Woodside hosted regional community information sessions and attended community events in Karratha, Dampier and Onslow which featured EP and consultation information.

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 ACWA did not provide feedback for this EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.

The measures and controls described in this EP address the potential impact from the proposed activity on ACWA's functions, interests or activities.

4.6 RECREATIONAL MARINE USERS AND REPRESENTATIVE BODIES

4.6.1 Marine Tourism WA

Summary of information provided and record of consultation for this EP:

- On 8 July 2024, Woodside emailed the Marine Tourism WA advising of the proposed activity (Record of Consultation, reference 6.1.24), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*.
- On 23 July 2024, Woodside sent an email reminder to Marine Tourism WA, following up on the proposed activity (Record of Consultation, reference 6.2.1) and included a link to the Consultation Information Sheet on Woodside's website.
- On 1 October 2025, Woodside emailed Marine Tourism WA a consultation update (Record of Consultation, reference 6.3.20) and provided a Consultation Information Sheet (Record of Consultation, reference 6.3.1).
- On 21 October 2025, Woodside sent an email reminder to Marine Tourism WA following up on the proposed activity (Record of Consultation 6.4.1).

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim	Woodside's Statement of 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	No additional measures or controls are required.

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		Change and Revision process (see Section 7.8.1 of this EP).	

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 July 2024. Woodside gave this information to Marine Tourism WA on 8 July 2024 and an updated Consultation Information Sheet has been available on the Woodside website since October 2025. Woodside gave this information to Marine Tourism WA on 8 July 2024, marking the commencement of consultation on this EP. Woodside emailed an updated Consultation Information Sheet to Marine Tourism WA on 1 October 2025, marking an additional 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 GPGT Survey Activity, 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.
  - 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 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 two 30-day periods for consultation.
- It has been 17 months since consultation commenced.
- In this context, Woodside allowed Marine Tourism WA a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity to Provide Feedback

Woodside allowed Marine Tourism WA a reasonable opportunity for consultation in the preparation of this EP because:

- Woodside published advertisements in 7 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 one targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and of consultation.
- Woodside hosted regional community information sessions and attended community events in Karratha, Dampier and Onslow which featured EP and consultation information.

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Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- No additional measures were required 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.

4.6.2 Pilbara/Kimberley Recreational Marine Users

Summary of information provided and record of consultation for this EP:

- On 8 July 2024, Woodside emailed (Record of Consultation, reference 6.1.25) or sent a letter (Record of Consultation, reference 6.1.26) to individual Pilbara/Kimberley Recreational Marine Users 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*.
- On 23 July 2024, Woodside sent a follow up email to individual Pilbara/Kimberley Recreational Marine Users (Record of Consultation, reference 6.2.1).
- On 25 July 2024 Woodside sent a follow up letter to individual Pilbara/Kimberley Recreational Marine Users when emails were not available (Record of Consultation, reference 6.2.2).
- On 1 October 2025, Woodside emailed or mailed Pilbara/Kimberley Recreational Marine Users a consultation update (Record of Consultation, reference 6.3.20 and 6.3.20.1) and provided a Consultation Information Sheet (Record of Consultation, reference 6.3.1).
- On 21 October 2025, Woodside sent an email or letter reminder to Pilbara/Kimberley Recreational Marine Users following up on the proposed activity (Record of Consultation 6.4.1 and 6.4.2).

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim	Woodside's Statement of 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 7.8.1 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 Environment Regulations and considers consultation with individual 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:

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Sufficient Information

Woodside has given Pilbara/Kimberley Recreational Marine Users sufficient information to allow Pilbara/Kimberley Recreational Marine Users to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since July 2024 and an updated Consultation Information Sheet has been available on the Woodside website since October 2025. Woodside gave this information to Pilbara/Kimberley Recreational Marine Users on 8 July 2024, marking the commencement of consultation on this EP. Woodside emailed or mailed an updated Consultation Information Sheet to Pilbara/Kimberley Recreational Marine Users on 1 October 2025, marking an additional 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 GPGT Survey Activity, 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.
  - 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 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 individual 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 individual Pilbara/Kimberley Recreational Marine Users two 30-day periods for consultation.
- It has been 17 months since consultation commenced.
- In this context, Woodside allowed individual Pilbara/Kimberley Recreational Marine Users a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

Woodside allowed Pilbara/Kimberley Recreational Marine Users a reasonable opportunity for consultation in the preparation of this EP because:

- Woodside published advertisements in 7 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 one targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and of consultation.
- Woodside hosted regional community information sessions and attended community events in Karratha, Dampier and Onslow which featured EP and consultation information.
- In the absence of feedback, Woodside sent a follow-up consultation email on 23 July 2024 or letter on 25 July 2024 and again on 21 October 2025, reminding individual 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:

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- No additional measures were required as individual Pilbara/Kimberley Recreational Marine Users did not provide feedback for this EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.

The measures and controls described in this EP address the potential impact from the proposed activity on individual Pilbara/Kimberley Recreational Marine Users' functions, interests or activities.

4.6.3 Recfishwest

Summary of information provided and record of consultation for this EP:

- On 8 July 2024, Woodside emailed Recfishwest advising of the proposed activity (Record of Consultation, reference 6.1.24), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*.
- On 23 July 2024, Woodside sent an email reminder to Recfishwest, following up on the proposed activity (Record of Consultation, reference 6.2.1) and included a link to the Consultation Information Sheet on Woodside's website.
- On 23 July, Recfishwest emailed (SI Report, reference 8.1) to thank Woodside for information related to Angel CCS Geophysical Geotechnical Surveys and:
  - **(1)** Noted that the planned activities will help obtain data to support the GHG program, inform design plans and placement of infrastructure and support baseline studies for current infrastructure and potential future activities.
  - **(2)** Noted activities are in area of recreational fishing but should not have high impact on recreational fishing due to survey methods.
  - **(3)** Wanted to be kept informed as project progresses and CCS infrastructure is designed and look forward to future updates.
- **(1)** On 23 July 2024, Woodside emailed Recfishwest to thank it for email regarding the planned activities of EP (SI Report, reference 8.2):
  - **(2)** Noted the feedback that recreational fishers are in area of planned activities, but they should not be highly impacted.
  - **(3)** Confirmed Recfishwest will receive notifications on current activities so they can update relevant fishing clubs and community members.
- On 1 October 2025, Woodside emailed Recfishwest a consultation update (Record of Consultation, reference 6.3.19) and provided a Consultation Information Sheet (Record of Consultation, reference 6.3.1).
- On 21 October 2025, Woodside sent an email reminder to Recfishwest following up on the proposed activity (Record of Consultation, reference 6.4.1).
- On 30 October 2025, Recfishwest thanked Woodside for the update on the Angel CCS GPGT Surveys EP (SI Report, reference 8.3) and:
  - **(1)** Recapped when surveys were expected to begin and status of state EP.
  - **(2,3)** Noted no additional feedback other than what was provided on 23 July 2025 and appreciated the update.
- On 3 November 2025, Woodside thanked Recfishwest for the review of the Angel CCC GPGT Surveys EP update (SI Report, reference 8.4) and:
  - **(1)** Confirmed Recfishwest's understanding of the Commonwealth EP activity and status of State EP.
  - **(2,3)** Understood that Recfishwest had no additional feedback beyond what was provided in 23 July 2024 and notifications will be provided.

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Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim	Woodside's Statement of Response	Inclusion in Environment Plan
(1) Recapped core project activities.	**(1)** Woodside understands that Recfishwest had reviewed the planned activities.	**(1)** Woodside noted the recap of activities associated with the EP's planned activities.	**(1)** Planned activities are covered in Section 3.2 of EP.
(2) Noted survey activities will not have high impact on recreational fishing.	**(2)** Woodside reviewed Recfishwest's assessment that given survey methods, activities won't have a high impact on recreational fishing.	**(2)** Woodside noted that despite prevalent recreational fishing in activity areas, the survey methods should have limited impact on fishers.	**(2)** Not required.
(3) Asked to be kept informed**.**	**(3)** Woodside acknowledges Recfishwest's request to be informed as the Angel CCS program progresses.	**(3)** Woodside confirmed it would provide notifications so Recfishwest can inform relevant fishing clubs and communities.	**(3)** Woodside will provide notifications to Recfishwest as set out in Section 7.10, Table 7-5 of the EP**.**
While feedback has been received, there were no objections or claims.	Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24.	Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should further feedback be received, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8.1 of this EP).	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 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 July 2024 and an updated Consultation Information Sheet has been available on the Woodside website since October 2025. Woodside gave this information to Recfishwest on 8 July 2024, marking the commencement of

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consultation on this EP. Woodside emailed an updated Consultation Information Sheet to Recfishwest on 1 October 2025, marking an additional 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 GPGT Survey Program, 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.
- 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.
- On 23 July 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 23 July 2024 and responded on 3 November 2025.

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 two 30-day periods for consultation.
- In this context, Woodside allowed Recfishwest a reasonable period for consultation in preparation of the EP as evidenced by Recfishwest's response on 23 July 2024 and again on 31 October 2025.

Reasonable Opportunity

Woodside allowed Recfishwest a reasonable opportunity for consultation in the preparation of this EP because:

- Woodside published advertisements in 7 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 one targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and of consultation.
- Woodside hosted regional community information sessions and attended community events in Karratha, Dampier and Onslow which featured EP and consultation information.
- Woodside considers a reasonable opportunity was provided to Recfishwest as evidenced by its response on 23 July 2024 and again on 30 October 2025.

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 7.10., Table 7-5 of the EP.

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Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.

4.6.4 WA Game Fishing Association

Summary of information provided and record of consultation for this EP:

- On 8 July 2024, Woodside emailed WA Game Fishing Association advising of the proposed activity (Record of Consultation, reference 6.1.24), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*.
- On 23 July 2024, Woodside sent an email reminder to WA Game Fishing Association, following up on the proposed activity (Record of Consultation, reference 6.2.1) and included a link to the Consultation Information Sheet on Woodside's website.
- On 1 October 2025, Woodside emailed WA Game Fishing Association a consultation update (Record of Consultation, reference 6.3.20) and provided a Consultation Information Sheet (Record of Consultation, reference 6.3.1).
- On 21 October 2025, Woodside sent an email reminder to WA Game Fishing Association following up on the proposed activity (Record of Consultation, reference 6.4.1).

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim	Woodside's Statement of 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 7.8.1 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 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 July 2024 and an updated Consultation Information Sheet has been available on the Woodside website since October 2025. Woodside gave this information to WA Game Fishing Association on 8 July 2024, marking the commencement of consultation on this EP. Woodside emailed an updated Consultation Information Sheet to WA Game Fishing Association on 1 October 2025, marking an additional consultation on this EP. The Consultation Information Sheet included:

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- The purpose of consultation and set out what was being sought through consultation.
- A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the GPGT Survey Activity, 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.
- 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 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 two 30 day periods for consultation.
- It has been 17 months since consultation commenced.
- In this context, Woodside allowed WA Game Fishing Association a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

Woodside allowed WA Game Fishing Association a reasonable opportunity for consultation in the preparation of this EP because:

- Woodside published advertisements in 7 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 one targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and of consultation.
- Woodside hosted regional community information sessions and attended community events in Karratha, Dampier and Onslow which featured EP and consultation information.
- In the absence of feedback, Woodside sent a follow-up consultation email on 23 July 2024 and again on 21 October 2025, 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 required 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.

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4.7 TITLEHOLDERS AND OPERATORS

4.7.1 Bounty Oil and Gas, Coastal Oil and Gas, Exxon Mobil Australia, Jadestone, JX Nippon O&G Exploration, KATO Energy, Longreach Capital Investment / Beagle No. 1, Skye Napoleon, Vermillion Oil & Gas

Summary of information provided and record of consultation for this EP:

- On 8 July 2024, Woodside emailed Bounty Oil and Gas, Coastal Oil and Gas (via Fox Resources), Exxon Mobil Australia, Jadestone, JX Nippon O&G Exploration, KATO Energy, Longreach Capital Investment/Beagle No. 1, Skye Napoleon and Vermillion Oil & Gas (known as Titleholders) advising of the proposed activity (Record of Consultation, reference 6.1.7), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*.
- On 23 July 2024, Woodside sent an email reminder to Titleholders, following up on the proposed activity (Record of Consultation, reference 6.2.1) and included a link to the Consultation Information Sheet on Woodside's website.
- On 1 October 2025, Woodside emailed Titleholders a consultation update (Record of Consultation, reference 6.3.3) and provided a Consultation Information Sheet (Record of Consultation, reference 6.3.1).
- On 21 October 2025, Woodside sent an email reminder to Titleholders following up on the proposed activity (Record of Consultation 6.4.1).

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim	Woodside's Statement of 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 7.8.1 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 Environment Regulations and considers consultation 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 July 2024 and an updated Consultation Information Sheet has been available on the Woodside website since October 2025. Woodside gave this information to Titleholders on 8 July 2024, marking the commencement of consultation on this EP. Woodside emailed an updated Consultation Information Sheet to Titleholders on 1 October 2025, marking an additional consultation on this EP. The Consultation Information Sheet included:

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- The purpose of consultation and set out what was being sought through consultation.
- A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the GPGT Survey Activity, 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.
- 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 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 two 30 day periods for consultation.
- It has been 17 months since consultation commenced.
- In this context, Woodside allowed Titleholders a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

Woodside allowed Titleholders a reasonable opportunity for consultation in the preparation of this EP because:

- Woodside published advertisements in 7 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 one targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and of consultation.
- Woodside hosted regional community information sessions and attended community events in Karratha, Dampier and Onslow which featured EP and consultation information.
- In the absence of feedback, Woodside sent a follow-up consultation email on 23 July 2024 and on 21 October 2025, 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 required 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 Titleholders' functions, interests or activities.

4.7.2 Chevron Australia

Summary of information provided and record of consultation for this EP:

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- On 8 July 2024, Woodside emailed Chevron Australia advising of the proposed activity (Record of Consultation, reference 6.1.27), provided a Consultation Information Sheet, GIS shape files and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*.
- On 23 July 2024, Woodside sent an email reminder to Chevron Australia, following up on the proposed activity (Record of Consultation, reference 6.2.1) and included a link to the Consultation Information Sheet on Woodside's website.
- **(1)** On 20 August 2024, Chevron Australia emailed to thank Woodside for sharing planned activities (SI Report, reference 23.1) and:
  - **(1)** Noted no issues were identified.
  - **(2)** Asked to be updated on cyclone anchor configuration, as well as mooring design, site specific geophysical and geotechnical data, anchor analysis, risk mitigations, should any activities take place during cyclone season.
- On 22 August 2024, Woodside emailed Chevron Australia to thank it for reviewing materials (SI Report, reference 23.2) and:
  - **(1)** For confirming Chevron Australia had not identified any issues.
  - **(2)** Confirmed there would be no anchoring activities with this EP.
- On 1 October 2025, Woodside emailed Chevron a consultation update (Record of Consultation, reference 6.3.21) and provided a Consultation Information Sheet (Record of Consultation, reference 6.3.1).
- On 21 October 2025, in absence of feedback, Woodside sent a follow-up email (Record of Consultation, reference 6.4.1).
- On 31 October 2025, Chevron thanked Woodside and provided Joint Venture (JV) partner-related questions (SI Report, reference 23.3).
- On 3 November 20025, Woodside thanked Chevron and noted JV matters to be addressed through those channels (SI Report, reference 23.4).
- On 5 November 2025, Chevron provided feedback for the Angel CCS survey activities (SI Report, reference 23.5) and:
  - Noted potential impacts to Chevron future fields including:
    - **(3)** Survey exclusion zones or vessel operations could temporarily restrict access to future field project areas or delay planned activities.
    - **(4)** Overlapping survey and future field schedules could create operational conflicts.
    - **(5)** Survey findings, such as geotechnical hazards or environmental sensitivities, may affect future field routing or design decisions.
  - **(4)** Requested detailed survey schedules and operational area maps to overlay with Chevron's future fields plans given the overlap with Chevron's adjacent title G-9-AP.
  - **(2)** Requested information on cyclone season and mooring design including anchor configuration and risk mitigation.
  - **(6)** Asked for notifications and updates on changes to survey scope, timing or operational area.
- On 26 November 2025, Woodside thanked Chevron for its feedback (SI Report, reference 23.6) and:
  - **(3)** Responded that survey exclusion zones and vessel operations were expected to have minimal impact because the exclusion zone was small and the vessel would remain in the area for short periods and
    - Would notify adjacent titleholders at least four weeks before mobilisation and collaborate on SIMOPs plan as needed.
  - **(4)** Noted survey planning was in early stages of planning to inform layouts and routes and if campaign would impact Chevron titles, survey corridor details would be provided.
  - (**5)** Confirmed Chevron's request for survey findings would be reviewed and handled through Joint Venture channels, outside the EP.
  - **(4)** Noted it would provide detail of survey corridor for any campaign affecting Chevron-operated titles.

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- **(2)** Confirmed that no anchoring would take place within the Operational Area.
- **(6)** Committed to provide start and end of activity notifications and updates.

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim	Woodside's Statement of Response	Inclusion in Environment Plan
(1) No issues identified.	**(1)** Woodside accepts that Chevron Australia had reviewed consultation materials and no issues were identified.	**(1)** Woodside noted Chevron had not identified any issues.	**(1)** Not required.
(2) Cyclone season -related questions.	**(2)** Woodside reviewed work plan and confirmed no anchoring would take place during survey activities, so no updates will be needed for Chevron Australia related to cyclone season.	**(2)** Woodside confirmed with Chevron Australia there would be no anchoring associated with survey activities.	**(2)** Not required.
(3) Need to understand survey exclusion zones to avoid potential delays.	**(3)** Woodside confirms the exclusion zone is small and adjacent titleholders will be notified at least four weeks ahead of mobilisation and have SIMOPs plan as needed.	**(3** Woodside confirmed the exclusion zone is small and adjacent titleholders would be notified at least four weeks ahead of mobilisation and have SIMOPs plan as needed.	**(3)** See Section 3.2 addressing overlapping titles.
(4) Request for survey schedules.	**(4)** Woodside understands the request but notes survey planning is in development and will update in future if Chevron titles are affected.	**(4)** Woodside replied that survey planning was in early stages but if Chevron would be impacted, it would receive survey corridor details.	**(4)** Not required.
(5) Request for survey data.	**(5)** Woodside believes survey data access is a discussion for the Joint Venture channels and should be reviewed outside of the EP.	**(5)** Woodside confirmed Chevron's request should be reviewed through Joint Venture channels and not within the EP.	**(5)** Not required.
(6) Request for notifications.	**(6)**	**(6)**	**(6)**

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	Woodside notes Chevron's request for start and end of activity notifications and updates.	Woodside confirmed Chevron would receive start and end of activity notifications.	Chevron will receive start and end o activity notifications per Table 7-5, Section 7.10 of the EP.
While feedback has been received, there were no objections or claims.	Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24.	Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should further feedback be received, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8.1).	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 July 2024 and an updated Consultation Information Sheet has been available on the Woodside website since October 2025. Woodside gave this information to Chevron on 8 July 2024, marking the commencement of consultation on this EP. Woodside emailed an updated Consultation Information Sheet to Chevron on 1 October 2025, marking an additional 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 GPGT Survey Program, 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.
  - 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.
- Woodside followed-up to remind Chevron Australia of consultation on 23 July 2024 and again on 21 October 2025.
- On 20 August 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 22 August 2024 and on 26 November 2025.

Reasonable Period

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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 two 30 day periods for consultation.
- In this context, Woodside allowed Chevron Australia a reasonable period for consultation in preparation of the EP as evidenced by Chevron Australia's response on 20 August 2024 and again on 5 November 2025.

Reasonable Opportunity

Woodside allowed Chevron Australia a reasonable opportunity for consultation in the preparation of this EP because:

- Woodside published advertisements in 7 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 one targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and of consultation.
- Woodside hosted regional community information sessions and attended community events in Karratha, Dampier and Onslow which featured EP and consultation information.
- Woodside considers a reasonable opportunity was provided to Chevron Australia as evidenced by its response on 20 August 2024 and on 5 November 2025.

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.
  - As a result of consultation and request for notifications, Chevron is included in start and end of activity notifications, Table 7-5, Section 7.10 of the EP.

Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.

4.7.3 Finder Energy

Summary of information provided and record of consultation for this EP:

- On 8 July 2024, Woodside emailed Finder Energy advising of the proposed activity (Record of Consultation, reference 6.1.7), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*.
- On 23 July 2024, Woodside sent an email reminder to Finder Energy, following up on the proposed activity (Record of Consultation, reference 6.2.1) and included a link to the Consultation Information Sheet on Woodside's website.
- **(1)** On 24 July 2024, Finder Energy emailed to thank Woodside for the information and noted it had no objections or comment on the planned activities. (SI Report, reference 7.1.)
- **(1)** On 24 July 2024, Woodside emailed to thank Finder Energy for its feedback (SI Report, reference 7.2).

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- On 1 October 2025, Woodside emailed Finder Energy a consultation update (Record of Consultation, reference 6.3.23) and provided a Consultation Information Sheet (Record of Consultation, reference 6.3.1).
- On 21 October 2025, Woodside sent an email reminder to Finder Energy following up on the proposed activity (Record of Consultation 6.4.1).

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim	Woodside's Statement of Response	Inclusion in Environment Plan
(1) Raised no objections or comments.	**(1)** Woodside accepts that Finder Energy had reviewed consultation materials and had no objections or comments**.**	**(1)** Woodside thanked Finder Energy and noted it had no objections or comments.	**(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, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8.1 of 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 Finder 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 Finder Energy sufficient information to allow Finder 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 July 2024 and an updated Consultation Information Sheet has been available on the Woodside website since October 2025. Woodside gave this information to Finder Energy on 8 July 2024, marking the commencement of consultation on this EP . Woodside emailed an updated Consultation Information Sheet to Finder Energy on 1 October 2025, marking an additional 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 GPGT Survey Program, 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.

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- 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.

- On 24 July 2024, Finder Energy shared its feedback, claims or objections regarding this activity, indicating the information provided was sufficient to enable Finder Energy to make an informed assessment of the possible consequences of the activity on its functions, interests or activities.
- Woodside provided additional information on 24 July 2024.

Reasonable Period

Woodside allowed Finder Energy a reasonable period for consultation in the preparation of this EP because:

- A consultation period was stated in the initial correspondence to Finder 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 Finder Energy two 30 day periods for consultation.
- In this context, Woodside allowed Finder Energy a reasonable period for consultation in preparation of the EP as evidenced by Finder Energy's response on 24 July 2024.

Reasonable Opportunity

Woodside allowed Finder Energy a reasonable opportunity for consultation in the preparation of this EP because:

- Woodside published advertisements in 7 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 one targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and of consultation.
- Woodside hosted regional community information sessions and attended community events in Karratha, Dampier and Onslow which featured EP and consultation information.
- Woodside sent follow-up consultation information on 23 July 2024 and 21 October 2025.
- Woodside considers a reasonable opportunity was provided to Finder Energy as evidenced by its response on 24 July 2024.

Outcomes of Consultation:

- Finder 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 Finder 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 Finder 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 KUFPEC

Summary of information provided and record of consultation for this EP:

- On 8 July 2024, Woodside emailed KUFPEC advising of the proposed activity (Record of Consultation, reference 6.1.7), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*.

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- On 23 July 2024, Woodside sent an email reminder to KUFPEC, following up on the proposed activity (Record of Consultation, reference 6.2.1) and included a link to the Consultation Information Sheet on Woodside's website.
- **(1)** On 9 August 2024, KUFPEC emailed and thanked Woodside for the information and noted they had no objections. (SI Report, reference 12.1).
- (1) On 9 August 2024, Woodside replied to KUFPEC to thank them for responding and noted KUFPEC has no objections to the planned activities (SI Report, 12.2).
- On 1 October 2025, Woodside emailed KUFPEC a consultation update (Record of Consultation, reference 6.3.3) and provided a Consultation Information Sheet (Record of Consultation, reference 6.3.1).
- On 21 October 2025, Woodside sent an email reminder to KUFPEC following up on the proposed activity (Record of Consultation 6.4.1).

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim	Woodside's Statement of Response	Inclusion in Environment Plan
(1) Raised no objections to activities.	**(1)** Woodside accepts that KUFPEC had reviewed consultation materials and had no objections.	**(1)** Woodside noted KUFPEC had no 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, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8.1 of 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 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 July 2024 and an updated Consultation Information Sheet has been available on the Woodside website since October 2025. Woodside gave this information to KUFPEC on 8 July 2024, marking the commencement of consultation on this EP. Woodside emailed an updated Consultation Information Sheet to KUFPEC on 1 October 2025, marking an additional consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.

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  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the GPGT Survey Activity, 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.
  - 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.
- Woodside followed up with KUFPEC on 23 July 2024 and again on 21 October 2025.
- On 9 August 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 provided additional information to KUFPEC on 9 August 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 two 30-day periods for consultation.
- In this context, Woodside allowed KUFPEC a reasonable period for consultation in preparation of the EP as evidenced by KUFPEC response on 9 August 2024.

Reasonable Opportunity

Woodside allowed KUFPEC a reasonable opportunity for consultation in the preparation of this EP because:

- Woodside published advertisements in 7 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 one targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and of consultation.
- Woodside hosted regional community information sessions and attended community events in Karratha, Dampier and Onslow which featured EP and consultation information.
- Woodside considers a reasonable opportunity was provided to KUFPEC as evidenced by its response 9 August 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.

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4.7.5 Santos

Summary of information provided and record of consultation for this EP:

- On 8 July 2024, Woodside emailed Santos advising of the proposed activity (Record of Consultation, reference 6.1.7), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*.
- On 23 July 2024, Woodside sent an email reminder to Santos, following up on the proposed activity (Record of Consultation, reference 6.2.1) and included a link to the Consultation Information Sheet on Woodside's website.
- On 1 August 2024, Santos emailed to thank Woodside for requesting feedback on Angel CCS surveys EP (SI Report, reference 9.1) and:
- **(1)** Said that it has planned activities in the same timeframe and vicinity of survey area.
- **(2)** Requested notification of planned vessel movements.
- On 2 August 2024, Woodside thanked Santos for its response and feedback (SI Report, reference 9.2) and:
  - **(1)** Noted Santos' feedback about planned operational activities during similar timeframe and in vicinity of proposed activity.
  - **(2)** Confirmed Woodside will notify Santos on planned vessel movements and activity commencement.
- On 2 October 2025, Woodside emailed Santos a consultation update (Record of Consultation, reference 6.3.22) with information about overlapping title and provided a Consultation Information Sheet (Record of Consultation, reference 6.3.1).
- On 21 October 2025, Woodside sent an email reminder to Santos following up on the proposed activity (Record of Consultation 6.4.1).

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim	Woodside's Statement of Response	Inclusion in Environment Plan
(1) Noted planned activities in similar timeframe and location.	**(1)** Woodside considered Santos' feedback about having planned activities during similar timeframe and vicinity and reviewed with EP team facilitator.	**(1)** Woodside noted the need for notifications on planned vessel movements and commencement of activities, and EP facilitator will review for SIMOPS consideration.	**(1)** Not required.
(2) Requested notification on vessel movements.	**(2)** Woodside acknowledges Santos' request for vessel movement notification and agrees it is needed.	**(2)** Woodside will notify Santos on planned vessel movements when activities commence.	**(2)** Woodside will provide notifications to Santos as set out in Section 7.10, Table 7-5 of the EP.
While feedback has been received, there were no objections or claims.	Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24.	Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should further feedback be received, it will be assessed and, where appropriate, Woodside will apply its	No additional controls or measures are required.

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		Management of Change and Revision process (see Section 7.8.1 of this EP).	

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 July 2024 and an updated Consultation Information Sheet has been available on the Woodside website since October 2025. Woodside gave this information to Santos on 8 July 2024, marking the commencement of consultation on this EP. Woodside emailed an updated Consultation Information Sheet to Santos on 2 October 2025, marking an additional 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 GPGT Survey Program, 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.
  - 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.
- On 1 August 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 2 August 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 two 30 day periods for consultation.
- In this context, Woodside allowed Santos a reasonable period for consultation in preparation of the EP as evidenced by Santos' response on 2 August 2024.

Reasonable Opportunity to Provide Feedback

Woodside allowed Santos a reasonable opportunity for consultation in the preparation of this EP because:

- Woodside published advertisements in 7 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 one targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and of consultation.

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- Woodside hosted regional community information sessions and attended community events in Karratha, Dampier and Onslow which featured EP and consultation information.
- Woodside considers a reasonable opportunity was provided to Santos as evidenced by its response on 2 August 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 7.10. of the EP.

Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.

4.7.6 InCapture

Summary of information provided and record of consultation for this EP:

- On 2 October 2025 Woodside emailed InCapture advising of the proposed activity (Record of Consultation, reference 6.3.24), provided a Consultation Information Sheet, and forwarded the original consultation emails from 2024 that were sent to relevant titleholders. InCapture was not part of the 2024 consultation because their title G-15-AP has not been awarded at the time of consultation.
- On 3 October 2025, InCapture emailed Woodside (SI Report, reference 30.1) and:
  - **(1)** Confirmed it had no objections to activities and would follow-up if further information was needed.
- On 6 October 2025, Woodside thanked InCapture for its email Woodside (SI Report, reference 30.2) and:
  - **(1)** Noted that InCapture had no objections and would contact Woodside should it need additional information.

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim	Woodside's Statement of Response	Inclusion in Environment Plan
(1) No objections to activities.	**(1)** Woodside understands and accepts that InCapture has no objections to the activities.	**(1)** Woodside confirmed with InCapture that it had no 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	No additional controls or measures are required.

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		received, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8.1 of this EP).	

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with InCapture for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:

Sufficient Information

Woodside has given InCapture sufficient information to allow InCapture to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

- The updated Consultation Information Sheet for this EP has been publicly available on the Woodside website since October 2025. Woodside gave this information to InCapture on 2 October 2025, marking the second 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 GPGT Survey Activity Program, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - 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 InCapture a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to InCapture advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed InCapture 30 days for consultation.
- Consultation for this EP with InCapture commenced 2 months ago.
- In this context, Woodside allowed InCapture 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 InCapture is appropriate and adapted to the nature of interests of InCapture:

- Woodside emailed InCapture at its preferred address.

Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

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- InCapture provided feedback but no objections or claims. In line with the intended outcome of consultation as set out in Section 5.2 and regulations 24 and 34(g), Woodside has:
  - Responded to feedback from InCapture 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 InCapture as no measures are needed 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.

4.7.7 Carbon CQ and SK Earthon Australia

Summary of information provided and record of consultation for this EP:

- On 2 October 2025 Woodside emailed Carbon CQ and SK Earthon Australia advising of the proposed activity (Record of Consultation, reference 6.3.24), provided a Consultation Information Sheet, and forwarded the original consultation emails from 2024 that were sent to relevant titleholders. They were not part of the 2024 consultation because their title G-15-AP has not been awarded at the time of consultation.
- On 21 October 2025, Woodside sent an email reminder to Carbon CQ and SK Earthon following up on the proposed activity (Record of Consultation 6.4.1).

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim	Woodside's Statement of Response	Inclusion in Environment Plan
No feedback, objections or claims about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8.1 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 Environment Regulations and considers consultation with Carbon CQ and SK Earthon 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 Carbon CQ and SK Earthon Australia sufficient information to allow Carbon CQ and SK Earthon Australia to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

- The updated Consultation Information Sheet for this EP has been publicly available on the Woodside website since October 2025. Woodside gave this information to Carbon CQ and SK Earthon Australia on 2 October 2025, marking the second commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.

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- A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the GPGT Survey Activity Program, and proposed mitigation and management measures.
- A timeframe for consultation and the provision of feedback.
- 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 Carbon CQ and SK Earthon Australia a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to Carbon CQ and SK Earthon 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 Carbon CQ and SK Earthon Australia 30 days for consultation.
- Consultation with Carbon CQ and SK Earthon for this EP commenced 2 months ago.
- In this context, Woodside allowed Carbon CQ and SK Earthon 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 Carbon CQ and SK Earthon Australia is appropriate and adapted to the nature of interests of Carbon CQ and SK Earthon Australia:

- Woodside emailed InCapture at its preferred address.
- In the absence of feedback, Woodside sent a follow-up consultation email on 21 October 2025, reminding Carbon CQ and SK Earthon 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 Carbon CQ and SK Earthon 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 Carbon CQ and SK Earthon Australia'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 8 July 2024, Woodside emailed AEP advising of the proposed activity (Record of Consultation, reference 6.1.7), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petrol*eum environment plans: Information for the community.

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- On 23 July 2024, Woodside sent an email reminder to AEP, following up on the proposed activity (Record of Consultation, reference 6.2.1) and included a link to the Consultation Information Sheet on Woodside's website.
- On 1 October 2025, Woodside emailed AEP a consultation update (Record of Consultation, reference 6.3.3) and provided a Consultation Information Sheet (Record of Consultation, reference 6.3.1).
- On 21 October 2025, Woodside sent an email reminder to AEP following up on the proposed activity (Record of Consultation 6.4.1).

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim	Woodside's Statement of 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 7.8.1 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 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 July 2024. Woodside gave this information to AEP on 8 July 2024, marking the commencement of consultation on this EP. A consultation update was provided on 1 October 2025. 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 GPGT Survey Activity, 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.
  - 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 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.

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- Woodside's methodology allows a 30-day consultation period and Woodside allowed AEP two 30 day periods for consultation.
- It has been 17 months since consultation commenced.
- In this context, Woodside allowed AEP a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity to Provide Feedback

Woodside allowed AEP a reasonable opportunity for consultation in the preparation of this EP because:

- Woodside published advertisements in 7 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 one targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and of consultation.
- Woodside hosted regional community information sessions and attended community events in Karratha, Dampier and Onslow which featured EP and consultation information.
- In the absence of feedback, Woodside sent a follow-up consultation email on 23 July 2024 and 21 October 2025, 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 required as AEP did not provide feedback for this EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.

The measures and controls described in this EP address the potential impact from the proposed activity on AEP's functions, interests or activities.

4.9 LOCAL GOVERNMENT AND ELECTED PARLIAMENTARY REPRESENTATIVES, COMMUNITY GROUPS OR ORGANISATIONS

4.9.1 City of Karratha

Summary of information provided and record of consultation for this EP:

- On 9 July 2024, Woodside emailed the City of Karratha 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 23 July 2024, Woodside sent an email reminder to City of Karratha, following up on the proposed activity (Record of Consultation, reference 6.2.1) and included a link to the Consultation Information Sheet on Woodside's website.
- On 2 October 2025, Woodside emailed City of Karratha a consultation update (Record of Consultation, reference 6.3.3) and provided a Consultation Information Sheet (Record of Consultation, reference 6.3.1).
- On 21 October 2025, Woodside sent an email reminder to City of Karratha following up on the proposed activity (Record of Consultation 6.4.1).

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Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim	Woodside's Statement of 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 7.8.1 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 Environment Regulations and considers consultation with City of Karratha for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:

Sufficient Information

Woodside has given City of Karratha sufficient information to allow City of Karratha to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since July 2024. Woodside gave this information to City of Karratha on 9 July 2024, marking the commencement of consultation on this EP. A consultation update was provided on 2 October 2025. 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 GPGT Survey Activity, 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.
  - 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 City of Karratha a reasonable period for consultation in the preparation of this EP because:

- A consultation period was stated in the initial correspondence to City of Karratha advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed City of Karratha two 30 day periods for consultation.
- It has been 17 months since consultation commenced.
- In this context, Woodside allowed City of Karratha a reasonable period for consultation in preparation of the EP.

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Reasonable Opportunity

Woodside allowed City of Karratha a reasonable opportunity for consultation in the preparation of this EP because:

- Woodside published advertisements in 7 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 one targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and of consultation.
- Woodside hosted regional community information sessions and attended community events in Karratha, Dampier and Onslow which featured EP and consultation information.
- In the absence of feedback, Woodside sent a follow-up consultation email on 23 July 2024 and again on 21 October 2025, reminding City of Karratha of the opportunity to provide feedback.

Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- No additional measures were required as City of Karratha did not provide feedback for this EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.

The measures and controls described in this EP address the potential impact from the proposed activity on City of Karratha's functions, interests or activities.

4.9.2 Karratha Community Liaison Group (Karratha CLG)

Summary of information provided and record of consultation for this EP:

- On 9 July 2024, Woodside emailed the Karratha CLG 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 23 July 2024, Woodside sent an email reminder to Karratha CLG, following up on the proposed activity (Record of Consultation, reference 6.2.1) and included a link to the Consultation Information Sheet on Woodside's website.
- On 2 October 2025, Woodside emailed Karratha CLG a consultation update (Record of Consultation, reference 6.3.3) and provided a Consultation Information Sheet (Record of Consultation, reference 6.3.1).
- On 21 October 2025, Woodside sent an email reminder to Karratha CLG following up on the proposed activity (Record of Consultation 6.4.1).

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim	Woodside's Statement of 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	No additional measures or controls are required.

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		Change and Revision process (see Section 7.8.1 of this EP).	

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 July 2024. Woodside gave this information to Karratha CLG on 9 July 2024, marking the commencement of consultation on this EP. A consultation update was provided on 2 October 2025.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 GPGT Survey 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.
  - 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 two 30 day periods for consultation.
- It has been 17 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 7 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 one targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and of consultation.
- Woodside hosted regional community information sessions and attended community events in Karratha, Dampier and Onslow which featured EP and consultation information.

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- In the absence of feedback, Woodside sent a follow-up consultation email on 23 July 2024 and on 21 October 2025 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.

4.9.3 Karratha and Districts Chamber of Commerce and Industry (KDCCI)

Summary of information provided and record of consultation for this EP:

- On 9 July 2024, Woodside emailed the KDCCI 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 23 July 2024, Woodside sent an email reminder to KDCCI following up on the proposed activity (Record of Consultation, reference 6.2.1) and included a link to the Consultation Information Sheet on Woodside's website.
- On 1 October 2025, Woodside emailed KDCCI a consultation update (Record of Consultation, reference 6.3.3) and provided a Consultation Information Sheet (Record of Consultation, reference 6.3.1).
- On 21 October 2025, Woodside sent an email reminder to KDCCI following up on the proposed activity (Record of Consultation 6.4.1).

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim	Woodside's Statement of 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 7.8.1 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 Environment Regulations and considers consultation with KDCCI 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

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Woodside has given KDCCI sufficient information to allow KDCCI 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 July 2024. Woodside gave this information to KDCCI on 9 July 2024, marking the commencement of consultation on this EP. A consultation update was provided on 2 October 2025. 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 GPGT Survey Activity, 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.
  - 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 KDCCI a reasonable period for consultation in the preparation of this EP because:

- A consultation period was stated in the initial correspondence to KDCCI 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 KDCCI two 30 day periods for consultation.
- It has been 17 months since consultation commenced.
- In this context, Woodside allowed KDCCI a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

Woodside allowed KDCCI a reasonable opportunity for consultation in the preparation of this EP because:

- Woodside published advertisements in 7 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 one targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and of consultation.
- Woodside hosted regional community information sessions and attended community events in Karratha, Dampier and Onslow which featured EP and consultation information.
- In the absence of feedback, Woodside sent a follow-up consultation email on 23 July 2024 and again on 21 October 2025, reminding KDCCI 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 KDCCI 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 KDCCI's functions, interests or activities.

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4.10 OTHER NON-GOVERNMENT GROUPS OR ORGANISATIONS

4.10.1 Telstra

Summary of information provided and record of consultation for this EP:

- On 8 July 2024, Woodside emailed Telstra advising of the proposed activity (Record of Consultation, reference 6.1.29), provided a Consultation Information Sheet, submarine communications cables map and a link to NOPSEMA's brochure Consultation on offshore petroleum environment plans: Information for the community.
- On 23 July 2024, Woodside sent an email reminder to Telstra, following up on the proposed activity (Record of Consultation, reference 6.2.1) and included a link to the Consultation Information Sheet on Woodside's website.
- On 2 October 2025, Woodside emailed Telstra a consultation update (Record of Consultation, reference 6.3.25) and provided a Consultation Information Sheet (Record of Consultation, reference 6.3.1).
- On 21 October 2025, Woodside sent an email reminder to Telstra following up on the proposed activity (Record of Consultation 6.4.1).
- **(1)** On 31 October 2025, Telstra confirmed it was interested in the survey works for the Angel CCS project given the use of ROV and seabed penetrometer testing, noting the potential or actual disturbance of the seabed (SI Report, reference 33.1) and:
  - **(2)** Noted that Woodside was already aware of InfraCo cable assets in the NWS region.
  - **(3)** Asked to be kept informed on actual dates and activities or any operation that may result in a seabed disturbance within 500m of any of Telstra's seabed cables.
- On 19 November, Woodside thanked Telstra for its review and feedback for the EP (SI Report, reference 33.2) and:
  - **(1)** Noted Telstra's interest in the survey work given potential disturbance to seabed.
  - **(2)** Acknowledged awareness of cables in the region.
  - **(3)** Confirmed it would provide start and end of activity notifications and would discuss with Telstra should any activity be within 500m of Telstra's seabed cables.

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim	Woodside's Statement of Response	Inclusion in Environment Plan
(I) Confirmed interest given potential seabed disturbance.	**(1)** Woodside understands Telstra's interest in the activity given potential seabed disturbance.	**(1)** Woodside confirmed Telstra's interest in activity given potential seabed disturbance.	**(1)** Not required.
(2) Noted Woodside awareness of existing cable assets in NWS region.	**(2)** Woodside is aware of existing cable assets in the region and near survey area.	**(2)** Woodside acknowledged its awareness of cables in the region.	**(2)** See Section 4.9.7, Table 4-26 of the EP.

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(3) Requested notifications on actual dates and activities or any works within 500m of Telstra seabed cables.	**(3)** Woodside understands Telstra's request to be notified for the activity as well as if any works will take place within 500m of its seabed cables.	**(3)** Woodside confirmed Telstra will receive start and end of activity notifications and Telstra would be contacted for discussions related to any activity within 500m of its seabed cables.	**(3)** For start and end of activity notifications, see Table 7-5, Section 7.10 of the EP. For the commitment to notify Telstra in the event of activities within 500m of its cables, see Section 6.8.2, P.S. 2.7 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.	Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should further feedback be received, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8.1 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 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 July 2024. Woodside gave this information to Telstra on 8 July 2024, marking the commencement of consultation on this EP. A consultation update was provided on 1 October 2025. 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 GPGT Survey Activity, 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. - 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 Telstra a reasonable period for consultation in the preparation of this EP because:	•

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- 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 two 30 day periods for consultation.
- It has been 17 months since consultation commenced.
- In this context, Woodside allowed Telstra a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

Woodside allowed Telstra a reasonable opportunity for consultation in the preparation of this EP because:

- Woodside published advertisements in 7 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 one targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and of consultation.
- Woodside hosted regional community information sessions and attended community events in Karratha, Dampier and Onslow which featured EP and consultation information.
- In the absence of feedback, Woodside sent a follow-up consultation email on 23 July 2024 and on 21 October 2025 , reminding Telstra of the opportunity to provide feedback, which it provided on 31 October 2025.

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.
  - Added control Section 6.8.2, P.S. 2.7 of the EP to address 4 week notification when activities are within 500m of seabed cables and o start and end of activity notifications, per Table 7-5, Section 7.10 of 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.

4.11 TRADITIONAL CUSTODIANS AND NOMINATED REPRESENTATIVE CORPORATIONS

4.11.1 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.

Woodside has an existing relationship with MAC which extends prior to consultation for this EP. Woodside's consultation approach for Traditional Owners has a focus on building and maintaining long-term relationships with each group. Woodside has also assigned a First Nations Engagement team member as a dedicated focal person for EP consultation with MAC, who is responsible for building a consultative relationship and is readily available to provide information and take feedback.

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In October 2025, Woodside provided MAC with a table of cultural values as part of the activity update. These values had been previously identified for MAC through a process of consultation and reviews of publicly available literature. Woodside invited MAC to make changes or provide additional information about these cultural values. This context and process demonstrates that Woodside's consultation approach with MAC is appropriate and adapted to the nature and interests of MAC.

Summary of information provided and record of consultation for this EP:

- On 9 July 2024, Woodside emailed MAC 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 NOPSEMA's *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.
  - A request for feedback by 9 August 2024.
  - Information on how MAC would like to engage with Woodside about the proposed activity, including the opportunity to meet face to face.
  - That feedback can continue to be accepted by Woodside for the life of the EP.
  - A request for MAC to provide information about the proposed activity to other individuals, as required.
- On 30 July 2024, Woodside emailed MAC a reminder about the proposed activity, offered to provide further information and the opportunity to meet (SI Report, reference 14.1).
- On 2 August 2024, MAC emailed Woodside a letter relating to another EP (SI Report, reference 14.2). Matters relating to this EP included:
  - **(1)** MAC's advice 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.
  - **(2)** MAC's request that Woodside contact MAC for comment and review, in the event of an environmental incident affecting Murujuga.
  - MAC's request to be consulted regarding any Woodside activities located close to Murujuga.
- **(2)** On 2 August 2024, Woodside emailed MAC confirming that Woodside would inform MAC in the unlikely case of an environmental incident (SI Report, reference 14.3).
- On 9 September 2024, Woodside emailed MAC an invitation to share stories and receive updates from Woodside at its Monthly Community Luncheon for Traditional Owners to be held in Roebourne on 25 September 2024 (SI Report, reference 37.1).
- **(1)** On 17 September 2024, Woodside emailed MAC following up on MAC's correspondence from 2 August 2024. Woodside noted that consideration of the potential cultural impacts on marine species, including impacts and associated controls for marine mammal migration paths and behaviour have been assessed collaboratively with the environmental impacts and controls. Woodside also confirmed it was available to meet with MAC to discuss (SI Report, reference 14.4).
- On 25 September 2024, Traditional Owner members from MAC attended Woodside's Monthly Community Luncheon for Traditional Owners held in Roebourne. During the luncheon Woodside requested feedback from all attendees about EPs and provided information about the consultation process (SI Report, reference 37.2).
- On 3 October 2024, Woodside emailed MAC 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 37.3).
- On 23 October 2024, Traditional Owner members from MAC attended Woodside's second Monthly Community Lunch 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 37.4).

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- On 4 March 2025, Woodside invited MAC to share stories and receive updates from Woodside at its Monthly Community Luncheon for Traditional Owners to be held in Roebourne on 5 March 2025 (SI Report, reference 37.5).
- On 5 March 2025, 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 37.6).
- On 24 March 2025, Woodside emailed MAC an invitation to share stories and receive updates from Woodside at its Monthly Community Luncheon for Traditional Owners to be held in Roebourne on 26 March 2025 (SI Report, reference 37.7).
- On 26 March 2025, Traditional Owner members from MAC attended Woodside's Monthly Community Luncheon for Traditional Owners held in Roebourne. During the lunch Woodside discussed the process for writing EPs and how it communicates feedback from groups to NOPSEMA (SI Report, reference 37.8).
- On 7 April 2025, Woodside emailed MAC an invitation to share stories and receive updates from Woodside at its Monthly Community Luncheon for Traditional Owners to be held in Roebourne on 8 April 2025 (SI Report, reference 37.9).
- On 8 April 2025, 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 37.10).
- On 2 October 2025, Woodside emailed MAC an activity update about the proposed activity (Record of Consultation, reference 6.3.30). The email included:
  - A reference to the original consultation email for this EP sent to MAC on 9 and 30 July 2024.
  - A Summary Information Sheet and a link to the Consultation Information Sheet.
  - A request to provide any additional feedback 31 October 2025 so that it can be considered in the preparation of the EP.
  - Information on the cultural values that Woodside consider relevant to the activity:
    - **(3)** Ecosystem and health of Mermaid Sound.
    - **(4)** Marine species – whales, dolphins, dugongs, fish, sea snakes, turtles, coral, seagrass, stingrays, sharks, crustaceans, octopus, sea stars, sea urchins, sponges, molluscs.
    - **(5)** Marine eco-systems – mangroves, macroalgal (seaweed) communities, subtidal soft bottom communities, intertidal sand and mudflat communities, rocky shores.
    - **(6)** Fish traps in Conzinc Bay, and Angel and Gidley Islands.
    - **(7)** Harvesting squid around Conzinc Bay.
    - **(8)** MAC is the appropriate cultural authority for Murujuga.
    - **(9)** Potential impact on Jinna (Songlines) on the submerged landscape.
    - **(1)** Murujuga seasonal calendar - any changes to the feeding, breeding or migratory behaviour of culturally significant species would impact significantly on subsistence, cultural and ceremonial activities.
  - **(1, 3, 4, 5, 6 ,7, 8, 9)** A request from Woodside that MAC confirm if there were any changes or additional information regarding cultural values that Woodside should consider in the preparation of this EP.
  - Advice that feedback can continue to be provided to Woodside during the life of an EP, including after consultation for the EP has closed, during EP assessment, and after an EP has been accepted by NOPSEMA.

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim	Woodside's Statement of Response	Inclusion in Environment Plan

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(1) Any changes to the feeding, breeding or migratory behaviour of culturally significant species would impact significantly on subsistence, cultural and ceremonial activities	**(1)** This value has been identified through Woodside's data collection processes (consultation).	**(1)** 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.	**(1)** Woodside has updated Section 4.9 to record these interests and cultural values. Woodside has also assessed the potential impacts on these interests and cultural values, and where appropriate, included controls, in Sections 6.8, 6.9 and 6.11 of the EP.
(2) MAC requested Woodside contact it in the event of environmental incident that may affect Murujuga.	**(2)** In the unlikely event of a spill under this EP, Woodside notifies appropriate cultural authorities that may be affected, with the purpose of mitigating potential risks to cultural heritage values in accordance with its Oil Spill Preparedness and Response Mitigation Assessment for this EP (see Appendix G).	**(2)** Woodside notes that if an unplanned event occurs under this EP, MAC will be notified.	**(2)** Woodside contacts relevant persons in the event of an unplanned event as outlined in Section 7.11 of this EP and in accordance with its Oil Spill Preparedness and Response Mitigation Assessment for this EP (see Appendix H).
(3) Cultural Value: • Ecosystem and health of Mermaid Sound.	**(3)** This value has been identified through Woodside's data collection processes (publicly available literature).	**(3)** Woodside provided MAC with a list of the cultural values known to Woodside that it believed relevant to the group and invited it to make changes or provide additional information (Record of Consultation, 6.3.30). MAC did not request any changes.	**(3)** Woodside has updated Section 4.9 to record these interests and cultural values. Woodside has also assessed the potential impacts on these interests and cultural values, and where appropriate, included controls, in Sections 6.8, 6.9 and 6.11 of the EP.
(4) Cultural Value: Marine species: • Whales, totemic importance. • Dolphins, cultural ceremonies. • Dugongs, food source. • Fish, cultural ceremonies. • Sea Snakes, culturally important. • Turtles, Songlines.	**(4)** This value has been identified through Woodside's data collection processes (consultation).	**(4)** Woodside provided MAC with a list of the cultural values known to Woodside that it believed relevant to the group and invited it to make changes or provide additional information (Record of Consultation, 6.3.30).	**(4)** Woodside has updated Section 4.9 to record these interests and cultural values. Woodside has also assessed the potential impacts on these interests and cultural values, and where appropriate, included controls, in Sections 6.8, 6.9 and 6.11 of the EP.

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• Coral, attract fish and other species • Seagrass, provide protection for animals. Locations include Conzinc Bay and between Angel and Gidley Islands. • Stingrays • Sharks • Crustaceans • Octopus • Sea star • Sea urchins • Sponges • Molluscs			
(5) Cultural Value: Marine eco-systems • Mangroves. • Macroalgal (seaweed) communities. • Subtidal soft bottom communities. • Intertidal sand and mudflat communities. • Rocky shores.	**(5)** This value has been identified through Woodside's data collection processes (consultation and publicly available literature).	**(5)** Woodside provided MAC with a list of the cultural values known to Woodside that it believed relevant to the group and invited it to make changes or provide additional information (Record of Consultation, 6.3.30).	**(5)** Woodside has updated Section 4.9 to record these interests and cultural values. Woodside has also assessed the potential impacts on these interests and cultural values, and where appropriate, included controls, in Sections 6.8, 6.9 and 6.11 of the EP.
(6) Cultural Value: • Fish traps in Conzinc Bay, and Angel and Gidley Islands.	**(6)** This value has been identified through Woodside's data collection processes (publicly available literature and consultation).	**(6)** Woodside provided MAC with a list of the cultural values known to Woodside that it believed relevant to the group and invited it to make changes or provide additional information (Record of Consultation, 6.3.30).	**(6)** Woodside has updated Section 4.9 to record these interests and cultural values. Woodside has also assessed the potential impacts on these interests and cultural values, and where appropriate, included controls, in Sections 6.8, 6.9 and 6.11 of the EP.
(7)	**(7)**	**(7)**	**(7)**

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Cultural Value: • Harvesting squid around Conzinc Bay	This value has been identified through Woodside's data collection processes (publicly available literature and consultation).	Woodside provided MAC with a list of the cultural values known to Woodside that it believed relevant to the group and invited it to make changes or provide additional information (Record of Consultation, 6.3.30).	Woodside has updated Section 4.9 to record these interests and cultural values. Woodside has also assessed the potential impacts on these interests and cultural values, and where appropriate, included controls, in Sections 6.8, 6.9 and 6.11 of the EP.
(8) Cultural Value: • MAC is the appropriate cultural authority for Murujuga.	**(8)** This value has been identified through Woodside's data collection processes (consultation).	**(8)** Woodside provided MAC with a list of the cultural values known to Woodside that it believed relevant to the group and invited it to make changes or provide additional information (Record of Consultation, 6.3.30). MAC did not request any changes.	**(8)** Woodside has updated Section 4.9 to record these interests and cultural values. Woodside has also assessed the potential impacts on these interests and cultural values, and where appropriate, included controls, in Sections 6.8, 6.9 and 6.11 of the EP.
(9) Cultural Value: • Potential impact on Jinna (Songlines) on the submerged landscape. • Potential impact to Aboriginal heritage, the submerged coastline at initial occupation of the region, landscape features that would have defined the first travel routes used to move through Country.	**(9)** This value has been identified through Woodside's data collection processes (consultation).	**(9)** Woodside provided MAC with a list of the cultural values known to Woodside that it believed relevant to the group and invited it to make changes or provide additional information (Record of Consultation, 6.3.30).	**(9)** Woodside has updated Section 4.9 to record these interests and cultural values. Woodside has also assessed the potential impacts on these interests and cultural values, and where appropriate, included controls, in Sections 6.8, 6.9 and 6.11 of the EP.
While feedback has been received, there were no objections or claims.	Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24.	Woodside engages in ongoing consultation throughout the life of an EP. 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 7.8.1 of the EP).	No additional measures or controls are required.

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Summary Report: Consultation Complete

Woodside has discharged its obligations for consultation under Regulation 25 of the 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 9 July 2024, Woodside made the Consultation Information Sheet available on the Woodside website.
- Woodside provided information to MAC on 9 July 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 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.
- Woodside sent a consultation update in October 2025 which included a link to the updated Consultation Information Sheet and an updated Summary Information Sheet. Woodside also provided an overview of the survey activities and updated timing (Record of Consultation, 6.3.30).

Reasonable Period

Woodside allowed MAC a reasonable period for consultation in the preparation of this EP because:

- Woodside commenced consultation on this EP with MAC on 9 July 2024 and requested MAC provide feedback by 9 August 2024 for the purposes of preparation of this EP in line with Woodside's methodology of a 30-day period for consultation.
- Woodside provided an activity update on this EP to MAC on 2 October 2025 and requested MAC provide feedback by 31 October 2025 for the purposes of preparation of this EP in line with Woodside's methodology of a 30-day period for consultation.
- Woodside has provided an opportunity to address and respond to MAC for over 17 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 17 months. This has included publishing advertisements in national, state and local newspapers including Indigenous newspapers, the National Indigenous Times (30 July 2024) advising of the proposed activities and requesting comments or feedback.
- Woodside's initial email about this EP on 9 July 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 team. Woodside also provided contact details for NOPSEMA.
  - Offered for Woodside to speak with MAC members as well as the MAC Board.

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- Asked MAC to advise how it would like Woodside to engage and whether MAC required further information.

- Woodside sent an activity update about this EP on 2 October 2025.
- Woodside offered to meet with MAC on a number of occasions.
- Throughout the consultation period, Woodside and MAC have exchanged multiple emails, met on one occasion and have otherwise 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:

- MAC advised Woodside that 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 of the EP. MAC did not provide feedback or information during the activity update for this EP relating to cultural values but has done so in consultation for other activities.

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 7.8 of this EP).

4.11.2 Ngarluma Aboriginal Corporation (NAC)

NAC is established under the *Native Title Act 1993* (Cth) by the Ngarluma people to represent the Ngarluma people (defined broadly by reference to descent from the set of ancestors who were known to have a continuous and unbroken connection as the Traditional Custodians at the time of European colonisation) and represent their communal interests including, among other things, management and protection of cultural values.

Woodside has an existing relationship with NAC which extends prior to consultation for this EP. Woodside's consultation approach for Traditional Owners has a focus on building and maintaining long-term relationships with each group. Woodside has assigned a First Nations Engagement team member as a dedicated focal person for EP consultation with NAC, who is responsible for building a consultative relationship and is readily available to provide information and take feedback. Aside from regular consultation, Woodside invites NAC to Quarterly Heritage Meetings.

In October 2025, Woodside provided NAC with a table of cultural values as part of the activity update. These values had been previously identified for NAC through a process of consultation and reviews of publicly available literature. NAC did not request any changes. This context and process demonstrates that Woodside's consultation approach with NAC is appropriate and adapted to the nature and interests of NAC.

Summary of information provided and record of consultation for this EP:

- On 12 July 2024, Woodside emailed NAC 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 NOPSEMA's *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 12 August 2024.
  - Information on how NAC would like to engage with Woodside about the proposed activity, including the opportunity to meet face to face.

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  - That feedback can continue to be accepted by Woodside for the life of the EP.
  - A request for NAC to provide information about the proposed activity to other individuals, as required.
- On 7 August 2024, Woodside emailed NAC a reminder about the proposed activity and offered to meet. Woodside reiterated the date to provide a response about the proposed activity for the consideration in this EP (SI Report, reference 15.1).
- On 5 September 2024, Woodside emailed NAC to invite it to Woodside's Quarterly Heritage Meetings, as an opportunity for Woodside to provide updates on Woodside's activities to Traditional Owner groups and to receive feedback from the community (SI Report, reference 15.2).
- On 9 September 2024, Woodside invited NAC to share stories and receives updates from Woodside at its Monthly Community Luncheon for Traditional Owners to be held in Roebourne on 25 September 2024 (SI Report, reference 37.1).
- On 25 September 2024, Traditional Owner members from NAC attended Woodside's Monthly Community Luncheon for Traditional Owners held in Roebourne. During the luncheon Woodside requested feedback from all attendees about EPs and provided information about the consultation process (SI Report, reference 37.2).
- 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 37.3).
- On 10 October 2024, NAC attended Woodside's Quarter 3 Heritage Meeting in Roebourne where Woodside presented to Traditional Owners (SI Report, reference 38.1). 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 23 October 2024, Traditional Owner members from NAC attended Woodside's second Monthly Community Luncheon for Traditional Owners held in Roebourne. During the luncheon Woodside requested feedback from all attendees about EPs and provided information about the consultation process (SI Report, reference 37.4).
- On 15 November 2024, Woodside emailed NAC an invitation to a Quarterly Heritage meeting in December (SI Report, reference 38.2).
- On 5 December 2024, NAC attended Woodside's Quarterly Heritage Meeting (SI Report, reference 38.3). Relevant matters discussed included:
  - An overview of upcoming Eps.
  - An explanation of ongoing consultation.
  - Reminder about monthly community luncheons.
- On 4 March 2025, Woodside invited NAC to share stories and receive updates from Woodside at its monthly community luncheon for Traditional Owners to be held in Roebourne on 5 March 2025(SI Report, reference 37.5).
- On 5 March 2025, 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 37.6).
- On 13 March 2025, NAC attended Woodside's Quarterly Heritage Meeting (SI Report, reference 38.4). Matters discussed and/or raised relating to this EP included:
  - That consultation is open for the life of any EP and Woodside can schedule consultation meetings at times that are convenient to the community.

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  - A reminder that Woodside hosts a community luncheon and yarning circle for all local Traditional Owners.
- On 24 March 2025, Woodside emailed NAC an invitation to share stories and receive updates from Woodside at its Monthly Community Luncheon for Traditional Owners to be held in Roebourne on 26 March 2025 (SI Report, reference 37.7).
- On 26 March 2025, Traditional Owner members from NAC attended Woodside's Monthly Community Luncheon for Traditional Owners held in Roebourne. During the lunch Woodside discussed the process for writing EPs and how it communicates feedback from groups to NOPSEMA (SI Report, reference 37.8).
- On 7 April 2025, Woodside emailed NAC an invitation to share stories and receive updates from Woodside at its Monthly Community Luncheon for Traditional Owners to be held in Roebourne on 8 April 2025 (SI Report, reference 37.9).
- On 8 April 2025, 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 37.10).
- On 4 June 2025, Woodside hosted a Quarterly Community Heritage meeting with Traditional Owners including members of NAC and WAC (SI Report, reference 38.5). Matters discussed relevant to this EP included:
  - Woodside provided an overview the consultation process with relevant First Nations persons.
- On 3 September 2025, Wong Goo Tt Oo, WAC and NAC attended Woodside's Quarterly Heritage Meeting (SI Report, reference 38.6). Matters discussed relevant to this EP included:
  - Woodside reminded attendees that it accepts feedback for the life of an EP.
  - Woodside is available to schedule meetings for EP consultation.
  - Cultural heritage updates.
- On 2 October 2025, Woodside emailed NAC about the proposed activity (Record of Consultation, reference 6.3.31). The email included:
  - A reference to the original consultation email for this EP sent to NAC on 12 July and 7 August 2024.
  - A Summary Information Sheet and a link to the Consultation Information Sheet.
  - A request to provide any additional feedback 31 October 2025 so that it can be considered in the preparation of the EP.
  - Information on the cultural values that NAC has previously provided to Woodside considered relevant to the activity:
    - **(1)** Onshore heritage – interest in managing sites.
    - **(2)** Potential submerged heritage.
    - **(3)** Manggan (creative beings) used supernatural force to shape the hills, rivers, seas and landforms.
  - **(1, 2, 3)** A request from Woodside that NAC confirm if there were any changes or additional information regarding cultural values that Woodside should consider in the preparation for this EP.
  - Advice that feedback can continue to be provided to Woodside during the life of an EP, including after consultation for the EP has closed, during EP assessment, and after an EP has been accepted by NOPSEMA.
- On 3 December 2025, Woodside met representatives from NAC, WAC and Wong-Goo-Tt-Oo in Karratha for the Q4 Quarterly Heritage meeting (SI Report, Reference 38.7). Matters discussed relevant to EP consultation included:
  - Woodside showed a video explaining EP consultation.
  - Woodside advised it may develop more videos to aid consultation.

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Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim	Woodside's Statement of Response	Inclusion in Environment Plan
(1) Cultural Value: • Onshore Heritage	**(1)** This value has been identified through Woodside's data collection processes (consultation).	**(1)** Woodside provided NAC with a list of the cultural values known to Woodside that it believed relevant to the group and invited it to make changes or provide additional information (Record of Consultation, 6.3.31). NAC did not request any changes.	**(1)** Woodside has updated Section 4.9 to record these interests and cultural values. Woodside has also assessed the potential impacts on these interests and cultural values, and where appropriate, included controls, in Sections 6.8, 6.9 and 6.11 of the EP.
(2) Cultural Value: • Potential of submerged heritage	**(2)** This value has been identified through Woodside's data collection processes (consultation).	**(2)** Woodside provided NAC with a list of the cultural values known to Woodside that it believed relevant to the group and invited it to make changes or provide additional information (Record of Consultation, 6.3.31). NAC did not request any changes.	**(2)** Woodside has updated Section 4.9 to record these interests and cultural values. Woodside has also assessed the potential impacts on these interests and cultural values, and where appropriate, included controls, in Sections 6.8, 6.9 and 6.11 of the EP.
(3) Cultural Value: • Manggan (creative beings) used supernatural force to shape the hills, rivers, seas and landforms.	**(3)** This value has been identified through Woodside's data collection processes (publicly available literature).	**(3)** Woodside provided NAC with a list of the cultural values known to Woodside that it believed relevant to the group and invited it to make changes or provide additional information (Record of Consultation, 6.3.31). NAC did not request any changes.	**(3)** Woodside has updated Section 4.9 to record these interests and cultural values. Woodside has also assessed the potential impacts on these interests and cultural values, and where appropriate, included controls, in Sections 6.8, 6.9 and 6.11 of the EP.
No feedback, objections or claims about the adverse impact of the activity received despite follow-up.	Although no feedback, objections or claims were provided for this EP, historical cultural values considered relevant have been identified and included based on consultation and publicly available literature.	Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8.1 of the EP).	No additional measures or controls are required.

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Summary Report: Consultation Complete

Woodside has discharged its obligations for consultation under Regulation 25 of the 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 9 July 2024, Woodside made the Consultation Information Sheet available on the Woodside website.
- Woodside provided information to NAC on 12 July 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 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.
- Woodside sent a consultation update in October 2025 which included a link to the updated Consultation Information Sheet and an updated Summary Information Sheet. Woodside also provided an overview of the survey activities and updated timing (Record of Consultation, 6.3.31).

Reasonable Period

Woodside allowed NAC a reasonable period for consultation in the preparation of this EP because:

- Woodside commenced consultation on this EP with NAC on 12 July 2024 and requested NAC provide feedback by 9 August 2024 for the purposes of preparation of this EP in line with Woodside's methodology of a 30-day period for consultation.
- Woodside provided an activity update on this EP to NAC on 2 October 2025 and requested NAC provide feedback by 31 October 2025 for the purposes of preparation of this EP in line with Woodside's methodology of a 30-day period for consultation.
- Woodside has provided an opportunity to address and respond to NAC for over 17 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 17 months. This has included publishing advertisements in national, state and local newspapers including Indigenous newspapers, the National Indigenous Times (30 July 2024) advising of the proposed activities and requesting comments or feedback.
- Woodside's initial email about this EP on 12 July 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 team. Woodside also provided contact details for NOPSEMA.
  - Offered for Woodside to speak with NAC members as well as the NAC Board.

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- Asked NAC to advise how it would like Woodside to engage and whether NAC required further information.

- Woodside sent an activity update about this EP on 2 October 2025.
- Woodside offered to meet with NAC on a number of occasions.
- Throughout the consultation period, Woodside and NAC have exchanged multiple emails and met on a number of occasions and have otherwise had direct contact lines to each other during the period.
- Woodside invites NAC to Quarterly Heritage Meetings and monthly relationship meetings.

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 17 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 7.8 of this EP).

4.11.3 Robe River Kuruma Aboriginal Corporation (RRKAC)

RRKAC is established under the *Native Title Act 1993* (Cth) by the Robe River Kuruma people to represent the Robe River Kuruma people (defined broadly by reference to descent from the set of ancestors who were known to have a continuous and unbroken connection as the Traditional Custodians at the time of European colonisation) and represent their communal interests including, among other things, management and protection of cultural values.

Woodside has an existing relationship with RRKAC which extends prior to consultation for this EP. Woodside's consultation approach for Traditional Owners has a focus on building and maintaining long-term relationships with each group. Woodside has assigned a First Nations Engagement team member as a dedicated focal person for EP consultation with RRKAC, who is responsible for building a consultative relationship and is readily available to provide information and take feedback.

In October 2025, Woodside provided RRKAC with a table of cultural values as part of the activity update. These values had been previously identified for RRKAC through a process of consultation and reviews of publicly available literature. RRKAC did not request any changes. This context and process demonstrates that Woodside's consultation approach with RRKAC is appropriate and adapted to the nature and interests of RRKAC.

Summary of information provided and record of consultation for this EP:

- On 8 July 2024, Woodside emailed RRKAC 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 NOPSEMA's *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 9 August 2024.
  - Information on how RRKAC would like to engage with Woodside about the proposed activity, including the opportunity to meet face to face.

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- That feedback can continue to be accepted by Woodside for the life of the EP.
- A request for RRKAC to provide information about the proposed activity to other individuals, as required.

- On 30 July 2024, Woodside emailed RRKAC a reminder about the proposed activity and requested if RRKAC had any feedback or would like the opportunity to consult on the activity further. The email included the closing consultation date (SI Report, reference 16.1).
- **(1)** On 6 September 2024, as a result of ongoing conversations with Woodside, RRKAC verbally confirmed that there was no feedback regarding the proposed activity. **(1)** Woodside noted RRKAC's feedback (SI Report, reference 16.2).
- On 9 September 2024, Woodside invited RRKAC to share stories and receives updates from Woodside at its Monthly Community Luncheon for Traditional Owners to be held in Roebourne on 25 September 2024 (SI Report, reference 37.1)**.**
- 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 37.3).
- On 4 March 2025, Woodside invited RRKAC to share stories and receive updates from Woodside at its Monthly Community Luncheon for Traditional Owners to be held in Roebourne on 5 March 2025 (SI Report, reference 37.5).
- On 5 March 2025, Traditional Owner members from RRKAC 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 37.6).
- On 24 March 2025, Woodside emailed RRKAC an invitation to share stories and receive updates from Woodside at its Monthly Community Luncheon for Traditional Owners to be held in Roebourne on 26 March 2025 (SI Report, reference 37.7).
- On 7 April 2025, Woodside emailed RRKAC an invitation to share stories and receive updates from Woodside at its Monthly Community Luncheon for Traditional Owners to be held in Roebourne on 8 April 2025 (SI Report, reference 37.9).
- On 2 October 2025, Woodside emailed RRKAC about the proposed activity (SI Report, reference 6.3.32). The email included:
  - A reference to the original consultation email for this EP sent to RRKAC on 8 and 30 July 2024.
  - A Summary Information Sheet and a link to the Consultation Information Sheet.
  - A request to provide any additional feedback 31 October 2025 so that it can be considered in the preparation of the EP.
  - Information on the cultural values that RRKAC has previously provided to Woodside considered relevant to the activity:
    - **(2)** Underwater heritage – concerns about impacts to heritage at shoreline.
    - **(3)** The coastline.
  - **(2, 3)** A request from Woodside that RRKAC confirm if there were any changes or additional information regarding cultural values that Woodside should consider in the preparation for this EP.
  - Advice that feedback can continue to be provided to Woodside during the life of an EP, including after consultation for the EP has closed, during EP assessment, and after an EP has been accepted by NOPSEMA.

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim	Woodside's Statement of Response	Inclusion in Environment Plan
(1) RRKAC advised it had no feedback regarding the activity.	**(1)** Woodside acknowledges that RRKAC has no feedback regarding the activity,	**(1)** Should feedback be received after the EP has been accepted (including any	**(1)** No action required.

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	and this includes no objections or claims.	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 7.8.1 of this EP).	
(2) Cultural Value: Concerns about underwater heritage: • impacts at shoreline.	**(2)** This value has been identified through Woodside's data collection processes (consultation).	**(2)** Woodside provided RRKAC with a list of the cultural values known to Woodside that it believed relevant to the group and invited RRKAC to make changes or provide additional information (Record of Consultation, 6.3.32). RRKAC did not request any changes.	**(2)** Woodside has updated Section 4.9 to record these interests and cultural values. Woodside has also assessed the potential impacts on these interests and cultural values, and where appropriate, included controls, in Sections 6.8, 6.9 and 6.11 of the EP.
(3) Cultural Value: • The coastline.	**(3)** This value has been identified through Woodside's data collection processes (consultation).	**(3)** Woodside provided RRKAC with a list of the cultural values known to Woodside that it believed relevant to the group and invited RRKAC to make changes or provide additional information (Record of Consultation, 6.3.32). RRKAC did not request any changes.	**(3)** Woodside has updated Section 4.9 to record these interests and cultural values. Woodside has also assessed the potential impacts on these interests and cultural values, and where appropriate, included controls, in Sections 6.8, 6.9 and 6.11 of the EP.
While feedback has been received, there were no objections or claims.	Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24.	Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should 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 the EP).	No additional measures or controls are required.
Summary Report: Consultation Complete			
Woodside has discharged its obligations for consultation under Regulation 25 of the Environmental Regulations and consultation 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:			

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- On 9 July 2024, Woodside made the Consultation Information Sheet available on the Woodside website.
- Woodside provided information to RRKAC on 8 July 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.
- Woodside sent a consultation update in October 2025 which included a link to the updated Consultation Information Sheet and an updated Summary Information Sheet. Woodside also provided an overview of the survey activities and updated timing (Record of Consultation, 6.3.32).

Reasonable Period

Woodside allowed RRKAC a reasonable period for consultation in the preparation of this EP because:

- Woodside commenced consultation on this EP with RRKAC on 8 July 2024 and requested RRKAC provide feedback by 9 August 2024 for the purposes of preparation of this EP in line with Woodside's methodology of a 30-day period for consultation.
- Woodside provided an activity update on this EP to RRKAC on 2 October 2025 and requested RRKAC provide feedback by 31 October 2025 for the purposes of preparation of this EP in line with Woodside's methodology of a 30-day period for consultation.
- Woodside has provided an opportunity to address and respond to RRKAC for over 17 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 17 months. This has included publishing advertisements in national, state and local newspapers including Indigenous newspapers, the National Indigenous Times (30 July 2024) advising of the proposed activities and requesting comments or feedback.
- Woodside's initial email about this EP on 8 July 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 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 sent an activity update about this EP on 2 October 2025.
- Woodside offered to meet with RRKAC on a number of occasions.
- Throughout the consultation period, Woodside and RRKAC have met on occasions and have otherwise had direct contact lines to each other during the period.

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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 17 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 7.8.1 of this EP).

4.11.4 Wirrawandi Aboriginal Corporation (WAC)

WAC is established under the *Native Title Act 1993* (Cth) by the Mardudhunera and Yaburara (YM) 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.

Woodside has an existing relationship with WAC which extends prior to consultation for this EP. Woodside's consultation approach for Traditional Owners has a focus on building and maintaining long-term relationships with each group. Woodside has assigned a First Nations Engagement team member as a dedicated focal person for EP consultation with WAC, who is responsible for building a consultative relationship and is readily available to provide information and take feedback. Aside from regular consultation about EPs, Woodside invites WAC to Quarterly Heritage Meetings.

In October 2025, Woodside provided WAC with a table of cultural values as part of the activity update. These values had been previously identified for WAC through a process of consultation and reviews of publicly available literature. WAC did not request any changes. This context and process demonstrates that Woodside's consultation approach with WAC is appropriate and adapted to the nature and interests of WAC.

Summary of information provided and record of consultation for this EP:

- On 8 July 2024, Woodside emailed WAC advising of the proposed activity (Record of Consultation, reference 6.1.35), which included the activity's Summary Information Sheet and Consultation Information Sheet. The email included:
  - An overview of the proposed activity.
  - Links to NOPSEMA's *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 9 August 2024.
  - Information on how WAC would like to engage with Woodside about the proposed activity, including the opportunity to meet face to face.
  - That feedback can continue to be accepted by Woodside for the life of the EP.
  - A request for WAC to provide information about the proposed activity to other individuals, as required.
- On 15 July 2024, Woodside met with WAC to discuss three EPs including the proposed activity (SI Report, reference 17.1). At this meeting:
  - **(1)** WAC confirmed there were no concerns as the three EPs were revisions and also informed Woodside that community Elders were advised of the EPs and had agreed there were no immediate concerns. **(1)** Woodside acknowledged the feedback at the meeting.
  - WAC expressed gratitude for Woodside's support and availability to discuss the EP materials in person.

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  - **(2)** WAC stated it was eager to participate in Sea Country mapping and to discuss possible sponsorship and commercial opportunities with industry, once a General Manager/CEO is recruited. **(2)** Woodside noted the interest at the meeting.
  - WAC noted its commitment to ensuring cultural governance is the foundation of consultation with industry.
- On 15 July 2024, WAC emailed Woodside to express gratitude for the information provided and the opportunity to consult on three EPs, including the proposed activity, at a meeting earlier that day (SI Report, reference 17.2). WAC stated:
  - It appreciated the information provided and was grateful for the opportunity to be consulted.
  - It was in the process of recruiting a General Manager.
  - **(2)** It was satisfied that the three activities including the proposed activity in this EP would have minimal impact to Sea Country within WAC's determination area and therefore WAC had no concerns. **(2)** Woodside acknowledged this.
  - The WAC Board was eager to meet and consult with Woodside for future EPs, after a General Manager is appointed.
- On 5 September 2024, Woodside emailed WAC to invite it to Woodside's Quarterly Heritage Meetings, 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 17.3).
- On 9 September 2024, Woodside invited WAC to share stories and receives updates from Woodside at its Monthly Community Luncheon for Traditional Owners to be held in Roebourne on 25 September 2024 (SI Report, reference 37.1).
- On 25 September 2024, Traditional Owner members from WAC attended Woodside's Monthly Community Luncheon for Traditional Owners held in Roebourne. During the luncheon Woodside requested feedback from all attendees about EPs and provided information about the consultation process (SI Report, reference 37.2).
- On 30 September 2024, Woodside met with WAC (SI Report, reference 17.4) At the meeting:
  - WAC confirmed that it is currently under-resourced 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.
  - WAC advised it is keen to discuss sponsorship opportunities and currently working on an improved organisational structure to support successful strategic outcomes.
  - Woodside reported that throughout September 2024, it has undertaken a number of discussions face to face and via telephone calls with WAC members and Elders about the following issues:
    - Increased responsibilities and pressures on Elders from industry.
    - Lore and the transfer of cultural knowledge to younger generations.
    - EP consultation and reasons why Woodside consults with relevant groups.
- 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 37.3).
- On 10 October 2024, WAC attended Woodside's Quarter 3 Heritage Meeting in Roebourne where Woodside presented to Traditional Owners (SI Report, reference 38.1). Matters relevant to this EP included:
  - Consultation outcomes for Woodside EPs.
  - An explanation of State and Commonwealth regulatory requirements.
  - An explanation of EMBAs.

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  - 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 17.5).
- On 5 December 2024, WAC attended Woodside's Quarter 4 Heritage Meeting in Karratha (SI Report, reference 38.3). Matters discussed relevant to this EP included:
  - Woodside reminded the meeting attendees about ongoing consultation.
- On 4 March 2025, Woodside invited WAC to share stories and receive updates from Woodside at its Monthly Community Luncheon for Traditional Owners to be held in Roebourne on 5 March 2025 (SI Report, reference 37.5).
- On 5 March 2025, Traditional Owner members from WAC 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 37.6).
- On 13 March 2025, WAC hosted Woodside's Quarterly Heritage Meeting (SI Report, reference 38.4). Matters discussed and/or raised relating to this EP included:
  - That consultation is open for the life of an EP and Woodside can schedule consultation meetings at times that are convenient to the community.
  - A reminder that Woodside hosts a community luncheon/yarning circle for all local Traditional Owners.
- On 24 March 2025, Woodside emailed WAC an invitation to share stories and receive updates from Woodside at its Monthly Community Luncheon for Traditional Owners to be held in Roebourne on 26 March 2025 (SI Report, reference 37.7).
- On 26 March 2025, Traditional Owner members from WAC attended Woodside's Monthly Community Luncheon for Traditional Owners held in Roebourne. During the lunch Woodside discussed the process for writing EPs and how it communicates feedback from groups to NOPSEMA (SI Report, reference 37.8).
- On 8 April 2025, Traditional Owner members from WAC 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 37.10).
- On 4 June 2025, Woodside hosted a Quarterly Community Heritage meeting with Traditional Owners including members of NAC and WAC (SI Report, reference 38.5). Matters discussed relevant to this EP included:
  - Woodside provided an overview the consultation process with relevant First Nations persons.
- On 3 September 2025, Wong Goo Tt Oo, WAC and NAC attended Woodside's Quarterly Heritage Meeting (SI Report, reference 38.6). Matters discussed relating to this EP included:
  - Woodside reminded attendees that it accepts feedback for the life of an EP.
  - Woodside is available to schedule meetings for EP consultation.
  - Cultural heritage updates.
- On 2 October 2025, Woodside emailed WAC about the proposed activity (SI Report, reference 6.3.33). The email included:
  - A reference to the original consultation email for this EP sent to WAC on 8 July and met on 15 July 2024.
  - A Summary Information Sheet and a link to the Consultation Information Sheet.
  - A request to provide any additional feedback 31 October 2025 so that it can be considered in the preparation of the EP.
  - Information on the cultural values that WAC has previously provided to Woodside considered relevant to the activity:

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- **(3)** Marine species – whales, turtles.
- **(4)** Potential impact of emissions on rock art.
- **(5)** Underwater and onshore heritage.

- **(3, 4, 5)** A request from Woodside that WAC confirm if there were any changes or additional information regarding cultural values that Woodside should consider in the preparation for this EP.
- Advice that feedback can continue to be provided to Woodside during the life of an EP, including after consultation for the EP has closed, during EP assessment, and after an EP has been accepted by NOPSEMA.

- On 3 December 2025, Woodside met representatives from NAC, WAC and Wong-Goo-Tt-Oo in Karratha for a Quarterly Heritage meeting (SI Report, Reference 38.7). Matters discussed relevant to EP consultation included:
  - Woodside showed a video explaining EP consultation.
  - Woodside said it may develop more videos to aid consultation.

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim	Woodside's Statement of Response	Inclusion in Environment Plan
(1) WAC confirmed with Woodside it had no issues or concerns for this EP.	**(1)** Woodside acknowledges that WAC had no issues or concerns, including no objections or claims, regarding this EP.	**(1)** 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 7.8.1 of the EP).	**(1)** No action required.
(2) WAC is keen to participate in Sea Mapping and to discuss possible sponsorship and commercial opportunities with industry.	**(2)** Woodside acknowledges WAC's interest to participate in Sea Mapping, and its interest to discuss sponsorship and commercial opportunities with industry.	**(2)** Woodside notes WAC's interest to participate in Sea Mapping along with other opportunities with industry and will wait for instruction from WAC once it has recruited a General Manager/CEO.	**(2)** No additional measures or controls are required.
(3) Cultural Value: Marine species: • Whales • Turtles.	**(3)** This value has been identified through Woodside's data collection processes (consultation).	**(3)** Woodside provided WAC with a list of the cultural values known to Woodside that it believed relevant to the group and invited it to make changes or provide additional information (Record of Consultation, 6.3.33). WAC did not request any changes.	**(3)** Woodside has updated Section 4.9 to record these interests and cultural values. Woodside has also assessed the potential impacts on these interests and cultural values, and where appropriate, included controls, in Sections 6.8, 6.9 and 6.11 of the EP.

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(4) Cultural Value: • Potential impact of emissions on rock art.	**(4)** This value has been identified through Woodside's data collection processes (consultation).	**(4)** Woodside provided WAC with a list of the cultural values known to Woodside that it believed relevant to the group and invited it to make changes or provide additional information (Record of Consultation, 6.3.33). WAC did not request any changes.	**(4)** Woodside has updated Section 4.9 to record these interests and cultural values. Woodside has also assessed the potential impacts on these interests and cultural values, and where appropriate, included controls, in Sections 6.8, 6.9 and 6.11 of the EP.
(5) Cultural Value: • Underwater and onshore heritage.	**(5)** This value has been identified through Woodside's data collection processes (consultation).	**(5)** Woodside provided WAC with a list of the cultural values known to Woodside that it believed relevant to the group and invited it to make changes or provide additional information (Record of Consultation, 6.3.33). WAC did not request any changes.	**(5)** Woodside has updated Section 4.9 to record these interests and cultural values. Woodside has also assessed the potential impacts on these interests and cultural values, and where appropriate, included controls, in Sections 6.8, 6.9 and 6.11 of the EP.
While feedback has been received, there were no objections or claims.	Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24.	Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should 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 the EP).	No additional measures or controls are required.

Summary Report: Consultation Complete

Woodside has discharged its obligations for consultation under Regulation 25 of the Environmental Regulations and consultation 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 9 July 2024, Woodside made the Consultation Information Sheet available on the Woodside website.
- Woodside provided information to WAC on 8 July 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.

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  - 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.
- Woodside sent a consultation update in October 2025 which included a link to the updated Consultation Information Sheet and an updated Summary Information Sheet. Woodside also provided an overview of the survey activities and updated timing (Record of Consultation, 6.3.33).

Reasonable Period

Woodside allowed WAC a reasonable period for consultation in the preparation of this EP because:

- Woodside commenced consultation on this EP with WAC on 8 July 2024 and requested WAC provide feedback by 9 August 2024 for the purposes of preparation of this EP in line with Woodside's methodology of a 30-day period for consultation.
- Woodside provided an activity update on this EP to WAC on 2 October 2025 and requested WAC provide feedback by 31 October 2025 for the purposes of preparation of this EP in line with Woodside's methodology of a 30-day period for consultation.
- Woodside has provided an opportunity to address and respond to WAC for over 17 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 for 17 months. This has included publishing advertisements in national, state and local newspapers including Indigenous newspapers, the National Indigenous Times (30 July 2024) advising of the proposed activities and requesting comments or feedback.
- Woodside's initial email about this EP on 8 July 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 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 sent an activity update about this EP on 2 October 2025.
- Woodside offered to meet with WAC and met face to face on a number of occasions.
- Throughout the consultation period, Woodside and WAC have exchanged multiple emails, met on four occasions and have otherwise had direct contact lines to each other during the period.
- Woodside invites WAC to Quarterly Heritage Meetings, and monthly relationship meetings.

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 17 months, WAC has provided feedback, but has not raised objections or claims about the adverse impact of each activity to which this EP relates.

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Woodside engages in ongoing consultation once an EP has been submitted for assessment as well as throughout the life of an EP. Should feedback be received after the EP has been accepted (including relevant new information relating to cultural values), it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8.1 of this EP).

4.11.5 Yindjibarndi Aboriginal Corporation (Yindjibarndi)

Yindjibarndi is established under the *Native Title Act 1993* (Cth) by the Yindjibarndi people to represent the Yindjibarndi people (defined broadly by reference to descent from the set of ancestors who were known to have a continuous and unbroken connection as the Traditional Custodians at the time of European colonisation) and represent their communal interests including, among other things, management and protection of cultural values.

Woodside has an existing relationship with Yindjibarndi which extends prior to consultation for this EP. Woodside's consultation approach for Traditional Owners has a focus on building and maintaining long-term relationships with each group. Woodside has assigned a First Nations Engagement team member as a dedicated focal person for EP consultation with Yindjibarndi, who is responsible for building a consultative relationship and is readily available to provide information and take feedback.

Yindjibarndi during previous consultation has requested Woodside to refer all correspondence about EPs to the Ngarluma Yindjibarndi Foundation Ltd (NYFL). This context and process demonstrates that Woodside's consultation approach with Yindjibarndi is appropriate and adapted to the nature and interests of Yindjibarndi.

Summary of information provided and record of consultation for this EP:

- On 8 July 2024, Woodside emailed Yindjibarndi (via NYFL) 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 NOPSEMA's *Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information*, and contact details.
  - Information on the interests that Yindjibarndi (via NYFL) and its members may have within the EMBA.
  - A request for feedback by 9 August 2024.
  - Information on how Yindjibarndi (via NYFL) would like to engage with Woodside about the proposed activity, including the opportunity to meet face to face.
  - That feedback can continue to be accepted by Woodside for the life of the EP.
  - A request for Yindjibarndi (via NYFL) to provide information about the proposed activity to other individuals, as required.
- On 23 July 2024, Woodside emailed Yindjibarndi (via NYFL) a reminder about the proposed activity and requesting if there was any feedback from the Yindjibarndi community or other relevant persons. Woodside offered to provide further information and/or the opportunity to consult on the proposed activity. The email included the closing consultation date (SI Report, reference 18.1).
- On 9 September 2024, Woodside invited Yindjibarndi to share stories and receives updates from Woodside at its Monthly Community Luncheon for Traditional Owners to be held in Roebourne on 25 September 2024 (SI Report, reference 37.1).
- On 25 September 2024, Traditional Owner members from Yindjibarndi attended Woodside's Monthly Community Luncheon for Traditional Owners held in Roebourne. During the luncheon Woodside requested feedback from all attendees about EPs and provided information about the consultation process (SI Report, reference 37.2).
- 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 37.3).

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- 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 18.2).
- On 21 October 2024, Yindjibarndi (via NYFL) emailed Woodside (SI Report, reference 18.3). In the email NYFL asserted:
  - **(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.
  - 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 Yindjibarndi 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 37.4).
- On 4 November 2024, Woodside emailed NYFL (as the delegated representative for Yindjibarndi) in response to statements made in NYFL's email on 21 October 2024 (SI Report, reference 18.4). The email:
  - **(2)** Responded to NYFL's cost estimates and rates and reiterated that they 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. This is particularly so where the high rates quoted by NYFL were for an initial review of a 7-page agreement.
  - **(1)** Offered again to meet and discuss this issue further anytime. And that Woodside would be available to meet in person in Ieramugadu (Roebourne) in the week of 18 November 2024.
  - **(1)** Confirmed that Woodside's 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. However, Woodside is also happy and discuss this EP and the various other EPs NYFL has listed in its recent correspondence.
  - **(1)** Reiterated that the ongoing negotiation of a consultation framework agreement can and continues to occur in parallel to consultation for EPs.
  - **(1)** Included a table showing the consultation status of each of the EPs referenced by NYFL in its letter outlining that consultation for this EP had closed.
- On 24 March 2025, Woodside emailed Yindjibarndi (via NYFL) an invitation to share stories and receive updates from Woodside at its Monthly Community Luncheon for Traditional Owners to be held in Roebourne on 26 March 2025 (SI Report, reference 37.7).
- On 26 March 2025, Traditional Owner members from Yindjibarndi (via NYFL) attended Woodside's Monthly Community Luncheon for Traditional Owners held in Roebourne. During the lunch Woodside discussed the process for writing EPs and how it communicates feedback from groups to NOPSEMA (SI Report, reference 37.8).
- On 7 April 2025, Woodside emailed Yindjibarndi (via NYFL) an invitation to share stories and receive updates from Woodside at its Monthly Community Luncheon for Traditional Owners to be held in Roebourne on 8 April 2025 (SI Report, reference 37.9).
- On 8 April 2025, Traditional Owner members from Yindjibarndi (via 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 37.10).

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 4.13.1 and SI Report, reference 21.0 for further information.

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- On 2 October 2025, Woodside emailed Yindjibarndi (via NYFL) about the proposed activity (SI Report, reference 6.3.34). The email included:
  - A reference to the original consultation email for this EP sent to Yindjibarndi (via NYFL) on 8 and 23 July 2024.
  - A Summary Information Sheet and a link to the Consultation Information Sheet.
  - A request to provide any additional feedback 31 October 2025 so that it can be considered in the preparation of the EP.
  - Advice that feedback can continue to be provided to Woodside during the life of an EP, including after consultation for the EP has closed, during EP assessment, and after an EP has been accepted by NOPSEMA.

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim	Woodside's Statement of Response	Inclusion in Environment Plan
(1) 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.	**(1)** 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.	**(1)** The information provided by Woodside meets the requirements of Regulation 25 of the Environment Regulations for the reasons set out above.	**(1)** Not required.
(2) NYFL has acknowledged it supports an agreement to enable a process of consultation.	**(2)** 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	**(2)** Woodside sent a 7-page draft consultation framework to NYFL in March 2024 for its consideration.	**(2)** No action required.

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	(quarterly) communication about Woodside activities. Feedback from NYFL on 27 October 2023 requested Woodside develop a draft consultation framework.		
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 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 7.8.1 of the EP).	No additional measures or controls are required.

Summary Report: Consultation Complete

Woodside has discharged its obligations for consultation under Regulation 25 of the 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 9 July 2024, Woodside made the Consultation Information Sheet available on the Woodside website.
- Woodside provided information to Yindjibarndi (via NYFL) on 8 July 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 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.
- Woodside sent a consultation update in October 2025 which included a link to the updated Consultation Information Sheet and an updated Summary Information Sheet. Woodside also provided an overview of the survey activities and updated timing (Record of Consultation, 6.3.34).

Reasonable Period

Woodside allowed Yindjibarndi (via NYFL) a reasonable period for consultation in the preparation of this EP because:

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- Woodside commenced consultation on this EP with Yindjibarndi (via NYFL) on 8 July 2024 and requested Yindjibarndi (via NYFL) provide feedback by 9 August 2024 for the purposes of preparation of this EP in line with Woodside's methodology of a 30-day period for consultation.
- Woodside provided an activity update on this EP to Yindjibarndi (via NYFL) on 2 October 2025 and requested Yindjibarndi (via NYFL) provide feedback by 31 October 2025 for the purposes of preparation of this EP in line with Woodside's methodology of a 30-day period for consultation.
- Woodside has provided an opportunity to address and respond to Yindjibarndi (via NYFL) for over 17 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 17 months. This has included publishing advertisements in national, state and local newspapers including Indigenous newspapers, the National Indigenous Times (30 July 2024) advising of the proposed activities and requesting comments or feedback.
- Woodside's initial email about this EP on 8 July 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 sent an activity update about this EP on 2 October 2025.
- 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 otherwise 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 17 months, Yindjibarndi (via NYFL) 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 7.8.1 of this EP).

4.12 NATIVE TITLE REPRESENTATIVE BODIES

4.12.1 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.

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Summary of information provided and record of consultation for this EP:

- On 9 July 2024, Woodside emailed KLC 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 NOPSEMA's *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 9 August 2024.
  - Information on how KLC would like to engage with Woodside about the proposed activity, including the opportunity to meet face to face.
  - That feedback can continue to be accepted by Woodside for the life of the EP.
  - A request for KLC to provide information about the proposed activity to other individuals, as required.
- On 30 July 2024, Woodside emailed KLC a reminder about the proposed activity and to offer an opportunity to meet and/or discuss the proposed activity (SI Report, reference 19.1).
- On 2 October 2025, Woodside emailed KLC about the proposed activity (SI Report, reference 6.3.35). The email included:
  - A reference to the original consultation email for this EP sent to KLC on 9 and 30 July 2024.
  - A Summary Information Sheet and a link to the Consultation Information Sheet.
  - A request to provide any additional feedback 31 October 2025 so that it can be considered in the preparation of the EP.
  - Advice that feedback can continue to be provided to Woodside during the life of an EP, including after consultation for the EP has closed, during EP assessment, and after an EP has been accepted by NOPSEMA.

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim	Woodside's Statement of Response	Inclusion in Environment Plan
No feedback, objections or claims received despite follow up.	Woodside has assessed the merits of any objection or claim 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 7.8.1 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

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Sufficient information has been provided because:

- On 9 July 2024, Woodside made the Consultation Information Sheet available on the Woodside website.
- Woodside provided information to KLC on 9 July 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 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.
- Woodside sent a consultation update in October 2025 which included a link to the updated Consultation Information Sheet and an updated Summary Information Sheet. Woodside also provided an overview of the survey activities and updated timing (Record of Consultation, 6.3.35).

Reasonable Period

Woodside allowed KLC a reasonable period for consultation in the preparation of this EP because:

- Woodside commenced consultation on this EP with KLC on 9 July 2024 and requested KLC provide feedback by 9 August 2024 for the purposes of preparation of this EP in line with Woodside's methodology of a 30-day period for consultation.
- Woodside provided an activity update on this EP to KLC on 2 October 2025 and requested KLC provide feedback by 31 October 2025 for the purposes of preparation of this EP in line with Woodside's methodology of a 30-day period for consultation.
- Woodside has provided an opportunity to address and respond to KLC for over 17 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 17 months. This has included publishing advertisements in national, state and local newspapers including Indigenous newspapers, the National Indigenous Times (30 July 2024) advising of the proposed activities and requesting comments or feedback.
- Woodside's initial email about this EP on 9 July 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 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 sent an activity update about this EP on 2 October 2025.
- Woodside offered to meet with KLC on a number of occasions.
- Throughout the consultation period, Woodside and KLC have otherwise had direct contact lines to each other during the period.

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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 17 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 7.8.1 of this EP).

4.12.2 Yamatji Marlpa Aboriginal Corporation (YMAC)

Yamatji Marlpa Aboriginal Corporation (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.

Summary of information provided and record of consultation for this EP:

- On 8 July 2024, Woodside emailed YMAC 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 NOPSEMA's *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 9 August 2024.
  - Information on how YMAC would like to engage with Woodside about the proposed activity, including the opportunity to meet face to face.
  - That feedback can continue to be accepted by Woodside for the life of the EP.
  - A request for YMAC to provide information about the proposed activity to other individuals, as required.
- **(1)** On 10 July 2024, following an email from Woodside that included a Word version of the draft consultation agreement, YMAC emailed Woodside confirming receipt of the draft consultation agreement with the intention to edit with proposed amendments and to confirm a date to meet (SI Report, reference 20.1).
- On 16 July 2024, Woodside telephoned YMAC to confirm the contact details to send EP information (SI Report, reference 20.2).
- On 16 July 2024, following a telephone conversation earlier that day, Woodside emailed YMAC's legal representative (SI Report, reference 20.3). Woodside:
  - Confirmed Woodside is seeking feedback and/or consultation of three EPs, including the proposed activity.
  - Attached original consultation emails from Woodside.
  - Advised of the contact details and closing dates to submit feedback.
  - Offered to provide additional information or to consult with Traditional Owners who are considered relevant.
  - Noted that the current consultation activities are part of five-year revisions.

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- Between 30 July 2024 and 11 September 2024, Woodside and YMAC exchanged emails relating to Woodside meeting with the NTGAC Board to discuss EP activities and **(1)** the draft consultation agreement. The information exchange included confirming a meeting date, venue location and cost estimate for the meeting, contact details of Woodside, NTGAC and YMAC representatives and attendees, and agreeing to a meeting agenda (SI Report, references 20.4 – 20.15).
- On 12 September 2024, Woodside met with the NTGAC Board and YMAC (SI Report, reference 20.16). Matters relevant to this EP were:
  - The EP consultation process and Woodside's availability to consult with NTGAC and YMAC about Woodside's activities or other matters important to NTGAC.
  - Woodside's partnerships with Indigenous communities.
  - That the discussion regarding the draft consultation agreement between Woodside and NTGAC (via YMAC) will be deferred and discussed with other Woodside representatives at a later date.
- On 2 October 2025, Woodside emailed YMAC about the proposed activity (SI Report, reference 6.3.36). The email included:
  - A reference to the original consultation email for this EP sent to YMAC on 8, 16 and 30 July 2024.
  - A Summary Information Sheet and a link to the Consultation Information Sheet.
  - A request to provide any additional feedback 31 October 2025 so that it can be considered in the preparation of the EP.
  - Advice that feedback can continue to be provided to Woodside during the life of an EP, including after consultation for the EP has closed, during EP assessment, and after an EP has been accepted by NOPSEMA.

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim	Woodside's Statement of Response	Inclusion in Environment Plan
(1) YMAC has expressed interest in entering a consultation agreement with Woodside and has provided Woodside with a draft consultation framework to assist the consultation process.	**(1)** Woodside is currently assessing the effectiveness of negotiating framework agreements with stakeholders. To date, no framework agreements have been finalised. Woodside notes that this is not required to undertake and/or complete consultation in the course of preparing this EP.	**(1)** Woodside has provided YMAC a draft framework agreement in February 2024 for consideration and notes it has not yet been actioned.	**(1)** No action required.
While feedback has been received, there were no objections or claims.	Woodside has assessed the merits of any objection or claim 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 7.8.1 of this EP).	No additional measures or controls are required.

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Summary Report: Consultation Complete
Woodside has discharged its obligations for consultation under Regulation 25 of the 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 9 July 2024, Woodside made the Consultation Information Sheet available on the Woodside website. • Woodside provided information to YMAC on 8 July 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 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. • Woodside sent a consultation update in October 2025 which included a link to the updated Consultation Information Sheet and an updated Summary Information Sheet. Woodside also provided an overview of the survey activities and updated timing (Record of Consultation, 6.3.36). **Reasonable Period** Woodside allowed YMAC a reasonable period for consultation in the preparation of this EP because: • Woodside commenced consultation on this EP with YMAC on 8 July 2024 and requested YMAC provide feedback by 9 August 2024 for the purposes of preparation of this EP in line with Woodside's methodology of a 30-day period for consultation. • Woodside provided an activity update on this EP to YMAC on 2 October 2025 and requested YMAC provide feedback by 31 October 2025 for the purposes of preparation of this EP in line with Woodside's methodology of a 30-day period for consultation. • Woodside has provided an opportunity to address and respond to YMAC for over 17 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 17 months. This has included publishing advertisements in national, state and local newspapers including Indigenous newspapers, the National Indigenous Times (30 July 2024) advising of the proposed activities and requesting comments or feedback. • Woodside's initial email about this EP on 8 July 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 team. Woodside also provided contact details for NOPSEMA. - Offered for Woodside to speak with YMAC's members as well as the YMAC Board.

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- Asked YMAC to advise how it would like Woodside to engage and whether YMAC required further information.

- Woodside sent an activity update about this EP on 2 October 2025.
- Woodside offered to meet with YMAC on a number of occasions.
- Throughout the consultation period, Woodside and YMAC have exchanged emails and have otherwise had direct contact lines to each other during the period.
- Woodside invites YMAC to monthly relationship meetings and 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 17 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 7.8 of this EP).

4.13 SELF-IDENTIFIED FIRST NATION GROUPS

4.13.1 Ngarluma Yindjibarndi Foundation Ltd (NYFL)

NYFL was created to act as trustee for the trust created pursuant to the Northwest Shelf Agreement 1998 (agreed 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 Native Title holders, the 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. The Yindjibarndi Aboriginal Corporation has requested all correspondence about EPs be directed to NYFL. NYFL self-identified and has advised it is relevant for this EP. In March 2024, Woodside provided NYFL with the draft terms of a consultation agreement between NYFL and Woodside. Discussions between Woodside and NYFL in relation to this agreement are ongoing, and have occurred in parallel to consultation for this EP.

In addition to consultation for specific EPs relevant to NYFL, Woodside also consults NYFL through Quarterly Heritage Meetings. Woodside has continually confirmed it is open to receiving or being notified of feedback, claims or objections on EPs. This context and process demonstrates that Woodside's consultation approach with NYFL is appropriate and adapted to the nature and interests of NYFL.

Summary of information provided and record of consultation for this EP:

- On 8 July 2024, Woodside emailed NYFL 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.

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  - Links to NOPSEMA's *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 9 August 2024.
  - Information on how NYFL would like to engage with Woodside about the proposed activity, including the opportunity to meet face to face.
  - That feedback can continue to be accepted by Woodside for the life of the EP.
  - A request for NYFL to provide information about the proposed activity to other individuals, as required.
- On 8 July 2024, NYFL emailed Woodside acknowledging receipt of Woodside's email about the proposed activity and requested that other NYFL representatives be included in all consultation correspondence from Woodside concerning EPs (SI Report, reference 21.1). In the attached letter:
  - **(1)** NFYL asserts that to undertake effective consultation, NYFL, its members and Traditional Owners require timely and accessible information in relation to the proposal.
  - **(1)** NYFL requires independent expert advice in relation to the technical information, the assessment of the potential environmental implications, the potential impact on the cultural heritage and rights.
  - **(2)** NYFL's funding request to progress discussions and negotiations on the draft consultation agreement remain unresolved.
  - **(2)** NYFL maintains that an interim consultation agreement remains the appropriate mechanism for consultation between Woodside and NYFL.
- On 9 July 2024, Woodside emailed NYFL, thanking it for the reply to the consultation email sent the day before and ensuring that further correspondence regarding EPs would be emailed to nominated NYFL staff (SI Report, reference 21.2).
- On 23 July 2024, Woodside emailed NYFL a reminder about the proposed activity and made an offer to provide further information or the opportunity to consult the activity further. The email included the closing consultation date (SI Report, reference 21.3).
- On 9 August 2024, NYFL emailed Woodside stating that NYFL would provide a response to Woodside in due course, as current resourcing resulted in limited availability to respond (SI Report, reference 21.4).
- On 9 September 2024, Woodside invited NYFL to share stories and receives updates from Woodside at its Monthly Community Luncheon for Traditional Owners to be held in Roebourne on 25 September 2024 (SI Report, reference 37.1).
- On 25 September 2024, Traditional Owner members from NYFL attended Woodside's Monthly Community Luncheon for Traditional Owners held in Roebourne. During the luncheon Woodside requested feedback from all attendees about EPs and provided information about the consultation process (SI Report, reference 37.2).
- 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 37.3).
- On 21 October 2024, NYFL emailed Woodside (SI Report, reference 21.5). 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.
  - 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 Lunch 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 37.4).

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- On 4 November 2024, Woodside emailed NYFL in response to statements made in NYFL's email on 21 October 2024 (SI Report, reference 21.6). The email:
  - **(2)** Responded to NYFL's cost estimates, reiterating that they are excessive. 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. This is particularly so where the high rates quoted by NYFL were for an initial review of a 7-page agreement.
  - **(1)** Offered again to meet and discuss this issue further. Woodside would be available to meet in person in Ieramugadu (Roebourne) in the week of 18 November 2024.
  - **(1)** Confirmed that Woodside's use of email for consultation correspondence appears to mirror NYFL's primary approach of emailing consultation correspondence. However, Woodside is also available to discuss this EP as part of its ongoing consultation with NYFL.
  - **(1)** Reiterated that the ongoing negotiation of a consultation framework agreement can and continues to occur in parallel to consultation for EPs.
  - **(1)** Included a table showing the status of each of the EPs referenced by NYFL in its letter, outlining that consultation for this EP had closed.
- On 8 November 2024, NYFL emailed Woodside requesting to meet on 20 November 2024 to progress the draft Consultation Framework Agreement (SI Report, reference 21.7).
- On 15 November 2024, Woodside emailed NYFL confirming availability 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 outlined in the 21 October 2024 correspondence (SI Report, reference 21.8).
- On 15 November 2024, NYFL emailed Woodside regarding cost estimates in relation to the review of the draft Consultation Framework Agreement (SI Report, reference 21.9).
- On 20 November 2024, Woodside emailed NYFL to follow up and thank NYFL for the meeting, confirming Woodside and NYFL had agreed a way forward to progress the draft Consultation Framework Agreement (SI Report, reference 21.10).
- 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 Sorry Business was underway (SI Report, reference 21.11). As a sign of respect, Woodside would be limiting communication with NYFL and Yindjibarndi Aboriginal Corporation until further notice.
- On 5 December 2024, Woodside wrote to NYFL in response to its email of 21 October 2024 (SI report, reference 20.12). 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.
  - **(1)** 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.
  - **(2)** 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 the draft consultation agreement, with NYFL stating it would progress consultation matters in due course (SI Report, references 21.13 – 21.14).

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- On 4 March 2025, 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 5 March 2025 (SI Report, reference 37.5).
- On 5 March 2025, 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 37.6).
- On 24 March 2025, Woodside emailed NYFL an invitation to share stories and receive updates from Woodside at its Monthly Community Luncheon for Traditional Owners to be held in Roebourne on 26 March 2025 (SI Report, reference 37.7).
- On 26 March 2025, Traditional Owner members from NYFL attended Woodside's Monthly Community Luncheon for Traditional Owners held in Roebourne. During the lunch Woodside discussed the process for writing EPs and how it communicates feedback from groups to NOPSEMA (SI Report, reference 37.8).
- **(1)** On 7 April 2025, NYFL emailed Woodside, in response to another EP, advising that NYFL will be meeting with its legal advisers regarding the draft consultation agreement and will send an updated agreement to Woodside in due course (SI Report, reference, 21.15).
- On 7 April 2025, Woodside emailed NYFL an invitation to share stories and receive updates from Woodside at its Monthly Community Luncheon for Traditional Owners to be held in Roebourne on 8 April 2025 (SI Report, reference 37.9).
- On 8 April 2025, 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 37.10).
- **(1)** On 10 April 2025, NYFL emailed Woodside a draft consultation agreement, previously provided by Woodside which incorporated NYFL changes (SI Report, reference 21.16).
- **(1)** On 15 June 2025, Woodside emailed NYFL amendments to a draft consultation agreement (SI Report, reference 21.17). In the email Woodside reiterated that consultation for the preparation of environment plans occurs concurrently with agreement negotiations.
- **(1)** On 16 June 2025, NYFL emailed Woodside to acknowledge receipt of Woodside's amendments to the draft consultation agreement (SI Report, reference 21.18).
- **(1)** On 16 June 2025, NYFL emailed Woodside about an unrelated EP and stated that a consultation agreement is the appropriate framework to engage in consultation and provided availability to discuss the draft consultation agreement (SI Report, reference 21.19).
- **(1)** On 19 June 2025, NYFL emailed Woodside and advised Woodside's amendments to a draft consultation were under review (SI Report, reference 21.20).
- **(1)** On 3 July 2025, NYFL emailed Woodside noting that NYFL looks forward to finalising the consultation agreement and undertaking consultation in regard to an EP not related to this activity (SI Report, reference 21.21).
- **(1)** On 4 July 2025, Woodside emailed NYFL to state that the preparation of EPs can and does occur concurrently with agreement negotiations (SI Report, reference 21.22).
- **(1)** On 24 July 2025, NYFL emailed Woodside and suggested meeting to discuss Woodside's amendments to the draft consultation agreement. NYFL requested Woodside support funding of the meeting including for legal representatives to attend (SI Report, reference 21.23).
- **(1)** On 23 September 2025, NYFL emailed Woodside to follow-up on its earlier offer to meet to discuss the consultation agreement (SI Report, reference 21.24).
- **(1)** On 24 September 2025, Woodside emailed NYFL to confirm an online meeting could be held to discuss the consultation agreement, however Woodside were unable to provide further funding for legal advice or otherwise in order to close out the agreement. Woodside again reminded NYFL that negotiation towards a consultation agreement can and does occur in parallel with consultation for EPs (SI Report, reference 21.25).
- On 2 October 2025, Woodside emailed NYFL about the proposed activity (SI Report, reference 6.3.37). The email included:
  - A reference to the original consultation email for this EP sent to NYFL on 8 and 23 July 2024.

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- A Summary Information Sheet and a link to the Consultation Information Sheet.
- A request to provide any additional feedback 31 October 2025 so that it can be considered in the preparation of the EP.
- Advice that feedback can continue to be provided to Woodside during the life of an EP, including after consultation for the EP has closed, during EP assessment, and after an EP has been accepted by NOPSEMA.

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim	Woodside's Statement of Response	Inclusion in Environment Plan
(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.	**(1)** 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.	**(1)** The information provided by Woodside meets the requirements of regulation 25 of the Environment Regulations for the reasons set out above.	**(1)** No action required.
(2) NYFL has acknowledged it supports an agreement to enable a process of consultation.	**(2)** 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.	**(2)** Woodside and NYFL continue working to finalise a consultation agreement. Woodside has reiterated to NYFL that consultation for this EP and others has and continues to occur in parallel to discussions about the agreement.	**(1)** No action required.

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While feedback has been received, there were no objections or claims.	Woodside has assessed the merits of any objection or claim 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 7.8.1 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 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 9 July 2024, Woodside made the Consultation Information Sheet available on the Woodside website.
- Woodside provided information to NYFL on 8 July 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 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.
- Woodside sent a consultation update in October 2025 which included a link to the updated Consultation Information Sheet and an updated Summary Information Sheet. Woodside also provided an overview of the survey activities and updated timing (Record of Consultation, 6.3.37).

Reasonable Period

Woodside allowed NYFL a reasonable period for consultation in the preparation of this EP because:

- Woodside commenced consultation on this EP with NYFL on 8 July 2024 and requested NYFL provide feedback by 9 August 2024 for the purposes of preparation of this EP in line with Woodside's methodology of a 30-day period for consultation.
- Woodside provided an activity update on this EP to NYFL on 2 October 2025 and requested NYFL provide feedback by 31 October 2025 for the purposes of preparation of this EP in line with Woodside's methodology of a 30-day period for consultation.
- Woodside has provided an opportunity to address and respond to NYFL for over 17 months, demonstrating a "reasonable period" of consultation.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided and Woodside's approach to consultation is appropriate and adapted because:

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- Woodside sought direction on NYFL'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 17 months. This has included publishing advertisements in national, state and local newspapers including Indigenous newspapers, the National Indigenous Times (30 July 2024) advising of the proposed activities and requesting comments or feedback.
- Woodside's initial email about this EP on 8 July 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 sent an activity update about this EP on 2 October 2025.
- 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 meetings and 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 17 months, NYFL 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 7.8.1 of this EP).

4.14 OTHER FIRST NATIONS GROUPS

4.14.1 Save Our Songlines (SOS)

SOS and/ or [Individual 1] do not squarely fall within the consultation categories in the current Woodside methodology and are therefore considered in their own category.

SOS is an organisation formed by [Individual 1], who we currently understand is the group's primary spokesperson. [Individual 1] and/ or SOS are together represented by lawyers from Johnson Legal Woodside understands that the views expressed by SOS align with the views of [Individual 1]. Woodside therefore approaches communication with SOS and/or [Individual 1] as communication with SOS and has consulted them concurrently.

The stated interests of [Individual 1] and/or SOS include the conservation of Murujuga rock art, and opposition to expansion of projects on the Burrup Peninsula. On the information available to us, we understand that SOS and/or [Individual 1] have also been members of Aboriginal corporations who have been separately consulted as relevant persons by Woodside. This is relevant because it confirms that cultural values or interests of those groups have been consulted on and assessed in preparing this EP. This context and process demonstrates that Woodside's consultation approach with SOS is appropriate and adapted to the nature and interests of SOS.

Historical engagement:

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- During previous consultation for other activities, SOS and/or [Individual 2] has provided information relating to its cultural values which Woodside deem relevant to this EP:
  - **(1)** Threats to Murujuga Rock Art and Cultural Heritage:
    - Emissions, movement and potential damage.
    - Impacts on sites of cultural and spiritual significance.
  - **(1)** Woodside has noted the cultural significant of Murujuga Rock Art and assessed risks in the EP.
  - **(2)** Cultural and Environmental Significance:
    - Songlines, Dreaming, and energy lines.
    - Cultural features related to marine life including whales, marine mammals, seagrass, turtles.
    - Importance of the meeting of freshwater and saltwater.
    - Connection to Sea Country and the sea.
  - **(2)** Woodside has recorded matters of cultural and environmental significance in this EP.
  - **(3)** Environmental Protection and Cultural Values:
    - Caring for country, significance of eagle, kangaroo, bungarra.
    - Importance of offshore islands, including Rosemary Island.
    - Disturbance of seabed, noise, and pollution.
    - Relationship between environmental protection and cultural values.
  - **(3)** Woodside has included matters of cultural and environmental significance in the EP.

Please see Scarborough Offshore Facility and Trunkline (Operations) EP and North West Shelf Phase 1 Plug and Abandonment and TPA03 Well Intervention (Appendix F and SI Report) for further details of this correspondence.

Summary of information provided and record of consultation for this EP:

- On 8 July 2024, Woodside emailed SOS and/or [Individual 1] 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 content included:
  - An overview of the proposed activity.
  - Links to NOPSEMA's *Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information*, and contact details. Information on the interests that SOS and/or [Individual 1] and its members may have within the EMBA.
  - A request for feedback by 9 August 2024.
  - Information on how SOS and/or [Individual 1] would like to engage with Woodside about the proposed activity, including the opportunity to meet face to face.
  - That feedback can continue to be accepted by Woodside for the life of the EP.
  - A request for SOS and/or [Individual 1] to provide information about the proposed activity to other individuals, as required.
- On 30 July 2024, Woodside emailed SOS and/or [Individual 1] a reminder about the proposed activity, including a reference to the original Record of Consultation email. Woodside provided contact details to submit feedback, as well as confirming a date to submit feedback about the activity (SI Report, reference 22.1).
- On 2 October 2025, Woodside emailed SOS and/or [Individual 1] about the proposed activity (SI Report, reference 6.3.38). The email included:

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- A reference to the original consultation email for this EP sent to SOS and/or [Individual 1] on 8 and 30 July 2024.
- A Summary Information Sheet and a link to the Consultation Information Sheet.
- A request to provide any additional feedback 31 October 2025 so that it can be considered in the preparation of the EP.
- Advice that feedback can continue to be provided to Woodside during the life of an EP, including after consultation for the EP has closed, during EP assessment, and after an EP has been accepted by NOPSEMA.

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim	Woodside's Statement of Response	Inclusion in Environment Plan
(1) Threats to Murujuga Rock Art and Cultural Heritage: • Emissions, movement and potential damage. • Impacts on sites of cultural and spiritual significance.	**(1)** This value has been identified through Woodside's data collection processes (consultation).	**(1)** Woodside acknowledges the cultural significance of Murujuga Rock Art. No rock art will be moved during this activity.	**(1)** Woodside has updated Section 4.9 to record these interests and cultural values. Woodside has also assessed the potential impacts on these interests and cultural values, and where appropriate, included controls, in Sections 6.8, 6.9 and 6.11 of the EP.
(2) Cultural and Environmental Significance: • Song lines, dreaming, and energy lines. • Cultural features related to marine life including whales, marine mammals, seagrass, turtles. • Importance of the meeting of freshwater and saltwater. • Connection to Sea Country and the sea.	**(2)** This value has been identified through Woodside's data collection processes (consultation).	**(2)** Woodside has noted these cultural values in Section 4.9 and assessed risks and mitigation measures in Sections 6.8 and 6.9 and 6.11 of the EP.	**(2)** Woodside has updated Section 4.9 to record these interests and cultural values. Woodside has also assessed the potential impacts on these interests and cultural values, and where appropriate, included controls, in Sections 6.8, 6.9 and 6.11 of the EP.
(3) Environmental Protection and Cultural Values: • Caring for country, significance of eagle, kangaroo, bungarra. • Importance of offshore islands, including Rosemary Island.	**(3)** This value has been identified through Woodside's data collection processes (consultation).	**(3)** Woodside has noted these cultural values in Section 4.9 and assessed risks and mitigation measures in Sections 6.8, 6.9 and 6.11 of the EP.	**(2)** Woodside has updated Section 4.9 to record these interests and cultural values. Woodside has also assessed the potential impacts on these interests and cultural values, and where appropriate, included controls, in Sections 6.8, 6.9 and 6.11 of the EP.

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• Disturbance of seabed, noise, and pollution. • Relationship between environmental protection and cultural values.			
No feedback, objections or claims about the adverse impact of the activity received despite follow-up.	Although no feedback, objections or claims were provided for this EP, historical cultural values considered relevant have been identified and included based on consultation and publicly available literature.	Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8.1 of the EP).	No additional measures or controls are required.

Summary Report: Consultation Complete

Woodside has discharged its obligations for consultation under Regulation 25 of the Environmental Regulations and consultation with SOS and/or [Individual 1] 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 9 July 2024, Woodside made the Consultation Information Sheet available on the Woodside website.
- Woodside provided information to SOS and/or [Individual 1] on 8 July 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 1] 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.
- Woodside sent a consultation update in October 2025 which included a link to the updated Consultation Information Sheet and an updated Summary Information Sheet. Woodside also provided an overview of the survey activities and updated timing (Record of Consultation, 6.3.38).

Reasonable Period

Woodside allowed SOS and/or [Individual 1] a reasonable period for consultation in the preparation of this EP because:

- Woodside commenced consultation on this EP with SOS and/or [Individual 1] on 8 July 2024 and requested SOS and/or [Individual 1] provide feedback by 9 August 2024 for the purposes of preparation of this EP in line with Woodside's methodology of a 30-day period for consultation.

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- Woodside provided an activity update on this EP to SOS and/or [Individual 1] on 2 October 2025 and requested SOS and/or [Individual 1] provide feedback by 31 October 2025 for the purposes of preparation of this EP in line with Woodside's methodology of a 30-day period for consultation.
- Woodside has provided an opportunity to address and respond to SOS and/or [Individual 1] for over 17 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 1] 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 17 months. This has included publishing advertisements in national, state and local newspapers including Indigenous newspapers, the National Indigenous Times (30 July 2024) advising of the proposed activities and requesting comments or feedback.
- Woodside's initial email about this EP on 9 July 2024:
    - Included a general email address and telephone number for Woodside. Woodside also provided contact details for NOPSEMA.
    - Offered for Woodside to speak with and/or [Individual 1] or SOS's members.
    - Asked SOS and/or [Individual 1] to advise how it would like Woodside to engage and whether SOS and/or [Individual 1] required further information.
- Woodside sent an activity update about this EP on 2 October 2025.
- Woodside offered to meet with SOS and/or [Individual 1].
- Throughout the consultation period, Woodside and SOS and/or [Individual 1] 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:

- SOS and/or [Individual 1] has previously advised Woodside that:
    - Cultural features associated with whales and other marine species are of spiritual importance. Woodside has put in place controls to manage impacts and risks relating to marine species' spiritual and cultural connection to the environment and assessed the potential impacts to cultural values. Items relating to SOS appear in Section 6.9 of the EP.
    - There were cultural features associated with Songlines, dreaming and energy lines. Woodside has updated Section 4.9.4 of the EP to record topics of interest and cultural values, including Songlines and energy lines, which are also assessed in Section 6.10 with appropriate controls implemented.
    - SOS and/or [Individual 1] has an interest in marine mammals, seagrass, and the meeting of freshwater and saltwater was demonstrated. Woodside has considered topics raised by SOS and/or [Individual 1] and updated Section 4.9 to record these, which are also assessed in Section 6.9 with appropriate controls implemented.
- During the past 17 months, SOS and/or [Individual 1] 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 7.8.1 of this EP).

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5. TABLE 3: ENGAGEMENT REPORT WITH PERSONS OR ORGANISATIONS ASSESSED AS NOT RELEVANT

5.1 COMMONWEALTH AND WA STATE GOVERNMENT DEPARTMENTS OR AGENCIES – ENVIRONMENT

5.1.1 Department of Water and Environmental Regulation (DWER)

Summary of information provided and record of consultation for this EP:

- On 16 October 2025, Woodside emailed Department of Water and Environmental Regulation (DWER) advising of the proposed activity (Record of Consultation, reference 6.3.29), provided a Consultation Information Sheet after DLPH requested DWER be consulted for the Angel CCS GPGT EP.
- On 21 October 2025, Woodside sent an email reminder to DWER , following up on the proposed activity (Record of Consultation, reference 6.4.1) and included a link to the Consultation Information Sheet on Woodside's website.

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim	Woodside's Statement of 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 7.8.1 of this EP).	No additional measures or controls are required.

Outcomes of Consultation

While DWER is not a relevant person under regulation 25 of the Environment Regulations, Woodside considers it has still provided sufficient information and a reasonable period outside of regulatory requirements for DWER to provide feedback during the consultation process.

5.2 COMMONWEALTH COMMERCIAL FISHERIES AND REPRESENTATIVE BODIES

5.2.1 Australian Southern Bluefin Tuna Industry Association (ASBTIA)

Summary of information provided and record of consultation for this EP:

- On 3 October 2025, Woodside emailed ASBTIA a consultation update (Record of Consultation, reference 6.3.18) and provided a Consultation Information Sheet (Record of Consultation, reference 6.3.1).

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• On 21 October 2025, Woodside sent an email reminder to ASBTIA following up on the proposed activity (Record of Consultation 6.4.1).			
Summary of Feedback, Objection or Claim	**Woodside's Assessment of Merits of Feedback, Objection or Claim**	**Woodside's Statement of 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 7.8.1 of this EP).	No additional measures or controls are required.
Outcomes of Consultation			
While ASBTIA 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 ASBTIA to provide feedback during the consultation process.			

5.2.2 Tuna Australia

Summary of information provided and record of consultation for this EP:

- On 3 October 2025, Woodside emailed Tuna Australia a consultation update (Record of Consultation, reference 6.3.18) and provided a Consultation Information Sheet (Record of Consultation, reference 6.3.1).
- On 21 October 2025, Woodside sent an email reminder to Tuna Australia following up on the proposed activity (Record of Consultation 6.4.1).
- On 31 October 2025, Tuna Australia confirmed its interest in commenting on the Angel CCS GPGT Surveys EP (SI Report, reference 34.1) and:
  - **(1)** Raised point that the Operational Area lies within the gazetted boundaries of the Western Tuna and Billfish Fishery (WTBF), the Southern Bluefin Tuna Fishery (SBTF), and the Western Skipjack Fishery where all concession holders retain full legal rights to operate at any time and should be relevant and absence of activity doesn't remove those rights.
  - **(2)** Referenced seismic vessels and 3 nautical mile safe zone and suggested EP lacks formal communication protocol with commercial fishers, including AIS updates and broadcast notifications.
  - **(3)** Noted the EP does not assess potential displacement costs and omissions fall short of ALARP standard under Regulation 11A(1)(b).
  - **(4)** Stated that the EP's assessment of acoustic and geotechnical impacts being negligible or of no lasting effect is scientifically unsubstantiated and inconsistent with section 3 of the OPGGS act and:
- Noted that no empirical evidence was provided to show minimal risk to pelagic fish larvae, tuna spawning or recruitment and since these are internationally managed tuna stocks, any disturbance has potential transboundary implications.

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  - **(5)** Highlighted the absence of a Before–After–Control–Impact (BACI) research program is a deficiency and urged that Woodside fund a dedicated research program to quantify potential effects with a compensation mechanism for adverse outcomes and:
    - Failure to address exposes the Commonwealth to reputational risks in international tuna forums related to Australia's position as leader in evidenced-based fisheries stewardship.
  - **(6)** Expressed concern about consultation contact data sourced from AFMA as it undermines integrity of consultation and suggested verification of source, date and accuracy of lists.
  - Provided five recommendations which tied back to previous points including:
    - **(7)** Enter formal Consultation Services agreement.
    - **(5)** Conduct BACI-based research program.
    - **(2)** Include detailed navigational impact assessments and coordination protocols for fishing vessels.
    - **(6)** Provide evidence of compliant and current consultation database.
    - **(4)** Commit to science-based reporting of environmental performance and cumulative impact assessment.
  - **(7,3)** Noted it remained willing to work with Woodside to ensure consultation obligations were met along with coexistence with Commonwealth fisheries.
- On 24 November, Woodside thanked Tuna Australia for feedback on proposed EPs (SI Report, reference 34.2) and:
  - **(7)** Noted Woodside had effective consultation processes with other representative organisations and was open to considering a similar agreement with Tuna Australia,
  - Proposed a December meeting to discuss feedback and consultation and asked for availability.
- On 28 November 2025, Tuna Australia thanked Woodside for follow-up on consultation process and provided availability for meeting. (SI Report, reference 34.3).
- On 1 December 2025, Woodside thanked Tuna Australia for its response and proposed a date and time for meeting. (SI Report, reference 34.4).
- On 1 December 2025, Tuna Australia confirmed meeting date and time (SI Report, reference 34.5).
- On 2 December 2025, Woodside confirmed it would issue calendar invite. (SI Report, reference 34.6).
- On 10 December 2025, Woodside and Tuna Australia met (SI Report, reference 34.7), discussed stakeholder engagement and:
  - **(3)** Woodside outlined grievance process for fishery stakeholders.
  - Tuna Australia discussed improvements to outreach to members and tuna community.
  - Provided review by Tuna Australia of industry including:
    - Migratory and unpredictable nature of stock.
    - Past consultation challenges.
  - **(6)** AFMA database was incomplete.
  - It works with 15 companies currently to support consultation with industry and collaborates with other tuna representative body.
  - Covered operational insights from Tuna Australia perspective including:
    - **(4)** Tuna fishing is in Commonwealth waters and migratory with currently 2 boats in WA.
    - There are multiple international commitments and agreements which adds complexity to management.

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- Discussed Tuna Australia communications to stakeholders, including its approach for mailouts.
- Noted by Tuna Australia that there were potential changes coming to marine parks.
- **(7)** Agreed to have Tuna Australia send its Service Agreement for review.

- On 16 December, Woodside thanked Tuna Australia for its feedback (SI Report, reference 34.8) and:
  - **(1)** Stated Woodside's assessment of relevance for Commonwealth Fisheries is based on proposed activities and considered management area overlap and catch effort within past five years, and:
  - Western Tuna and Billfish Fishery, Southern Bluefin Tuna Fishery, and Western Skipjack Fishery have not been active in the Operations Area or EMBA for at least 15 years, according to ABARES data.
  - With consideration of overlap, Woodside consulted the three fisheries for this EP.
  - **(2)** Clarified the EP does not involve seismic vessels or a 3 nautical mile exclusion zone but a temporary 500m exclusion zone around project vessels and:
  - Woodside facilitates communication with mariners through the following:
    - AHO notification at least 4 weeks prior to start of activity for inclusion in AHO's notice to mariners.
    - On request, provides start and end of activity notification to fisheries.
    - Ensures project vessels operate AIS and virtual AIS.
    - Comply with Marine Orders for safe vessel operations.
  - **(3)** Noted Woodside was updating its co-existence approach with Australian commercial fisheries and will provide it to Tuna Australia in due course.
  - **(4)** Confirmed that Woodside conducts all activities in accordance with the Commonwealth EPBC Act and:
    - Its environmental risk assessments are based on robust scientific methodologies, industry best practices and review of available literature and empirical studies.
    - The GPGT survey equipment and techniques for the EP were selected to mimimise acoustic disturbance to limit sounds levels and physical impacts in a localised area and having temporary impacts.
    - Potential cumulative impacts to marine fauna, including pelagic fish and tuna spawning have been carefully considered and:
      - Risk of significant impact is assess as extremely low due to duration and scale of activity as well as movement of potentially affected species in area.
      - Mitigation and management measures are in place to reduce any potential impact.
  - **(5)** Noted a formal BACI research program is not mandated for activity and:
    - Woodside is committed to ongoing engagement with fisheries stakeholders and scientific community, and recognise importance as upholding high standards in keeping with Australia's reputation as an evidenced-based fisheries management leader.
    - Committed to high standards across operations through transparent, science-based reporting of environmental performance.
  - **(6)** Confirmed Woodside gets licensing information for consultation from AFMA and complies with terms of provision.
  - **(7)** Stated a service agreement is not needed to meet Regulation 25 of the Environment Regulations, but noted discussions would continue between Tuna Australia and Woodside outside of the EP.
  - Responded to Tuna Australia's closing recommendations and tied back to earlier responses which included:
    - **(7)** Refer back to response on entering formal Consultation Services Agreement.

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- **(5)** Refer back to response on conduct BACI-based research program.
- **(2)** Refer back to response on Include detailed navigational impact assessments and coordination protocols for fishing vessels.
- **(6)** Refer back to response on provide evidence of compliant and current consultation database.
- **(4)** Refer back to response on commit to science-based reporting of environmental performance and cumulative impact assessment.

- On 16 December, Tuna Australia thanked Woodside for its response (SI Report, reference 34.9) and:
  - Said while it appreciated the detailed response to its concerns, it would be best to talk in the new year to adequately address its concerns.

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim	Woodside's Statement of Response	Inclusion in Environment Plan
(I) Fishing rights determines relevancy, not activity.	**(1)** Woodside confirms it reviews management area overlap and catch effort over the past 5 years for consultation.	**(1)** Woodside confirmed it reviewed management area overlap and catch effort over past 5 years but did provide consultation material t**o** Western Tuna and Billfish Fishery, Southern Bluefin Tuna Fishery, and Western Skipjack Fishery.	**(1)** See Section 5.2.3 of Appendix F of this EP for consultation summary of the three tuna fisheries.
(2) Need for communication protocols with commercial fishers.	**(2)** Woodside has protocols in place for communications with commercial fisheries.	**(2)** Woodside confirmed the protocols in place for communication with mariners.	**(2)** See Section 6.8.1 of the EP.
(3) Potential displacement costs not in EP.	**(3)** Woodside is currently updating its co-existence agreement approach for commercial fisheries.	**(3)** Woodside confirmed its co-existence approach with commercial fisheries was being updated and will be shared in due course.	**(3)** Not required.
(4) Concern over impacts of surveys on tuna stock.	**(4)** Woodside understands Tuna Australia has concern over survey impacts and uses robust scientific methodologies to minimise and mitigate impacts.	**(4)** Woodside confirmed it uses robust scientific methodologies, industry best practices and review of available literature and empirical studies to assess and address potential impacts.	**(4)** Not required.
(5)	**(5)** Woodside understands that BACI	**(5)**	**(5)** Not required.

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Lack of BACI program supports need for funded research.	research program is not mandated for this type of activity.	Woodside confirmed that BACI research program is not mandated but committed to ongoing engagement with fisheries stakeholders and scientific community.	
(6) Concern over AFMA-sourced consultation data.	**(6)** Woodside secures licensing information from AFMA and complies with terms of provision.	**(6)** Woodside confirmed it works with AFMA to secure licensing information and complies with terms of provision.	**(6)** Not required
(7) Suggested formal consultation agreement.	**(7)** Woodside has suggested a meeting to discuss consultation with Tuna Australia.	**(7)** Woodside confirmed with Tuna Australia a meeting date to discuss consultation.	**(7)** Not required.
While feedback was received, there were no objections or claims.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8.1 of this EP).	No additional measures or controls are required. Tuna Australia will receive start and end of activity notifications per Table 7-5, Section 7.10 of the EP.
Outcomes of Consultation			
While Tuna Australia 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 Tuna Australia to provide feedback during the consultation process.			

5.2.3 Southern Bluefin Tuna Fishery, Western Skipjack Tuna Fishery and Western Tuna and Billfish Fishery

Summary of information provided and record of consultation for this EP:

- On 25 November 2025, Woodside emailed the Southern Bluefin Tuna Fishery, Western Skipjack Tuna Fishery Western Tuna and Billfish Fishery (Commonwealth Fisheries) advising of the proposed activity as of October 2025 (Record of Consultation, reference 6.3.41) and provided a Consultation Information Sheet. They were given 30 days for consultation with a close date of 29 December 2025.
- On 16 December 2025, as no response had been received, Woodside sent a follow up email to the Commonwealth Fisheries which included a consultation close date of 29 December 2025, to ensure at least 30 days for consultation. (Record of Consultation, reference 6.4.3)

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Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim	Woodside's Statement of 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 7.8.1 of this EP).	No additional measures or controls are required.
Outcomes of Consultation			
While the Commonwealth Fisheries are 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 fisheries to provide feedback during the consultation process.			

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5.3 OTHER NON-GOVERNMENT GROUPS OR ORGANISATIONS

5.3.1 Vocus

Summary of information provided and record of consultation for this EP:

- On 15 July 2024, Woodside emailed Vocus advising of the proposed activity (Record of Consultation, reference 6.1.30, provided a Consultation Information Sheet, submarine communications cables map and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*.
- On 23 July 2024, Woodside sent an email reminder to 23 July 2024, following up on the proposed activity (Record of Consultation, reference 6.2.1) and included a link to the Consultation Information Sheet on Woodside's website.
- On 23 July 2024, Vocus emailed to thank Woodside for the information (SI Report, reference 10.1) and:
  - **(1)** Noted its Highclere Cable is outside of the survey zone, so it has no comment or concern.
  - **(2)** Wished Woodside well on survey and asked to be informed on any changes.
- **(1)** On 23 July 2024, Woodside emailed to thank Vocus for its response and confirming location of Highclere Cable and that it had no comments or concerns and **(2)** confirmed Woodside would update Vocus if there were changes (SI Report, reference 10.2).
- On 2 October 2025, Woodside emailed Vocus a consultation update (Record of Consultation, reference 6.3.26) and provided a Consultation Information Sheet (Record of Consultation, reference 6.3.1).
- On 21 October 2025, Woodside sent an email reminder to Vocus following up on the proposed activity (Record of Consultation 6.4.1).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim	Woodside's Statement of Response	Inclusion in Environment Plan
(1) Noted no concerns as cable outside survey area.	**(1)** Woodside agreed that there would be no cable interaction during activities and noted Vocus had no comment or concerns**.**	**(1)** Woodside noted location of Highclere Cable is outside of the survey zone.	**(1)** Not required.
(2) Requested updates if there are any changes to the activity.	**(2)** Woodside understands that Vocus would want to be contacted if activity changes and that is standard practice**.**	**(2)** Woodside will update Vocus if there are changes to the activity.	**(2)** All relevant stakeholders would be contacted in the event of a change to the planned activities as set out in Section 7.10, Table 7-5 of the EP.
While feedback has been received, there were no objections or claims.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of	No additional controls or measures are required.

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		Change and Revision process (see Section 7.8.1 of this EP).	

Outcomes of Consultation

While Vocus is not a relevant person under regulation 25 of the Environment Regulations, Woodside considers it has still provided sufficient information and a reasonable period outside of regulatory requirements for Vocus to provide feedback during the consultation process.

5.3.2 Doctors for the Environment Australia (DEA)

Summary of information provided and record of consultation for this EP:

- On 8 July 2024, Woodside emailed DEA advising of the proposed activity (Record of Consultation, reference 6.1.7), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure Consultation on offshore petroleum environment plans: Information for the community.
- On 23 July 2024, Woodside sent an email reminder to DEA, following up on the proposed activity (Record of Consultation, reference 6.2.1) and included a link to the Consultation Information Sheet on Woodside's website.
- On 2 October 2025, Woodside emailed DEA a consultation update on the EP (Record of Consultation, reference 6.3.3) since consultation first took place in July 2024. Woodside provided an overview of activities with updated timing for planned GPGT survey activities. Woodside attached an updated Consultation Information Sheet (Record of Consult, reference 6.3.1).
- On 21 October 2024, Woodside sent a reminder email to DEA (Record of Consultation, reference 6.4.1).
- On 24 October 2024, DEA responded to the consultation request (SI Report, reference, 32.1) and provided an attachment with its response (SI Report reference, 32.1.1 and:
  - Opened with an overview of DEA as an independent, non-government organisation of medical doctors in the Australian states and territories with work based on premise that humans need a future with clean air and water, healthy soils, a stable climate and diverse and interconnected humanity. They are interested in environmental protection and restoration to promote human health and social stability.
  - Shared an Acknowledgement of Country, recognising traditional owners throughout Australia in the spirit of reconciliation.
  - Provided a summary overview of its position on Geophysical and Geotechnical (GPGT Surveys) and CCS projects which included:
    - **(1)** Angel CCS GPGT Surveys are unnecessary and may damage the marine ecosystem and are part of a CCS project which should not be used to justify gas expansion.
    - **(2)** Angel CCS would divert attention from our need to move away from gas and risks of GPGT surveys can not be justified. It also noted that:
      - CCS is unproven and costly and should not be supported or approved to justify gas expansion as it undermines decarbonisation efforts.
      - CCS projects divert funding from proven emissions-reduction technologies and delay transition to renewables.
  - Stated points not related to GPGT surveys including bullets below and the rest of this summary:
    - Concentrated carbon dioxide (CO_2) is toxic and its leakage into marine environment is a threat to aquatic ecosystems both directly through acidification and indirectly through sediment toxicity and oceans and water environments need to be protected from this.
    - Associated seismic blasting negatively impacts marine ecosystem in a number of ways, some known and others not known or understood.

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        - Australia can demonstrate how it can conserve biodiversity despite the inadequate environmental laws by rejecting false solutions to curb greenhouse gas emissions and get back on the path to a liveable future.
    - Identified CCS as a false solution to global heating and included:
        - CCS cannot operate at scale to limit global heating and is not proven climate solution.
        - Proft maximisation by fossil fuel industry is at the core of CCS promotion as a way out of climate crisis.
        - CCS delays cuts in GHG emissions required for a safe climate and to meet Paris Agreement goals.
    - Cited Chevron Gorgon as a CCS failure to deliver on forecasted emissions reductions noting:
        - Project only sequesters ~50% of what was projected after 5 years.
        - Target only represents a small percentage of total emissions.
        - CCS has yet to demonstrate it can reach target at scale.
    - Stated that approving CCS to manage carbon emissions is like greenwashing to support the development of fossil fuel projects in Australia, noting:
        - International Energy Agency (IEA) and Intergovernmental Panel on Climate Change (IPCC) outline that new fossil fuels projects are incompatible with reaching net-zero by 2050.
        - Support of CCS diverts funding from proven technologies and delays transition to renewables.
    - Noted safety and environmental concerns about transport of CO_2 and sub-seabed CCS including:
        - Fossil fuel industry has underplayed environmental risks associated with CCS and escaped CO_2 during transport in ships and pipelines and from storage facilities.
        - Within a sub-seabed setting, dissolved CO_2 leads to acidification of water which affects aquatic organisms, our food system, growth of shellfish and mobility of metals which increases sediment toxicity.
    - Added that CCS poses a range of geomechanical risks due to pressure build-up including caprock failure, reactivation of existing faults and the resultant induced seismicity, surface uplift and CO_2 leakage.
    - Provided information on the technical and operational challenges associated with large-scale shipping of CO_2 including:
        - Stages the gas must go through and associated safety protocols and uses which add to GHG emissions.
        - Moisture-laden CO_2 is highly corrosive.
        - Between 3-4% per 1000 km of CO_2 is lost to atmosphere during transport.
        - It is dubious to conduct surveys for a CCS project that relies on experimental shipping.
    - Stated it believes that given CCS' high risks and uncertainties, approval of any activity that enables it, should be rejected and:
        - Australia is obligated to protect ecosystems and regulators need to be clear that ecosystem protection is needed for human health and chance for liveable future.
- On 16 December, Woodside thanked DEA for its feedback (SI Report, reference 32.2) and:
    - Noted DEA's position that GPGT surveys were unnecessary and may have impacts on marine environment.
    - **(1)** Confirmed Woodside seeks to manage activities so any impacts or risks from GPGT surveys are reduced to ALARP and provided background including:
        - Impacts and risks are identified and assessed by its multi-disciplinary team of experts across environment, cultural heritage and stakeholder consultation.

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- Mitigation and management measures which includes noise modelling, exclusion zones, fauna observation and spill response were in the EP,
- Table 3 of the Consultation Information Sheet includes a summary of key impacts and proposed management measures that may be subject to change based on consultation and assessment.

- **(2)** Acknowledged DEA's feedback related to climate concerns and carbon capture and storage which is outside the scope of the GPGT surveys EP and confirmed:
  - Angel CCS Project is subject to further regulatory approvals, noting the proposed project includes a carbon dioxide (CO_2) gathering system for the collection of CO_2 which will be taken to a central facility prior to being transported offshore for injection into the subsea geological formation.
- Asked if DEA had additional feedback on the GPGT surveys which the EP covers as Woodside continues to receive, assess and respond to feedback throughout the life of the EP.
- Noted Woodside's Management of Change and Review process in the event new information or stakeholder feedback introduces need for additional measures to reduce risk or improve outcomes.
- Flagged that State EP consultation would occur at a later date.

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim	Woodside's Statement of Response	Inclusion in Environment Plan
(1) GPGT surveys are unnecessary and may damage marine environment.	**(1)** Woodside carries out its activity so impacts and risks are managed to ALARP and notes Table 3 of the Consultation Information Sheet (CIS) provides mitigation and management measures.	**(1)** Woodside confirmed it seeks to carry out activities so impacts and risks are managed to ALARP, noted a multidisciplinary team identified and assessed those and referred to Table 3 of the CIS for review of mitigation and management measures.	**(1)** See section 2.3 and 2.4 of the EP.
(2) CCS isn't viable solution and diverts funding and focus from renewables	**(2)** Woodside notes that the EP cover GPGT surveys and not CCS activities.	**(2)** Woodside noted DEA's feedback on CCS and confirmed EP scope covers GPGT surveys.	**(2)** Not required.
While feedback has been received, there were no objections or claims.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8.1. of this EP).	No additional controls or measures are required.

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Outcomes of Consultation
While DEA is not a relevant person under regulation 25 of the Environment Regulations, Woodside considers it has still provided sufficient information and a reasonable period outside of regulatory requirements for DEA to provide feedback during the consultation process.

5.3.3 Australasian Centre for Corporate Responsibility (ACCR), Australian Marine Conservation Society (AMCS), Australian Conservation Foundation (ACF), Conservation Council of Western Australia (CCWA), Greenpeace Australia Pacific (GAP) and Market Forces

Summary of information provided and record of consultation for this EP:

- On 8 July 2024, Woodside emailed Australasian Centre for Corporate Responsibility (ACCR), Australian Marine Conservation Society (AMCS), Australian Conservation Foundation (ACF), Conservation Council of Western Australia (CCWA), Greenpeace Australia Pacific (GAP) and Market Forces (known as NGOs moving forward) advising of the proposed activity (Record of Consultation, reference 6.1.7), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*.
- On 23 July 2024, Woodside sent an email reminder to NGOs, following up on the proposed activity (Record of Consultation, reference 6.2.1) and included a link to the Consultation Information Sheet on Woodside's website.
- On 1 October 2025, Woodside emailed NGOs a consultation update (Record of Consultation, reference 6.3.3) and provided a Consultation Information Sheet (Record of Consultation, reference 6.3.1).
- On 21 October 2025, Woodside sent an email reminder to NGOs following up on the proposed activity (Record of Consultation 6.4.1).

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim	Woodside's Statement of 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 7.8.1 of this EP).	No additional measures or controls are required.

Outcomes of Consultation
While these NGOs are 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 NGOs to provide feedback during the consultation process.

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5.4 RESEARCH INSTITUTES AND LOCAL CONSERVATION GROUPS OR ORGANISATIONS

5.4.1 Australian Institute of Marine Science (AIMS)

Summary of information provided and record of consultation for this EP:

- On 8 July 2024, Woodside emailed AIMS 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 19 July 2024, AIMS emailed and thanked Woodside for the notification of activities (SI Report, reference 1.1) and:
  - **(1)** Noted their operational activities will not be impacted due to the exclusion zone and proactive vessel communication on behalf of Woodside.
  - **(2)** Requested to be updated should the proposed activities change.
- On 23 July 2024, Woodside thanked AIMS for reviewing the activities (SI Report, reference 1.2) and:
  - **(1)** Acknowledged AIMS' note that activities will not impact their operations.
  - **(2)** Will update AIMS if anything changes.
- On 2 October 2025, Woodside emailed AIMS a consultation update on the EP (Record of Consultation, reference 6.3.27) since consultation first took place in July 2024. Woodside provided an overview of activities with updated timing for planned GPGT survey activities. Woodside attached an updated Consultation Information Sheet.
- On 21 October 2024, Woodside sent a reminder email to AIMS (Record of Consultation, reference 6.4.1).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim	Woodside's Statement of Response	Inclusion in Environment Plan
(1) Noted AIMS operations will not be affected.	**(1)** Woodside noted AIMS' position that their operations will not be impacted by the planned activities.	**(1)** Woodside confirmed AIMS' position as not being impacted.	**(1)** Not required.
(2) Requested update if there are any changes to the activity.	**(2)** Woodside agrees that stakeholders would be updated in the event planned activities change.	**(2)** Woodside confirmed it would update AIMS if changes were made to the planned activities.	**(2)** Not required.
While feedback has been received, there were no objections or claims.		Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback	No additional controls or measures are required.

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		may be received as part of ongoing consultation. Should further feedback be received, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8.1 of this EP).	
Outcomes of Consultation			
While AIMS is not a relevant person under regulation 25 of the Environment Regulations, Woodside considers it has still provided sufficient information and a reasonable period outside of regulatory requirements for AIMS to provide feedback during the consultation process.			

5.4.2 Commonwealth Scientific and Industrial Research Organisation (CSIRO)

Summary of information provided and record of consultation for this EP:

- On 8 July 2024, Woodside emailed CSIRO, 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 9 July 2024, Woodside forwarded the email to another CSIRO contact recommended by primary contact's out-of-office response (SI Report, reference 27.1).
- On 23 July 2024, Woodside sent an email reminder to CSIRO, following up on the proposed activity (Record of Consultation, reference 6.2.1) and included a link to the Consultation Information Sheet on Woodside's website.
- On 2 October 2025, Woodside emailed CSIRO a consultation update on the EP (Record of Consultation, reference 6.3.28) since consultation first took place in July 2024. Woodside provided an overview of activities with updated timing for planned GPGT survey activities. Woodside attached an updated Consultation Information Sheet.
- On 21 October 2024, Woodside sent a reminder email to CSIRO (Record of Consultation, reference 6.4.1).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim	Woodside's Statement of 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 7.8.1 of this EP).	No additional measures or controls are required.

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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.

5.4.3 Western Australian Marine Science Institution (WAMSI), University of Western Australia (UWA), Curtin University, Murdoch University

Summary of information provided and record of consultation for this EP:

- On 8 July 2024, Woodside emailed WAMSI, UWA, Curtin University and Murdoch University (Research Organisations) 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 23 July 2024, Woodside sent an email reminder to the Research Organisations, following up on the proposed activity (Record of Consultation, reference 6.2.1) and included a link to the Consultation Information Sheet on Woodside's website.
- On 2 October 2025, Woodside emailed Research Organisations a consultation update on the EP (Record of Consultation, reference 6.3.28) since consultation first took place in July 2024. Woodside provided an overview of activities with updated timing for planned GPGT survey activities. Woodside attached an updated Consultation Information Sheet.
- On 21 October 2024, Woodside sent a reminder email to Research Organisations (Record of Consultation, reference 6.4.1).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim	Woodside's Statement of 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 7.8.1 of this EP).	No additional measures or controls are required.

Outcomes of Consultation
While the Research Organisations are not a relevant person under regulation 25 of the Environment Regulations, Woodside considers it has still provided sufficient information and a reasonable period outside of regulatory requirements for WAMSI to provide feedback during the consultation process.

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6. RECORD OF CONSULTATION

6.1 Initial consultation

6.1.1 Consultation Information Sheet

Woodside Energy

CONSULTATION

INFORMATION SHEET

July 2024

ANGEL CCS GEOPHYSICAL AND GEOTECHNICAL SURVEYS COMMONWEALTH AND STATE ENVIRONMENT PLANS

NORTH WEST SHELF, 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 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 of 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

The Angel Carbon Capture and Storage Joint Venture (Angel CCS JV), of which Woodside is Operator, has identified the opportunity for a carbon capture and storage (CCS) project in the North-West region of Western Australia (WA). The proposed Angel CCS Project involves the development of a Carbon Dioxide (CO_2) gathering system, collecting CO_2 via new pipelines from emitters on shore or through imported options via ships. Collected CO_2 would be transported to a central compression facility prior to being transported offshore via subsea pipeline and injected into the subsea geological formation.

More information about the plans for the proposed Angel CCS Project is available at https://woodside.com/angelccs.

To support the Angel CCS Project, Woodside is proposing to undertake geophysical and geotechnical surveys to provide data to support the greenhouse gas (GHG) activity program. Data from the surveys is intended to inform the design for the pipeline and umbilical routes, subsea structure foundation locations and planning for mobile offshore drilling unit (MODU) anchoring or jack-up rig placement. The surveys will also support baseline studies to provide data on existing infrastructure and potential future activities.

Survey activities proposed to be undertaken in Commonwealth waters will be submitted to National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment under the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth).*

Pending the introduction of legislation, survey activities proposed to be undertaken in State waters are currently intended be submitted to the Department of Energy, Mines, Industry Regulation and Safety (DEMIRS) pending review of the *Petroleum (Submerged Lands) (Environment) Regulations 2012 (WA).*

Location and operations

The State Operational Area is proposed to be on the North West Shelf of WA extending from the state waters adjacent to the Karratha Gas Plant (KGP) out to the Commonwealth/State waters boundary.

The Commonwealth Operational Area is proposed to extend from the Commonwealth/State waters boundary, out to the Angel Field located in GHG Assessment Permit G-10-AP. A narrow survey corridor also extends west out from the Angel Field to petroleum title WA-1-L. Operational Areas are shown in **Figure 1.**

Woodside notes that the Commonwealth Operational Area is larger than the area of the GHG Assessment Permit G-10-AP and that within G-10-AP there are overlapping petroleum titles. Woodside will obtain key GHG Operation permits and GHG Special Authorities as applicable.

Surveys

Geophysical and geotechnical surveys are planned to assist to provide data for aspects of the GHG activity program. The surveys will involve seafloor sampling and scanning in both State and Commonwealth waters for data collection to inform various phases of the Angel CCS Project.

For the purposes of the EPs, a 'survey' is defined as a suite of geophysical and/or geotechnical activities that are all conducted in a defined survey campaign. Survey activities under this EP will be conducted in the following permit areas:

- Commonwealth Operational Area includes permit titles: WA-3-L, WA-4-L, WA-9-L, WA-52-L, WA-28-P, WA-1-L, WA-208-P, G-9-AP, G-10-AP, vacant acreage and vacant acreage release area W22-4
- State Operational Area includes permit title: vacant acreage.

Timing

The surveys are anticipated to commence around Q1 2025, with the State waters component estimated to take a total of approximately 80 days to complete and the Commonwealth component, a total of approximately 100 days. The survey activities are not planned to be undertaken in a single campaign and will be split into a number of campaigns over the five-year validity period of the EPs. Timing and duration may be subject to change due to a number of factors including approvals, weather, project vessel availability, and other unforeseen circumstances.

The campaign may occur at any time throughout the year and therefore the EPs assess risks relevant to geophysical and geotechnical survey activities in all seasons to provide flexibility for campaigns.

Proposed future activity in State waters is pending revision of State regulations [and State EP approval].

Table 1 Summarises the activities, which will be managed under the Angel CCS Geophysical and Geotechnical Surveys EPs.

Project vessels

A number of project vessels will be used to complete the survey activities.

These may include a multi-purpose project vessel for geophysical and geotechnical survey and a smaller vessel to access the nearshore sections.

1 Angel Carbon Capture and Storage Geophysical and Geotechnical Surveys Commonwealth and State Environment Plans | July 2024

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Geotechnical drilling may be performed from a supply vessel using a seafloor drilling unit or from a small jack-up barge. The barge will be positioned and supported using a small tug or multi cat.

Activities in Commonwealth waters may also require a larger vessel such as a geotechnical drilling vessel. Uncrewed surface vessels (USVs), controlled from a remote operations centre, are likely to replace conventional vessels for numerous survey tasks over the life of the EP. In addition, a drone or light aircraft may be used to capture data close to the shore.

Communications with mariners

A 500 m safety exclusion zone will apply around the project vessels conducting survey activities to manage vessel movements.

Commercial fishers and other marine users are permitted to use the Operational Areas but should take care around operations by adhering to standard navigation rules and remain clear of the safety exclusion zone.

Marine notices will be issued prior to activity commencement to alert vessels which may be operating in waters nearby.

Assessment

Woodside has undertaken an assessment of the potential impacts and risks to the environment and relevant persons arising from the planned activities as well as unplanned events. This assessment considers the timing, duration, and location of the activities. **Table 3** provides a summary of mitigation and management measures that will be implemented. Further details will be provided in the EPs.

In preparing the EP, Woodside's intent is to minimise environmental social and cultural risks and impacts associated with the proposed activities, and we seek your feedback to inform our decision making.

Joint venture

Woodside Energy Ltd is the operator on behalf of the Angel CCS Joint Venture. The participants of the JV are Woodside Energy Ltd, BP Developments Australia Pty Ltd, Japan Australia LNG (MIMI) Pty Ltd, Shell Australia Pty Ltd, and Chevron Australia Pty Ltd.

We welcome your feedback by 9 August 2024.

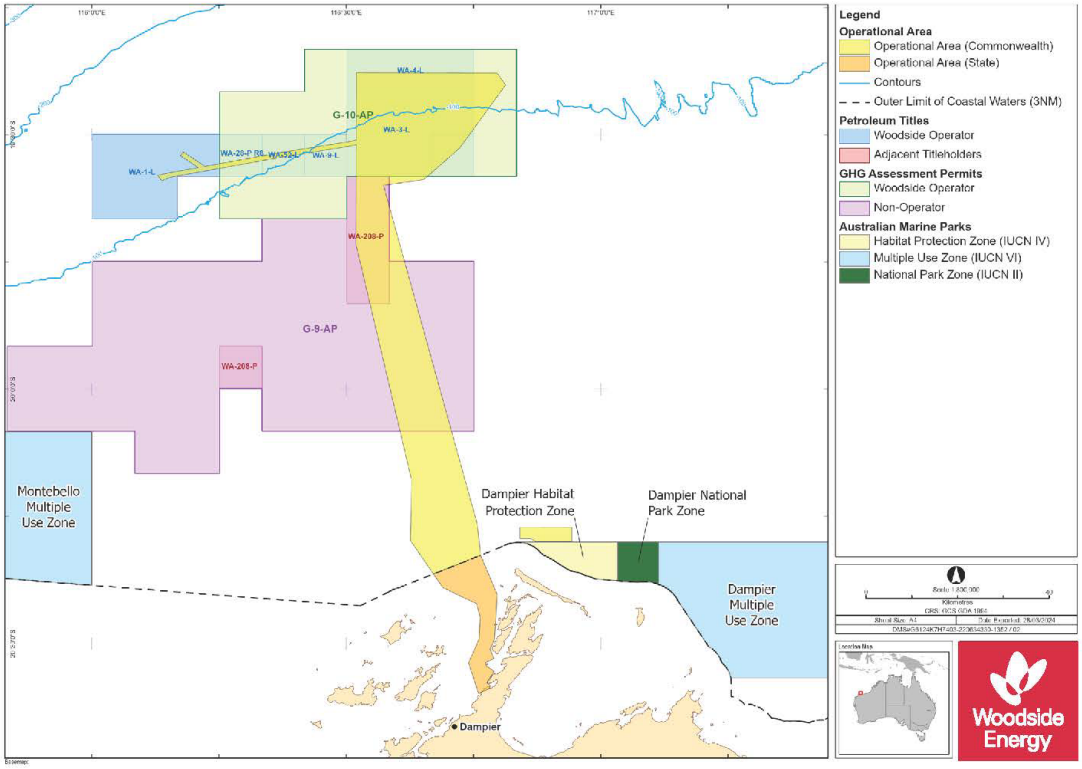


Figure 1: Commonwealth and State Operational Areas for Angel CCS Geophysical and Geotechnical Surveys EPs.

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Table 1. Activity Summary

Angel Carbon Capture and Storage Geophysical and Geotechnical Surveys Commonwealth and State Environment Plans		
	State	**Commonwealth**
Location	• North West Shelf Province	• North West Shelf
Permit titles	• Vacant acreage	• G-10-AP, WA-3-L, WA-4-L, WA-9-L, WA-52-L, WA-28-P, WA-1-L, G-9-AP, WA-208-P, Vacant acreage, Vacant acreage release area W22-4
Approximate water depth	• Up to 45 m	• ~ 35 - 135 m
Key activities	**Geophysical surveys:** • Multibeam echo sounders, single beam echo sounders, altimeters • Side scan sonar • Magnetometers • Sub-bottom profilers • Refraction sub-bottom profiler (including mini airgun) **Geotechnical surveys:** • Box cores/grab samplers • Piston/gravity cores and vibrocores • Drilling core holes • Piezocone penetrometer tests **Other survey techniques:** • Water samplers • Sound velocity sensors and multi-parameter conductivity-temperature-depth profilers • Ultra-short baseline positioning system • Doppler velocity log and inertial navigation systems • Underwater cameras • Underwater laser scanners • Remotely operated vehicles, autonomous underwater vehicles • Drone or light aircraft photogrammetry or lidar (State only)	
Vessels	• Multi-purpose project vessel • Supply vessel • Jack-up barge positioned and supported by small tug or multi cat • Smaller vessel to access the very nearshore sections • Uncrewed surface vessels controlled from a remote operations centre.	• Multi-purpose project vessel • Supply vessel • Geotechnical drilling vessel • Uncrewed surface vessels controlled from a remote operations centre.
Key dates	• Commence around Q1 2025 • Approximately 80 days, split into multiple campaigns, over the five-year period of the State EP.	• Commence around Q1 2025 • Approximately 100 days, split into multiple campaigns over the five-year period of the Commonwealth EP.
Operational area and exclusion zones	• Temporary 500 m exclusion zone around vessels conducting survey activities to manage vessel movements. • No restrictions to other vessels within the Operational Area apart from being advised to take care during the survey vessel activities.	
Distance to nearest town	• ~ 9 km north-east of Dampier	• ~ 35 km (closest survey point) to 140 km (furthest survey point) north of Dampier
Distance to nearest marine park/ nature reserve	• ~ 800 m west of Murujuga National Park • ~ 7.7 km southwest of Dampier Habitat Protection Zone	• ~ 150 m north of Dampier Habitat Protection Zone (borrow ground) • ~ 7.5 km west of Dampier Habitat Protection Zone

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Table 2. Approximate locations

Approximate Locations	State Operational Area coordinates (GDA94)		Commonwealth Operational Area coordinates (GDA94)	
	Latitude	Longitude	Latitude	Longitude
	20° 19' 33.990" S	116° 45' 50.227" E	19° 31' 34.359" S	116° 43' 22.354" E
	20° 24' 10.800" S	116° 47' 47.400" E	19° 35' 18.320" S	116° 39' 06.558" E
	20° 27' 38.831" S	116° 47' 34.767" E	19° 35' 57.638" S	116° 34' 23.093" E
	20° 27' 41.877" S	116° 47' 29.380" E	20° 15' 54.774" S	116° 45' 27.037" E
	20° 27' 52.453" S	116° 47' 34.075" E	20° 19' 33.990" S	116° 45' 50.227" E
	20° 29' 27.666" S	116° 47' 29.237" E	20° 21' 46.789" S	116° 40' 16.961" E
	20° 30' 38.105" S	116° 46' 58.079" E	20° 17' 49.079" S	116° 37' 33.362" E
	20° 31' 44.956" S	116° 47' 23.784" E	20° 10' 42.448" S	116° 37' 42.242" E
	20° 32' 13.144" S	116° 46' 25.596" E	19° 42' 58.071" S	116° 31' 09.470" E
	20° 32' 34.871" S	116° 46' 28.691" E	19° 31' 10.091" S	116° 31' 11.574" E
	20° 33' 15.082" S	116° 47' 25.625" E	19° 31' 19.011" S	116° 30' 38.038" E
	20° 34' 34.741" S	116° 46' 34.926" E	19° 32' 39.510" S	116° 22' 16.080" E
	20° 34' 53.753" S	116° 46' 57.273" E	19° 35' 01.321" S	116° 09' 14.078" E
	20° 35' 13.412" S	116° 46' 57.245" E	19° 35' 26.418" S	116° 08' 14.970" E
	20° 35' 51.842" S	116° 45' 36.089" E	19° 34' 45.208" S	116° 07' 47.574" E
	20° 32' 15.330" S	116° 44' 24.769" E	19° 33' 52.082" S	116° 12' 33.998" E
	20° 29' 29.850" S	116° 45' 38.524" E	19° 32' 28.487" S	116° 10' 27.117" E
	20° 26' 52.501" S	116° 45' 46.552" E	19° 32' 01.775" S	116° 10' 46.702" E
	20° 25' 17.701" S	116° 45' 23.139" E	19° 33' 43.511" S	116° 13' 21.128" E
	20° 23' 22.218" S	116° 41' 22.685" E	19° 32' 07.493" S	116° 22' 09.990" E
	20° 21' 46.789" S	116° 40' 16.961" E	19° 30' 47.223" S	116° 30' 30.517" E
			19° 30' 36.276" S	116° 31' 11.673" E
			19° 22' 40.255" S	116° 31' 13.073" E
			19° 22' 42.119" S	116° 47' 45.355" E
			19° 24' 08.149" S	116° 48' 46.696" E
			And borrow ground:	
			20° 16' 17.851" S	116° 56' 34.716" E
			20° 17' 55.121" S	116° 56' 34.626" E
			20° 17' 54.855" S	116° 52' 14.764" E
			20° 17' 36.215" S	116° 51' 45.215" E
			20° 17' 36.333" S	116° 50' 27.616" E
			20° 16' 17.443" S	116° 50' 27.487" E

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Environment That May Be Affected (EMBA)

The EMBA is a mathematically modelled area of the largest possible spatial extent where the Commonwealth activities could potentially have an environmental consequence. The broadest extent of the model takes into consideration planned and unplanned activities. For the EPs, the EMBA has been developed by 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 a vessel collision. The Commonwealth 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.

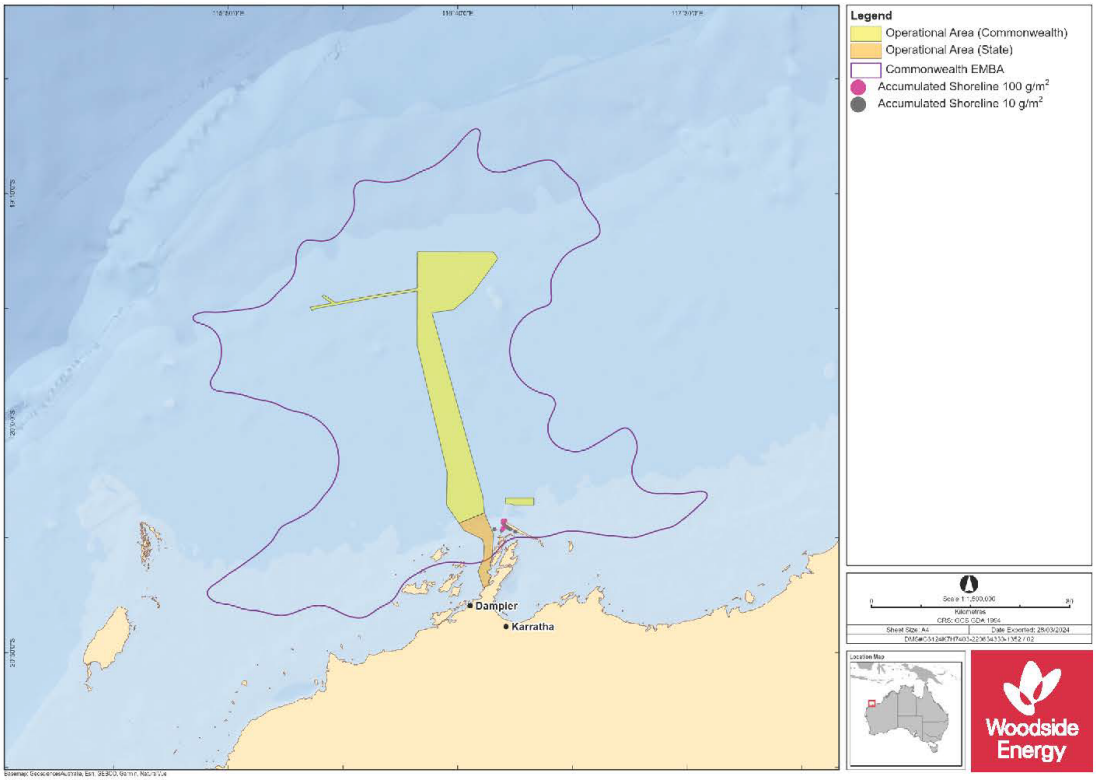


Figure 2: Commonwealth EMBA for Angel CCS Geophysical and Geotechnical Surveys EPs

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Mitigation and management measures

Woodside has undertaken an assessment to identify potential impacts and risks to the environment arising from the proposed activities considering timing, duration, location. Mitigation and management measures for proposed activities are outlined in **Table 3**. Further details will be provided in the EPs.

Table 3. Summary of key risks and/or impacts and management measures

Potential Impact/Risk	Description of Source of Potential Impact/Risk	Description of Potential Impact/Risk	Preliminary Draft Mitigation and/or Management Measure
Planned Activities (Routine and Non-routine)			
Physical presence: interaction with other marine users	The physical presence and movement of project vessels within the Operational Areas has the potential to interfere with/ displace other marine users. The following vessels will be involved in survey activities: • multi-purpose project vessels • geotechnical vessels (geotechnical drilling vessels) • jack-up barge positioned and supported using a small tug or multi cat (State only) • smaller vessel will be used to access the very nearshore sections (State only) • uncrewed surface vessels (USVs). Survey activities are planned to be conducted as multiple campaigns over the five-year approval period of the EP (2025 – 2029).	• Displacement of commercial fishing activities and commercial shipping vessels. • Other marine users may be present in the Operational Areas. These include recreational fishing areas, tourism, and commercial shipping fairways. • Due to the localised nature of the activity, any displacement is expected to be negligible with no lasting effect.	• Establish a temporary 500 m safety exclusion zone around the project vessels which is communicated to marine users. • Vessels to adhere to the navigation safety requirements including the *Navigation Act 2012* and any subsequent Marine Orders. • Notify Australian Hydrographic Office (AHO) of activities and movements. • Notify relevant government departments, fishing industry representative bodies and licence holders (where requested during consultation) of activities.
Physical presence – disturbance to seabed from geotechnical and geophysical surveys	Geotechnical survey activities are likely to result in localised and temporary physical modification and disturbance to a small area of the seabed. The source of impact from geotechnical surveys are: • box cores/grab samplers • shallow cores and probes: piston/gravity/vibrocores • cored bore holes • penetrometer testing (CPT/PCPT/CPTu). The geotechnical seabed coring may result in the indirect discharge of a small quantity of drill cuttings and fluid at the seafloor. Placing the geotechnical equipment on the seafloor will result in minor localised physical disturbance to the seafloor beneath the equipment.	Environmental values potentially impacted: • seabed habitat • key ecological features (KEFs) (Commonwealth only) • marine primary producers • cultural heritage. The Operational Areas are expected to consist mainly of sandy substrate. The Commonwealth Operational Area overlaps the Ancient Coastline and Glomar Shoal Key Ecological Features (KEFs). Activities will be localised and of short duration, physical impacts to the seabed are expected to be negligible.	• No routine anchoring will occur during surveys. • Monitor inventory deployed to the field and track removal of equipment during activity. • Implement Woodside's Chemical Selection and Assessment Environment Guideline. • No seabed disturbance will occur on shoals within the Operational Areas. • An Unexpected Finds Procedure will be in place in the event of the discovery of what appears to be Underwater Cultural Heritage. • Desktop heritage assessment prior to starting the activities. • Comply with regulatory requirements for Underwater Cultural Heritage.

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Potential Impact/Risk	Description of Source of Potential Impact/Risk	Description of Potential Impact/Risk	Preliminary Draft Mitigation and/or Management Measure
Routine acoustic emissions – Generation of noise from survey vessels, and from geophysical and geotechnical survey equipment	• Generation of underwater noise from project vessels. • Generation of acoustic signals from dynamic positioning systems. • The key sound sources during geotechnical surveys include the penetration tests and sampling boreholes undertaken at the seabed. • Underwater noise generated by geophysical sources during surveys and positioning equipment (transponders).	• Elevated underwater noise may affect marine fauna, including marine mammals, turtles and fish in three main ways: 1. By causing direct physical effects, including injury or hearing impairment. Hearing impairment may be temporary or permanent. 2. Through disturbance leading to behavioural changes or displacement from important areas. The occurrence and intensity of disturbance is highly variable and depends on a range of factors rating to the animal and situation. 3. By masking or interfering with other biologically important sounds (including vocal communication, echolocation, signals and sounds produced by predators or prey). • The frequency of the transponders is at the upper limit of the bandwidth of low frequency cetaceans. Low frequency cetaceans such as pygmy blue whales are therefore unlikely to be impacted by sound generated from the transponders. • The continuous noise generated by vessels is not expected to cause temporary or permanent change in hearing sensitivity to cetaceans due to the level of exposure required to trigger this. Impacts may relate to temporary behavioural changes such as avoidance with no lasting effect. • Biologically Important Areas (BIAs) overlapping the Operational Areas include the pygmy blue whale distribution BIA, the humpback whale migration BIA. • The Commonwealth Operational Area overlaps internesting buffers for the hawksbill, loggerhead, green turtles and flatback turtles. The State Operational Area supports several BIAs such as internesting buffers, internesting, foraging, migration corridors, mating, and nesting for all marine turtles. Marine turtles may avoid the low-frequency sounds generated by vessel noise. • The Commonwealth Operational Area overlaps a foraging BIA for whale sharks however as the thresholds for impacts are higher than the noise generated by the activities, impacts are not expected.	• Comply with regulatory requirements for interactions with marine fauna to prevent adverse interactions. • Project vessels will not travel greater than 6 knots within 300 m of a cetacean or turtle (caution zone) and not closer than 100 m from a whale. • Project vessels will not 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 6 knots. • Project vessels will not travel greater than 8 knots within 250 m of a whale shark and not allow the vessel to approach closer than 30 m of a whale shark. • Start-up of geophysical survey equipment will be delayed if a whale is sighted within the observation zone (150 m). • Implementation of an observation zone for 30 minutes prior to start up around geophysical survey equipment.

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Potential Impact/Risk	Description of Source of Potential Impact/Risk	Description of Potential Impact/Risk	Preliminary Draft Mitigation and/or Management Measure
Routine and non-routine discharges from survey vessels	• Routine discharge of sewage, grey water and putrescible wastes to marine environment from project vessels. • Routine discharge of deck and bilge water to marine environment from project vessels.	• The main 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 including short-term, localised impacts to water quality. • No significant impacts are expected to water quality from planned discharges because of the minor quantities involved, the expected localised mixing zone, and the high level of dilution into the open water marine environment of the Operational Areas. • Similarly, although some marine fauna may transit the Operational Areas, potential for impacts remains low due to the localised nature of discharges and rapid dilution.	• Vessel discharges will be managed according to regulatory requirements.
Routine and non-routine discharges of drill cuttings and drilling fluids during geotechnical drilling	• Drill cuttings and fluids will be discharged at the borehole location during geotechnical seabed coring. • Drilling fluid will consist primarily of seawater and may include low-toxicity additives.	Geotechnical survey activities are likely to result in localised and temporary physical modification and disturbance to a small area of the seabed. Potential impacts include: • localised reduction in water and sediment quality • loss or damage to benthic habitats. The Commonwealth Operational Area overlaps with the Ancient Coastline KEF and Glomar Shoals KEFs. Impacts to benthic marine fauna as a result of geotechnical surveying are expected to be highly localised to surface area of the borehole, drill cuttings and the footprint of the geotechnical equipment, which is a relatively small area compared to the regional extent of the Ancient Coastline KEF.	• All chemicals intended or likely to be discharged into the marine environment reduced to as low as reasonably practicable (ALARP) using Woodside's chemical assessment process.

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Potential Impact/Risk	Description of Source of Potential Impact/Risk	Description of Potential Impact/Risk	Preliminary Draft Mitigation and/or Management Measure
Routine light emissions – external lighting on survey vessels	Project vessels will use external lighting to navigate and conduct safe operations at night, including to maintain good night visibility for crew members and to communicate the vessel's presence to other marine users.	Light emissions may affect fauna (such as marine turtles and birds) in two main ways: 1. Behaviour: artificial lighting has the potential to create a constant level of light at night that can override natural levels and cycles. 2. Orientation: if an artificial light source is brighter than a natural source, the artificial light may override natural cues, leading to disorientation. The Commonwealth Operational Area overlaps internesting buffers for the hawksbill, loggerhead, green turtles and flatback turtles. The State Operational Area supports several BIAs such as internesting buffers, internesting, foraging, migration corridors, mating, and nesting for all marine turtles. The Commonwealth Operational Area supports several breeding BIAs for the wedge-tailed shearwater, roseate tern, and fairy terns. The State Operational Area supports both breeding and foraging BIAs for these species.	Implementation of the Woodside Offshore Seabird Management Plan, that includes but not limited to: • record keeping and reporting of seabird interactions • procedures on seabird intervention, care and management • regulatory reporting requirements for seabed interactions that result in unintentional injury • a scalable adaptive management process should negative light impacts to nocturnal seabirds be detected. Lighting will be limited to the minimum required for navigation and safe operational requirements, with the exception of emergency events.
Routine and non-routine atmospheric and GHG emissions	• Atmospheric emissions and GHG emissions generated by project vessels. • Emissions are generated from internal combustion engines, machinery, and incinerators on vessels.	• Emissions from project vessels and could result in temporary, localised reductions in air quality in the immediate vicinity. • The exposed location of the project vessels is expected to result in the rapid dispersion of the low volumes of atmospheric emissions, as such the potential impacts are expected to be localised and of no lasting effect.	• Comply with regulatory requirements for GHG emissions reporting. • Vessel operations planned, where practicable, to minimise fuel consumption and associated GHG/air emissions. • Fuel types will be selected to reduce expected GHG emissions (I.e., Project vessels will not use heavy fuel oil (HFO) or intermediate fuel oil (IFO)).
Unplanned Events (Accidents / Incidents)			
Accidental introduction of invasive marine species (IMS)	• 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) or onto benthic habitat within shallower areas.	• It is not credible for IMS to be introduced and establish on the seabed or subsea structures in the Commonwealth Operational Area as these deep waters are not conducive to the settlement and establishment of IMS. • The State Operational Area in shallower waters (up to 45 m) present a slightly increased risk of IMS establishment, however, the risk of establishment, whilst credible, is remote. • Given the low likelihood of IMS translocation to and colonisation within the Operational Areas, project activities are unlikely to result in establishment of IMS, and as such will not adversely affect other marine user activities in the region.	• 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.

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Potential Impact/Risk	Description of Source of Potential Impact/Risk	Description of Potential Impact/Risk	Preliminary Draft Mitigation and/or Management Measure
Unplanned interaction 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 supporting the survey activities.	• BIAs overlapping the Operational Areas include the pygmy blue whale distribution BIA, the humpback whale migration BIA, marine turtle internesting buffers, internesting, foraging, migration corridors, mating, and nesting BIAs, marine turtle critical habitat areas, and the Commonwealth whale shark foraging BIA. • Given the adopted controls, it is considered that if a collision or entanglement were to occur, it will not result in a potential impact greater than a localised impact to environmental receptors, with no lasting effect to marine fauna populations.	Comply with regulatory requirements for interactions with marine fauna to reduce the likelihood of a collision occurring.
Physical presence – disturbance to seabed: vessel grounding (State only)	The highly unlikely event of a collision or grounding event during the survey activities could cause disturbance of seabed habitat.	• Unplanned seabed disturbance may result in localised changes to water and sediment quality or a localised temporary impact to benthic communities and is therefore considered to present a negligible risk.	Comply with regulatory requirements for the prevention of vessel collisions and safety and emergency arrangements.
Physical presence – disturbance to seabed from dropped objects, equipment loss	Dropped objects resulting in the disturbance of seabed habitat	• Unplanned seabed disturbance may result in localised changes to water and sediment quality or a localised temporary impact to benthic communities and is therefore considered to present a negligible risk. • Potential impacts to KEFs which intersect the Commonwealth Operational Area are considered to have a temporary disruption and no lasting effects to a small area of the seabed, as they would be limited to the footprint of a dropped object resulting in potential highly localised and temporary change in habitat. Dropped objects within the Ancient Landscape could impact cultural heritage associated with this area, however, this would also comprise a small area.	• Project vessel inductions include control measures for dropped object prevention. • Dropped objects and geophysical/ geotechnical equipment to be recovered and relocated where safe and practicable to do so. Overboarding geotechnical equipment: exclusion zone of 50 m of existing subsea assets
Unplanned discharges – loss of solid hazardous and non- hazardous wastes/ equipment	• Accidental discharge of hydrocarbons/ chemicals from project vessels deck activities and equipment, from subsea ROV hydraulic leaks. • Unplanned release of chemicals or hydraulic fluid due to failure of subsea equipment. • Accidental loss of hazardous or non-hazardous solid wastes / equipment to the marine environment.	• 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.	• Comply with regulatory requirements for the prevention of marine pollution and handling of hazardous wastes (i.e., Marine Orders 95 and 94). • Implement waste management procedures which provide for safe handling and transportation, segregation and storage and appropriate classification of waste generated. • Solid waste/equipment dropped to the marine environment is to be recovered where safe and practicable to do so.

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Potential Impact/Risk	Description of Source of Potential Impact/Risk	Description of Potential Impact/Risk	Preliminary Draft Mitigation and/or Management Measure
Unplanned discharges – deck and subsea spills from geotechnical and geophysical survey vessels and equipment	• Accidental discharge to the ocean of other hydrocarbons/ chemicals/ geotechnical drilling fluids from project vessels deck activities and equipment (e.g., cranes). • Unplanned release of chemicals or hydraulic fluid due to failure of geotechnical and geophysical survey equipment.	• Unplanned discharges of non-process chemicals and hydrocarbons may decrease the water quality in the immediate vicinity of the release. Only small volumes are anticipated, resulting in very short-term impacts to water quality, limited to the immediate release location. • As a result of a change in water quality, further impacts to receptors may occur, however impacts to marine fauna are expected to be limited to temporary irritation of sensitive membranes to individuals and are considered slight or less (negligible).	• Comply with regulatory requirements for the prevention of marine pollution for project vessels. • Liquid chemical and fuel storage areas are bunded or secondarily contained when they are not being handled/moved temporarily on project vessels. • Spill kits positioned in high-risk locations around the vessels (near potential spill points such as transfer stations). • Chemicals will be selected with the lowest reasonably practicable environmental impacts and risks subject to technical constraints and approved through the Woodside chemical assessment process.
Unplanned hydrocarbon release – vessel collision	Vessels will use marine diesel fuel, meaning a collision involving a project vessel or third-party vessel during the activity may result in the release of marine diesel. For an interaction to result in the worst-case scenario diesel release, several factors must occur: • Vessel interaction must result in a collision. • The collision has enough force to penetrate the vessel hull and must occur in the location of a fuel tank. The fuel tank must have a sufficient amount of fuel so that the liquid level is higher than the point of damage.	• In the highly unlikely event of a vessel collision causing a release of hydrocarbon, impact to water quality and marine ecosystems could occur. • Marine diesel is a relatively volatile, non-persistent hydrocarbon. If released to the environment, up to approximately 40% evaporates within the first 24 hours. • In the event of a hydrocarbon release, potential impacts across the EMBA will be assessed including receptors such as plankton, fish, marine turtles, marine mammals, seabirds and migratory shorebirds, marine primary producers, tourism, recreation, commercial fisheries, commercial shipping and cultural heritage. • Considering receptor sensitivity, potential loss of containment volume(s) and potential spill locations, most receptors are expected to be rated as having a potential consequence level of 'Minor' or less (Slight or Negligible).	• Comply with regulatory requirements for the prevention of vessel collisions and safety and emergency arrangements. • Notify relevant government departments, fishing industry representative bodies and licence holders of activities prior to commencement and on completion of activities. • Establish temporary exclusion zones around vessels which are communicated to marine users to reduce the likelihood of collision. • A management plan for simultaneous operations is in place when working in vicinity of other Woodside operations/ activities. **Spill response arrangements:** • Arrangements supporting the Oil Pollution Emergency Plan (OPEP) will be tested so that the OPEP can be implemented as planned. • Emergency response activities would be implemented in line with the OPEP.

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, or would like additional information, please contact Woodside before **9 August 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 and to the Department of Energy, Mines, Industry Regulation and Safety (DEMIRS).

Woodside will communicate 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 Plans which will be submitted to NOPSEMA for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth)* and support other regulatory processes associated with the planned activities (which may or may not be confidential) as well as to DEMIRS pending review of the Petroleum (Submerged Lands) (Environment) Regulations 2012 (WA). Noting that at the date of this information sheet, the legislation has not yet been drafted.

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.

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6.1.2 Summary Information Sheet

Woodside Energy

CONSULTATION

SUMMARY INFORMATION SHEET

July 2024

ANGEL CCS GEOPHYSICAL AND GEOTECHNICAL SURVEYS COMMONWEALTH AND STATE ENVIRONMENT PLANS

NORTH WEST SHELF, NORTH-WEST AUSTRALIA

Woodside consults relevant persons in the course of preparing an Environment Plan (EP) to notify and obtain their input. This assists Woodside to confirm current measures or identify additional measures, if any, that maybe 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 information relating to the Angel Carbon Capture and Storage (CCS) Geophysical and Geotechnical Surveys Commonwealth and State Waters EPs which aim to assist with planning associated with the proposed Greenhouse Gas (GHG) activity program.

The surveys essentially aim to gather information about the features of the seabed to assist to understand seabed soil conditions. They also seek to test soil and rock samples to provide data on seabed contents and properties.

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 Angel CCS Geophysical and Geotechnical Surveys Commonwealth and State Environment Plans Consultation Information Sheet (July 2024) which can be found at: http://www.woodside.com/what-we-do/consultation-activities.

The surveys are anticipated to commence around Q1 2025.

Overview

The Angel Carbon and Capture Storage Joint Venture (Angel CCS JV), of which Woodside is Operator, has identified the opportunity to pursue the implementation of a carbon capture and storage (CCS) project in the North-West of Western Australia (WA).

CCS is the process of capturing carbon and storing it underground in geological structures. The proposed Angel CCS Project would involve the development of a Carbon Dioxide (CO_2) gathering system, collecting CO_2 via new pipelines from emitters on shore or through imported options via ships. Collected CO_2 would then be transported to a central compression facility prior to being transported offshore via subsea pipeline and injected into the subsea geological formation.

To learn more about the proposed Angel CCS Project, visit https://woodside.com/angelccs.

To assist with the planning associated with the proposed Angel CCS Project, Woodside is proposing to undertake a series of geophysical and geotechnical surveys in both Commonwealth and State waters. The proposed route for the surveys is from the state waters adjacent to the Karratha Gas Plant (KGP) to the Angel Field, a distance of approximately 140 km.

The Commonwealth EP will cover activities in Commonwealth waters and will be submitted to National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA). The State EP will cover activities in WA waters and will be submitted to the Department of Energy, Mines, Industry Regulation and Safety (DEMIRS), pending updates to WA state legislation.

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Maps showing the location of the activities are provided below:

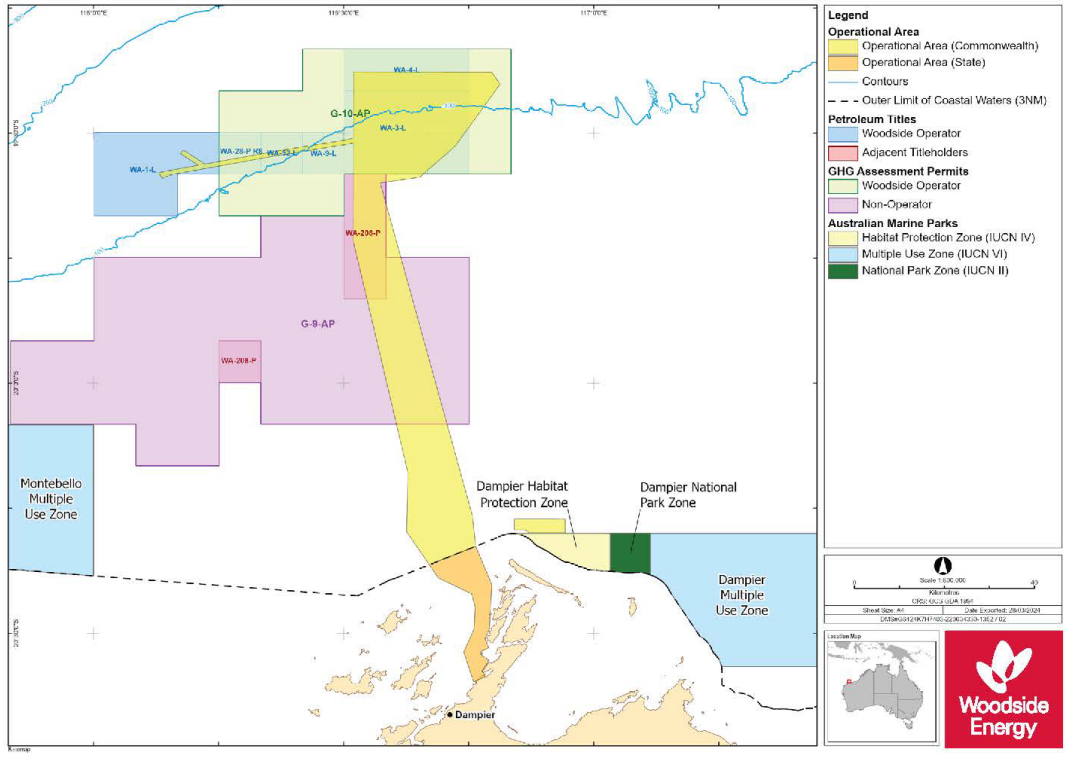


Figure 1: Commonwealth and State Operational Areas for Angel CCS Geophysical and Geotechnical Surveys EPs.

Summary of activities

Woodside plans to collect high resolution geophysical and geotechnical data by using geophysical and geotechnical survey equipment and various vessels. The activities in State waters are estimated to take approximately 80 days to complete, and the activities in Commonwealth waters are estimated to take approximately 100 days. The survey activities are not planned to be undertaken in a single campaign and will be split into multiple campaigns over the five-year validity period of the EPs. Timing and duration may be subject to change due to a number of factors, including timing of approvals, project vessel availability, weather and other unforeseen circumstances.

Vessels

Survey vessels will be used to support the geophysical and geotechnical surveys. Vessel size and type will be consistent with the relevant work scope and water depth. Drones or light aircraft may also be used.

Geophysical and geotechnical surveys

Geophysical surveys use a number of different techniques to gather information about the features of the seabed and determine seabed soil conditions. Geotechnical surveys are proposed to use standard industry equipment to test soil and rock samples to provide detailed data on seabed contents and properties.

Communication with mariners

Marine notices will be issued prior to activity commencement to alert vessels which may be operating in waters nearby.

Joint venture

Woodside Energy Ltd is the operator on behalf of the Angel CCS Joint Venture. The participants of the JV are Woodside Energy Ltd, BP Developments Australia Pty Ltd, Japan Australia LNG (MIMI) Pty Ltd, Shell Australia Pty Ltd, and Chevron Australia Pty Ltd.

Environment that may be affected (EMBA)

The EMBA is an area that has been mathematically modelled. It is a model of the largest spatial extent where the Commonwealth activities could potentially have an environmental consequence. The broadest extent of the model takes into consideration planned as well as unplanned activities. For the EPs, the EMBA modelling has been developed by combining numerous modelled outputs which are based on highly unlikely releases of hydrocarbons to the environment. The modelling scenarios that inform the EMBA are based on hydrocarbon releases from a highly unlikely vessel collision. The Commonwealth 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 a number of variables like 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. The specific path of a hydrocarbon release and specific part of the EMBA that is affected will only be known at the time of the release.

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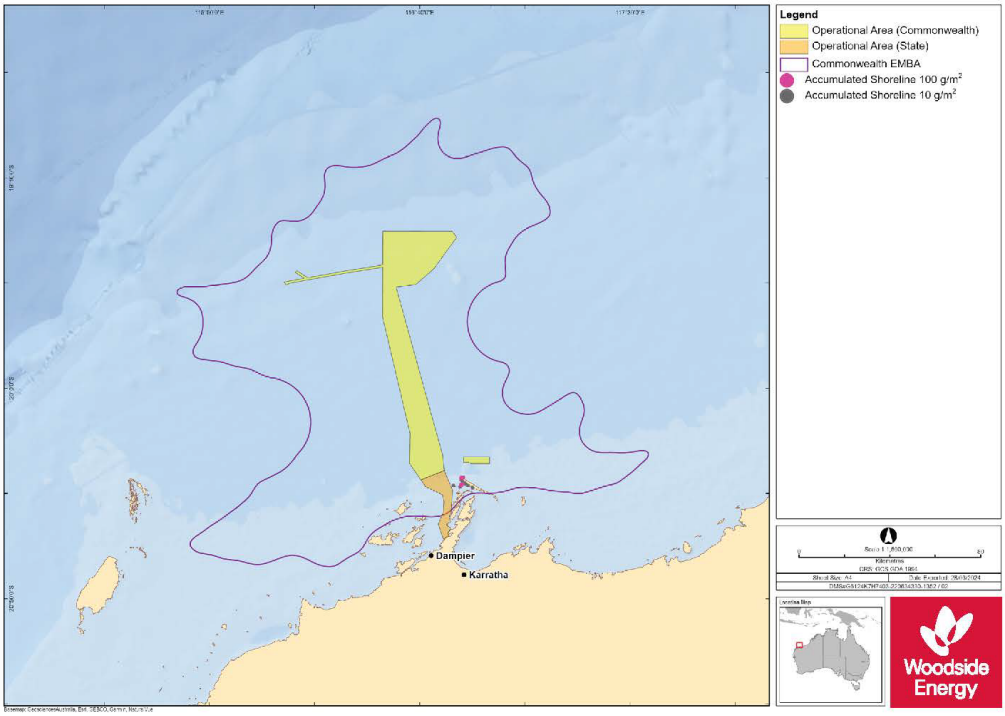


Figure 2: Commonwealth EMBA

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, or would like additional information, please contact Woodside before **9 August 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) and to the Western Australia Department of Energy, Mines, Industry Regulation and Safety (DEMIRS) as required under legislation. Woodside will communicate material changes to the proposed activity to affected relevant persons as relevant and appropriate.

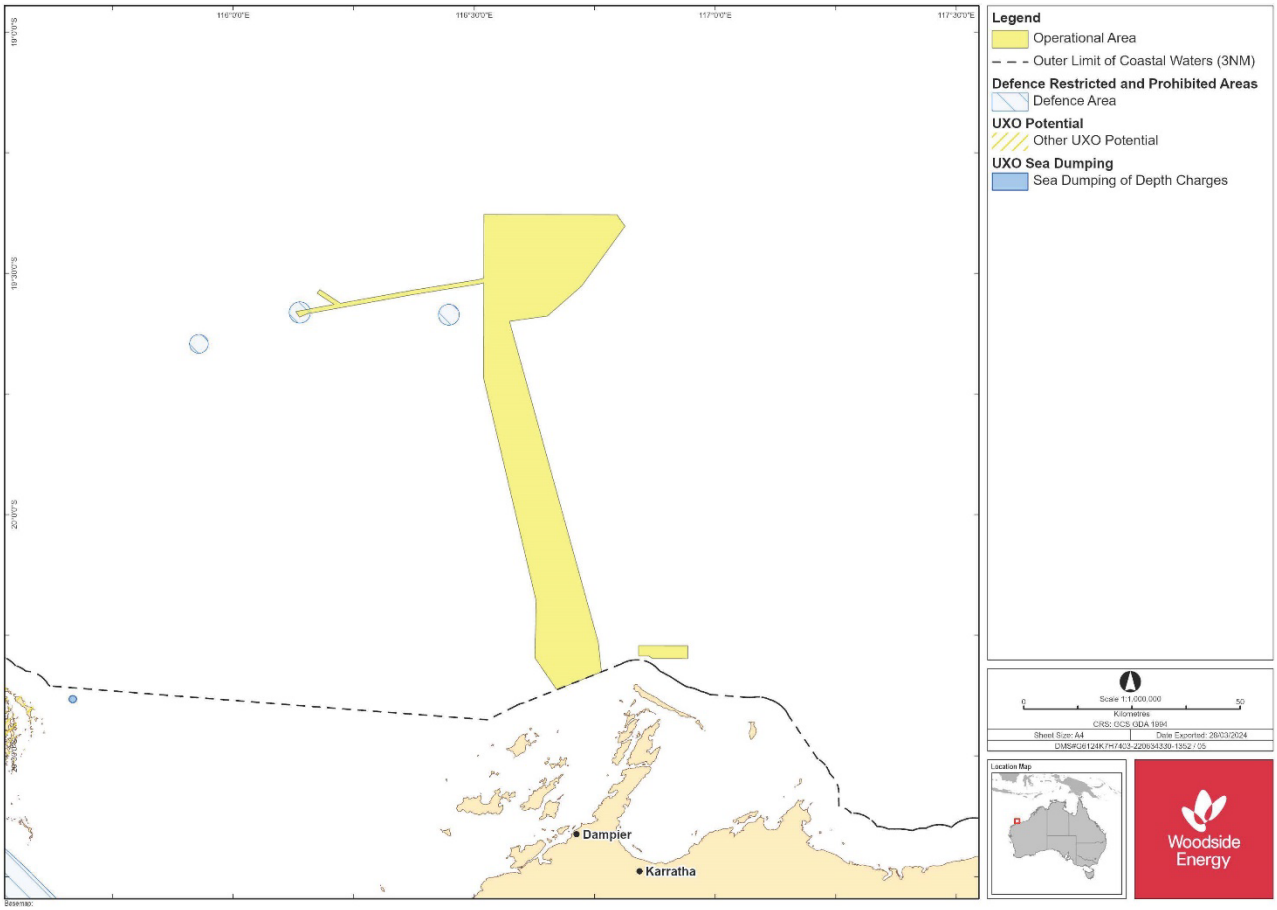
Your feedback and our response will be included in our EPs for the proposed activities, which will be submitted to NOPSEMA for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth)* and to DEMIRS pending updates to the *Petroleum (Submerged Lands) (Environment) Regulations 2012 (WA)*. As at the date of this Information Sheet, the Western Australian regulations have not yet been drafted.

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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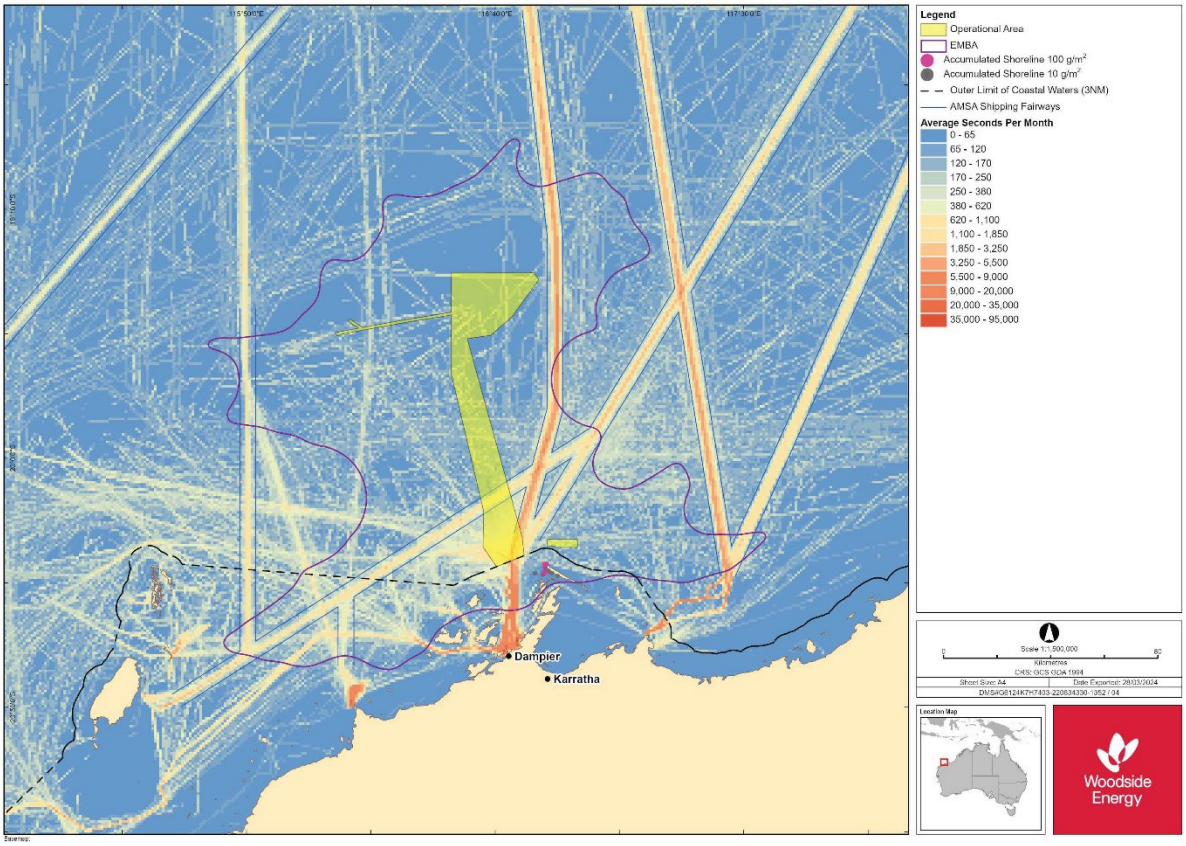
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6.1.3 Defence zones map



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6.1.4 Vessel density map



6.1.5 Shipwrecks

EMBA and Accumulated Shoreline+ Australia National Shipwrecks OVERLAP

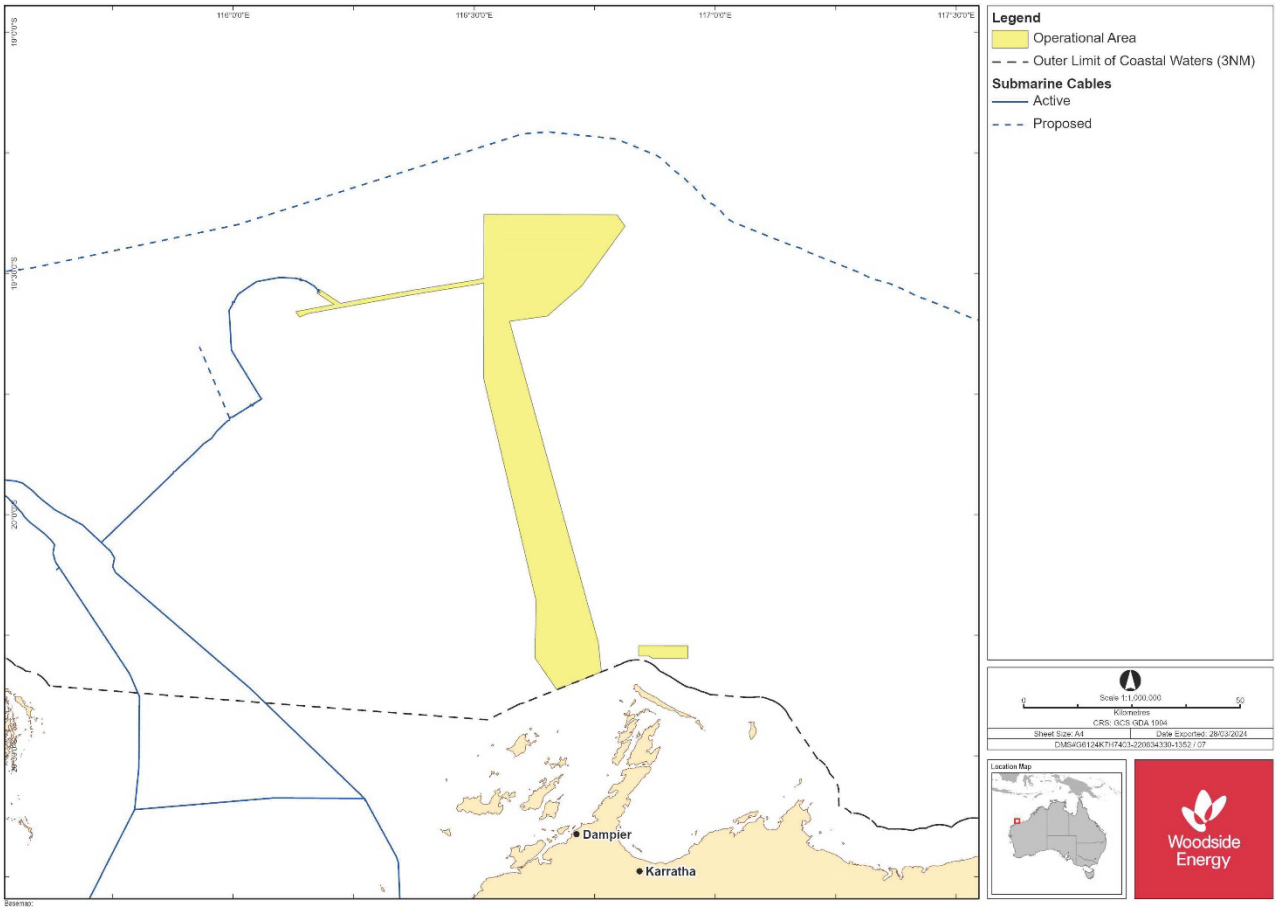
Vessel Name	Vessel Type	When Lost	Where Lost	Latitude	Longitude
Zelma	Unknown	1990	Dampier Archipelago	-20.37716667	116.8746667
Dampier	Trawler	unknown	Enderby Island, Dampier Archipelago	-20.52333333	116.2366667

EMBA and Accumulated Shoreline+ State Historical Shipwrecks OVERLAP

Vessel Name	Comments	When Lost	Where Lost	Latitude	Longitude
Dampier		unknown	Enderby Island, Dampier Archipelago	20°31.4	116°14.2
Zelma		20/07/1990	Dampier Archipelago	20°22.63	116°52.48

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6.1.6 Submarine communication cables map



6.1.7 Email to Australian Border Force (ABF), Australian Conservation Foundation (ACF), Australian Energy Producers (AEP), Australian Marine Conservation Society (AMCS), Australasian Centre for Corporate Responsibility (ACCR), Bounty Oil and Gas, Coastal Oil and Gas/Fox Resources, Conservation Council of Western Australia (CCWA), Department of Biodiversity, Conservations and Attractions (DBCA), Department of Mines, Petroleum and Exploration (DMPE, formerly DEMIRS), Department of Industry, Sciences and Resources (DISR), Doctors for the Environment (DEA), Exxon Mobil, Finder Energy, Greenpeace Australia Pacific (GAP), Jadestone Energy, JX Nippon, KATO Energy, KUFPEC Australia, Longreach Capital Investments/Beagle No. 1, Market Forces, Pilbara Ports, Santos, Skye Napoleon, Vermillion Oil & Gas − 8 July 2024

Woodside is planning to submit the Angel Carbon Capture and Storage (CCS) Geophysical and Geotechnical Surveys Commonwealth and State Environment Plans.

Overview

For the proposed Angel CCS Project in the North-West region of Western Australia, Woodside, as Operator of the Angel CCS Joint Venture, plans to undertake geophysical and geotechnical surveys to provide data to support the greenhouse gas (GHG) activity program. Data from the surveys, in Commonwealth and State waters, is intended to inform the design for the pipeline and umbilical routes, subsea structure foundation locations and planning for mobile offshore drilling unit anchoring

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or jack-up rig placement. The surveys will also support baseline studies to provide data on existing infrastructure and potential future activities.

The Angel CCS Project involves the development of a Carbon Dioxide (CO2) gathering system, collecting CO2 via new pipelines from emitters onshore or through imported options via ships.

Collected CO2 would be transported to a central compression facility prior to being transported

offshore via a subsea pipeline and injected into the subsea geological formation.

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 these environment plans, is determined by modelling a release of hydrocarbons from a vessel collision. A vessel collision and 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 hydrocarbon release does occur, the whole EMBA will not be affected.

Consultation information

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: Angel CCS Geophysical and Geotechnical Surveys Commonwealth and State Environment Plans

Angel CCS Geophysical and Geotechnical Surveys Commonwealth and State Environmental Plans		
Summary	Series of geophysical and geotechnical surveys to provide data to support the GHG activity program, inform design of the Angel CCS Project and support baselines studies to provide data on existing infrastructure and potential future activities.	
	State	**Commonwealth**
Permit Area	Vacant acreage	Vacant acreage, G-10-AP, WA-3-L, WA-4-L, WA-9-L, WA-52-L, WA-28-P, WA-1-L, G-9-AP, WA-208-P, Vacant acreage release area W22-4
Location	North West Shelf Province ~ 9 km north-east of Dampier, Western Australia	North West Shelf ~ 35 km to 140 km north of Dampier, Western Australia
Approx. water depth (m)	Up to 45 m	35-135 m
Timing	Expected to commence around: Q1 2025 Timing: Approximately 80 days over 5-year period of the EP.	Expected to commence around: Q1 2025 Timing: Approximately 100 days over 5-year period of the EP.

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Angel CCS Geophysical and Geotechnical Surveys Commonwealth and State Environmental Plans		
Operational areas / Exclusionary zones	Temporary 500 m safety exclusion zone will apply around the project vessels conducting survey activities in the State and Commonwealth Operational Areas to manage vessel movements.	
Vessels	Multi-purpose project vessel, supply vessel, jack-up barge supported by small tug or multi cat, smaller craft for nearshore, uncrewed surface vessels.	Multi-purpose project vessel, supply vessel, geotechnical drilling vessel, uncrewed surface vessels.

Feedback:

If you have feedback specific to the proposed activities described under the proposed EPs, we would welcome your feedback via email at Feedback@woodside.com or phone call at 1800 442 977, or via the feedback form on our website by 9 August 2024.

Your feedback and our response will be included in our EPs. The Commonwealth EP 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 (Ch)*. The State EP will be submitted to Department of Energy, Mines, Industry Regulation and Safety (DEMIRS) pending review of the *Petroleum (Submerged Lands) (Environment) Regulations 2012 (WA)*. Both 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.

NOPSEMA has published the brochure Consultation on offshore petroleum environment plans – Information for the Community to help community members understand consultation requirements for Commonwealth EPs and how to participate in consultation.

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6.1.8 Email to Australian Communications and Media Authority (ACMA) − 8 July 2024

Woodside is planning to submit the Angel Carbon Capture and Storage (CCS) Geophysical and Geotechnical Surveys Commonwealth and State Environment Plans.

Overview
For the proposed Angel CCS Project in the North-West region of Western Australia, Woodside, as Operator of the Angel CCS Joint Venture, plans to undertake geophysical and geotechnical surveys to provide data to support the greenhouse gas (GHG) activity program. Data from the surveys, in Commonwealth and State waters, is intended to inform the design for the pipeline and umbilical routes, subsea structure foundation locations and planning for mobile offshore drilling unit anchoring or jack-up rig placement. The surveys will also support baseline studies to provide data on existing infrastructure and potential future activities.

The Angel CCS Project involves the development of a Carbon Dioxide (CO2) gathering system, collecting CO2 via new pipelines from emitters onshore or through imported options via ships. Collected CO2 would be transported to a central compression facility prior to being transported offshore via a subsea pipeline and injected into the subsea geological formation.
Environment that may be affected (EMBA)

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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 hydrocarbon release does occur, the whole EMBA will not be affected.
Consultation information
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. We have also contacted Telstra as its cables were identified.

Activity: Angel CCS Geophysical and Geotechnical Surveys Commonwealth and State Environment Plans

Angel CCS Geophysical and Geotechnical Surveys Commonwealth and State Environmental Plans		
Summary	Series of geophysical and geotechnical surveys to provide data to support the GHG activity program, inform design of the Angel CCS Project and support baselines studies to provide data on existing infrastructure and potential future activities.	
	State	Commonwealth
Permit Area	Vacant acreage	Vacant acreage, G-10-AP, WA-3-L, WA-4-L, WA-9-L, WA-52-L, WA-28-P, WA-1-L, G-9-AP, WA-208-P, Vacant acreage release area W22-4
Location	North West Shelf Province ~ 9 km north-east of Dampier, Western Australia	North West Shelf ~ 35 km to 140 km north of Dampier, Western Australia
Approx. water depth (m)	Up to 45 m	35-135 m
Timing	Expected to commence around: Q1 2025 Timing: Approximately 80 days over 5-year period of the EP.	Expected to commence around: Q1 2025 Timing: Approximately 100 days over 5-year period of the EP.
Operational areas / Exclusionary zones	Temporary 500 m safety exclusion zone will apply around the project vessels conducting survey activities in the State and Commonwealth Operational Areas to manage vessel movements.	
Vessels	Multi-purpose project vessel, supply vessel, jack-up barge supported by small tug or multi	Multi-purpose project vessel, supply vessel, geotechnical drilling vessel, uncrewed surface vessels.

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Angel CCS Geophysical and Geotechnical Surveys Commonwealth and State Environmental Plans		
	cat, smaller craft for nearshore, uncrewed surface vessels.	

Feedback:
If you have feedback specific to the proposed activities described under the proposed EPs, we would welcome your feedback via email at Feedback@woodside.com or phone call at 1800 442 977, or via the feedback form on our website by 9 August 2024.
Your feedback and our response will be included in our EPs. The Commonwealth EP 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). The State EP will be submitted to Department of Energy, Mines, Industry Regulation and Safety (DEMIRS) pending review of the Petroleum (Submerged Lands) (Environment) Regulations 2012 (WA). Both support other regulatory processes associated with the planned activities (which may or may not be confidential)
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6.1.9 Email to Australian Fisheries Management Authority (AFMA), Commonwealth Fish - 8 July 2024

Woodside is planning to submit the Angel Carbon Capture and Storage (CCS) Geophysical and Geotechnical Surveys Commonwealth and State Environment Plans.

Overview
For the proposed Angel CCS Project in the North-West region of Western Australia, Woodside, as Operator of the Angel CCS Joint Venture, plans to undertake geophysical and geotechnical surveys to provide data to support the greenhouse gas (GHG) activity program. Data from the surveys, in Commonwealth and State waters, is intended to inform the design for the pipeline and umbilical routes, subsea structure foundation locations and planning for mobile offshore drilling unit anchoring or jack-up rig placement. The surveys will also support baseline studies to provide data on existing infrastructure and potential future activities.
The Angel CCS Project involves the development of a Carbon Dioxide (CO2) gathering system, collecting CO2 via new pipelines from emitters onshore or through imported options via ships. Collected CO2 would be transported to a central compression facility prior to being transported offshore via a subsea pipeline and injected into the subsea geological formation.
Exclusionary / Cautionary Zones
Temporary 500 m exclusion zone around vessels conducting survey activities to manage vessel movements.
No restrictions to other vessels within the Operational Area apart from being advised to take care during the survey vessel activities.

Environment that may be affected (EMBA)

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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 hydrocarbon release does occur, the whole EMBA will not be affected.
Consultation information
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: Angel CCS Geophysical and Geotechnical Surveys Commonwealth and State Environment Plans

Angel CCS Geophysical and Geotechnical Surveys Commonwealth and State Environmental Plans		
Summary	Series of geophysical and geotechnical surveys to provide data to support the GHG activity program, inform design of the Angel CCS Project and support baselines studies to provide data on existing infrastructure and potential future activities.	
	State	Commonwealth
Permit Area	Vacant acreage	Vacant acreage, G-10-AP, WA-3-L, WA-4-L, WA-9-L, WA-52-L, WA-28-P, WA-1-L, G-9-AP, WA-208-P, Vacant acreage release area W22-4
Location	North West Shelf Province ~ 9 km north-east of Dampier, Western Australia	North West Shelf ~ 35 km to 140 km north of Dampier, Western Australia
Approx. water depth (m)	Up to 45 m	35-135 m
Timing	Expected to commence around: Q1 2025 Timing: Approximately 80 days over 5-year period of the EP.	Expected to commence around: Q1 2025 Timing: Approximately 100 days over 5-year period of the EP.
Operational areas / Exclusionary zones	Temporary 500 m safety exclusion zone will apply around the project vessels conducting survey activities in the State and Commonwealth Operational Areas to manage vessel movements.	

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Angel CCS Geophysical and Geotechnical Surveys Commonwealth and State Environmental Plans		
Vessels	Multi-purpose project vessel, supply vessel, jack-up barge supported by small tug or multi cat, smaller craft for nearshore, uncrewed surface vessels.	Multi-purpose project vessel, supply vessel, geotechnical drilling vessel, uncrewed surface vessels.
Fisheries	Active in the State Operational Area: none	Active in the Commonwealth Operational Area: none Active in the Commonwealth EMBA: North-West Slope Trawl Fishery

Feedback:
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Your feedback and our response will be included in our EPs. The Commonwealth EP 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). The State EP will be submitted to Department of Energy, Mines, Industry Regulation and Safety (DEMIRS) pending review of the Petroleum (Submerged Lands) (Environment) Regulations 2012 (WA). Both 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.
NOPSEMA has published the brochure Consultation on offshore petroleum environment plans – Information for the Community to help community members understand consultation requirements for Commonwealth EPs and how to participate in consultation.
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6.1.10 Email to Australian Hydrographic Office (AHO) - 8 July 2024

Woodside is planning to submit the Angel Carbon Capture and Storage (CCS) Geophysical and Geotechnical Surveys Commonwealth and State Environment Plans.

Overview
For the proposed Angel CCS Project in the North-West region of Western Australia, Woodside, as Operator of the Angel CCS Joint Venture, plans to undertake geophysical and geotechnical surveys to provide data to support the greenhouse gas (GHG) activity program. Data from the surveys, in Commonwealth and State waters, is intended to inform the design for the pipeline and umbilical routes, subsea structure foundation locations and planning for mobile offshore drilling unit anchoring or jack-up rig placement. The surveys will also support baseline studies to provide data on existing infrastructure and potential future activities.
The Angel CCS Project involves the development of a Carbon Dioxide (CO2) gathering system, collecting CO2 via new pipelines from emitters onshore or through imported options via ships. Collected CO2 would be transported to a central compression facility prior to being transported offshore via a subsea pipeline and injected into the subsea geological formation.
Environment that may be affected (EMBA)

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unplanned activities, and for these environment plans, is determined by modelling a release of hydrocarbons from a vessel collision. A vessel collision and release of this kind is highly unlikely to occur.
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Consultation information
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: Angel CCS Geophysical and Geotechnical Surveys Commonwealth and State Environment Plans

Angel CCS Geophysical and Geotechnical Surveys Commonwealth and State Environmental Plans		
Summary	Series of geophysical and geotechnical surveys to provide data to support the GHG activity program, inform design of the Angel CCS Project and support baselines studies to provide data on existing infrastructure and potential future activities.	
	State	Commonwealth
Permit Area	Vacant acreage	Vacant acreage, G-10-AP, WA-3-L, WA-4-L, WA-9-L, WA-52-L, WA-28-P, WA-1-L, G-9-AP, WA-208-P, Vacant acreage release area W22-4
Location	North West Shelf Province ~ 9 km north-east of Dampier, Western Australia	North West Shelf ~ 35 km to 140 km north of Dampier, Western Australia
Approx. water depth (m)	Up to 45 m	35-135 m
Timing	Expected to commence around: Q1 2025 Timing: Approximately 80 days over 5-year period of the EP.	Expected to commence around: Q1 2025 Timing: Approximately 100 days over 5-year period of the EP.
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Vessels	Multi-purpose project vessel, supply vessel, jack-up barge supported by small tug or multi cat, smaller craft for nearshore, uncrewed surface vessels.	Multi-purpose project vessel, supply vessel, geotechnical drilling vessel, uncrewed surface vessels.

Feedback:

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Your feedback and our response will be included in our EPs. The Commonwealth EP 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). The State EP will be submitted to Department of Energy, Mines, Industry Regulation and Safety (DEMIRS) pending review of the Petroleum (Submerged Lands) (Environment) Regulations 2012 (WA). Both support other regulatory processes associated with the planned activities (which may or may not be confidential)
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6.1.11 Email to Australian Maritime Safety Authority (AMSA) – Maritime Safety - 8 July 2024

Woodside is planning to submit the Angel Carbon Capture and Storage (CCS) Geophysical and Geotechnical Surveys Commonwealth and State Environment Plans.

Overview
For the proposed Angel CCS Project in the North-West region of Western Australia, Woodside, as Operator of the Angel CCS Joint Venture, plans to undertake geophysical and geotechnical surveys to provide data to support the greenhouse gas (GHG) activity program. Data from the surveys, in Commonwealth and State waters, is intended to inform the design for the pipeline and umbilical routes, subsea structure foundation locations and planning for mobile offshore drilling unit anchoring or jack-up rig placement. The surveys will also support baseline studies to provide data on existing infrastructure and potential future activities.
The Angel CCS Project involves the development of a Carbon Dioxide (CO2) gathering system, collecting CO2 via new pipelines from emitters onshore or through imported options via ships. Collected CO2 would be transported to a central compression facility prior to being transported offshore via a subsea pipeline and injected into the subsea geological formation.
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 these environment plans, is determined by modelling a release of hydrocarbons from a vessel collision. A vessel collision and release of this kind is highly unlikely to occur.
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Consultation information
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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.
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: Angel CCS Geophysical and Geotechnical Surveys Commonwealth and State Environment Plans

Angel CCS Geophysical and Geotechnical Surveys Commonwealth and State Environmental Plans		
Summary	Series of geophysical and geotechnical surveys to provide data to support the GHG activity program, inform design of the Angel CCS Project and support baselines studies to provide data on existing infrastructure and potential future activities.	
	State	Commonwealth
Permit Area	Vacant acreage	Vacant acreage, G-10-AP, WA-3-L, WA-4-L, WA-9-L, WA-52-L, WA-28-P, WA-1-L, G-9-AP, WA-208-P, Vacant acreage release area W22-4
Location	North West Shelf Province ~ 9 km north-east of Dampier, Western Australia	North West Shelf ~ 35 km to 140 km north of Dampier, Western Australia
Approx. water depth (m)	Up to 45 m	35-135 m
Timing	Expected to commence around: Q1 2025 Timing: Approximately 80 days over 5-year period of the EP.	Expected to commence around: Q1 2025 Timing: Approximately 100 days over 5-year period of the EP.
Operational areas / Exclusionary zones	Temporary 500 m safety exclusion zone will apply around the project vessels conducting survey activities in the State and Commonwealth Operational Areas to manage vessel movements.	
Vessels	Multi-purpose project vessel, supply vessel, jack-up barge supported by small tug or multi cat, smaller craft for nearshore, uncrewed surface vessels.	Multi-purpose project vessel, supply vessel, geotechnical drilling vessel, uncrewed surface vessels.

Feedback:

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6.1.12 Email to Australian Maritime Safety Authority (AMSA) - Marine Pollution - 8 July 2024

Woodside is planning to submit the Angel Carbon Capture and Storage (CCS) Geophysical and Geotechnical Surveys Commonwealth and State Environment Plans.

Overview
For the proposed Angel CCS Project in the North-West region of Western Australia, Woodside, as Operator of the Angel CCS Joint Venture, plans to undertake geophysical and geotechnical surveys to provide data to support the greenhouse gas (GHG) activity program. Data from the surveys, in Commonwealth and State waters, is intended to inform the design for the pipeline and umbilical routes, subsea structure foundation locations and planning for mobile offshore drilling unit anchoring or jack-up rig placement. The surveys will also support baseline studies to provide data on existing infrastructure and potential future activities.
The Angel CCS Project involves the development of a Carbon Dioxide (CO2) gathering system, collecting CO2 via new pipelines from emitters onshore or through imported options via ships. Collected CO2 would be transported to a central compression facility prior to being transported offshore via a subsea pipeline and injected into the subsea geological formation.
Environment that may be affected (EMBA)

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Consultation information
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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: Angel CCS Geophysical and Geotechnical Surveys Commonwealth and State Environment Plans

Angel CCS Geophysical and Geotechnical Surveys Commonwealth and State Environmental Plans		
Summary	Series of geophysical and geotechnical surveys to provide data to support the GHG activity program, inform design of the Angel CCS Project and support baselines studies to provide data on existing infrastructure and potential future activities.	
	State	Commonwealth
Permit Area	Vacant acreage	Vacant acreage, G-10-AP, WA-3-L, WA-4-L, WA-9-L, WA-52-L, WA-28-P, WA-1-L, G-9-AP, WA-208-P, Vacant acreage release area W22-4
Location	North West Shelf Province ~ 9 km north-east of Dampier, Western Australia	North West Shelf ~ 35 km to 140 km north of Dampier, Western Australia
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6.1.13 Email to Department of Agriculture, Fisheries and Forestry (DAFF) - Fisheries - 8 July 2024

Woodside is planning to submit the Angel Carbon Capture and Storage (CCS) Geophysical and Geotechnical Surveys Commonwealth and State Environment Plans.

Overview
For the proposed Angel CCS Project in the North-West region of Western Australia, Woodside, as Operator of the Angel CCS Joint Venture, plans to undertake geophysical and geotechnical surveys to provide data to support the greenhouse gas (GHG) activity program. Data from the surveys, in Commonwealth and State waters, is intended to inform the design for the pipeline and umbilical routes, subsea structure foundation locations and planning for mobile offshore drilling unit anchoring or jack-up rig placement. The surveys will also support baseline studies to provide data on existing infrastructure and potential future activities.
The Angel CCS Project involves the development of a Carbon Dioxide (CO2) gathering system, collecting CO2 via new pipelines from emitters onshore or through imported options via ships. Collected CO2 would be transported to a central compression facility prior to being transported offshore via a subsea pipeline and injected into the subsea geological formation.
Exclusionary / Cautionary Zones
Temporary 500 m exclusion zone around vessels conducting survey activities to manage vessel movements.
No restrictions to other vessels within the Operational Area apart from being advised to take care during the survey vessel 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 these environment plans, is determined by modelling a release of hydrocarbons from a vessel collision. A vessel collision and 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 hydrocarbon release does occur, the whole EMBA will not be affected.
Consultation information
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: Angel CCS Geophysical and Geotechnical Surveys Commonwealth and State Environment Plans

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Angel CCS Geophysical and Geotechnical Surveys Commonwealth and State Environmental Plans		
Summary	Series of geophysical and geotechnical surveys to provide data to support the GHG activity program, inform design of the Angel CCS Project and support baselines studies to provide data on existing infrastructure and potential future activities.	
	State	Commonwealth
Permit Area	Vacant acreage	Vacant acreage, G-10-AP, WA-3-L, WA-4-L, WA-9-L, WA-52-L, WA-28-P, WA-1-L, G-9-AP, WA-208-P, Vacant acreage release area W22-4
Location	North West Shelf Province ~ 9 km north-east of Dampier, Western Australia	North West Shelf ~ 35 km to 140 km north of Dampier, Western Australia
Approx. water depth (m)	Up to 45 m	35-135 m
Timing	Expected to commence around: Q1 2025 Timing: Approximately 80 days over 5-year period of the EP.	Expected to commence around: Q1 2025 Timing: Approximately 100 days over 5-year period of the EP.
Operational areas / Exclusionary zones	Temporary 500 m safety exclusion zone will apply around the project vessels conducting survey activities in the State and Commonwealth Operational Areas to manage vessel movements.	
Vessels	Multi-purpose project vessel, supply vessel, jack-up barge supported by small tug or multi cat, smaller craft for nearshore, uncrewed surface vessels.	Multi-purpose project vessel, supply vessel, geotechnical drilling vessel, uncrewed surface vessels.
Fisheries	Active in the State Operational Area: none	Active in the Commonwealth Operational Area: none Active in the Commonwealth EMBA: North-West Slope Trawl Fishery

Biosecurity

With respect to the biosecurity matters, please note the following information below:

Operational Area:
The Operational Area is located within the North-west Marine Region (NWMR) in State water depths of up to 45 m deep, and in Commonwealth water depths between 35 m to 135 m on the continental shelf. The bathymetry within the Operational Area is generally flat, which is consistent with the broader NWS Province shelf region.

Potential IMS risk	IMS risk mitigation management

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Accidental introduction and establishment of invasive marine species (IMS)	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 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 EPs, we would welcome your feedback via email at Feedback@woodside.com or phone call at 1800 442 977, or via the feedback form on our website by 9 August 2024.
Your feedback and our response will be included in our EPs. The Commonwealth EP 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). The State EP will be submitted to Department of Energy, Mines, Industry Regulation and Safety (DEMIRS) pending review of the Petroleum (Submerged Lands) (Environment) Regulations 2012 (WA). Both support other regulatory processes associated with the planned activities (which may or may not be confidential)
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6.1.14 Email to Department of Defence (DoD) - 8 July 2024

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Woodside is planning to submit the Angel Carbon Capture and Storage (CCS) Geophysical and Geotechnical Surveys Commonwealth and State Environment Plans.

Overview

For the proposed Angel CCS Project in the North-West region of Western Australia, Woodside, as Operator of the Angel CCS Joint Venture, plans to undertake geophysical and geotechnical surveys to provide data to support the greenhouse gas (GHG) activity program. Data from the surveys, in Commonwealth and State waters, is intended to inform the design for the pipeline and umbilical routes, subsea structure foundation locations and planning for mobile offshore drilling unit anchoring or jack-up rig placement. The surveys will also support baseline studies to provide data on existing infrastructure and potential future activities.

The Angel CCS Project involves the development of a Carbon Dioxide (CO2) gathering system, collecting CO2 via new pipelines from emitters onshore or through imported options via ships. Collected CO2 would be transported to a central compression facility prior to being transported offshore via a subsea pipeline and injected into the subsea geological formation.

Environment that may be affected (EMBA)

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Consultation information

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Please also find attached a defence area map in the areas surrounding the Operational Area.

Activity: Angel CCS Geophysical and Geotechnical Surveys Commonwealth and State Environment Plans

Angel CCS Geophysical and Geotechnical Surveys Commonwealth and State Environmental Plans		
Summary	Series of geophysical and geotechnical surveys to provide data to support the GHG activity program, inform design of the Angel CCS Project and support baselines studies to provide data on existing infrastructure and potential future activities.	
	State	Commonwealth
Permit Area	Vacant acreage	Vacant acreage, G-10-AP, WA-3-L, WA-4-L, WA-9-L, WA-52-L, WA-28-P, WA-1-L, G-9-AP, WA-208-P, Vacant acreage release area W22-4
Location	North West Shelf Province ~ 9 km north-east of Dampier, Western Australia	North West Shelf ~ 35 km to 140 km north of Dampier, Western Australia

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Angel CCS Geophysical and Geotechnical Surveys Commonwealth and State Environmental Plans		
Approx. water depth (m)	Up to 45 m	35-135 m
Timing	Expected to commence around: Q1 2025 Timing: Approximately 80 days over 5-year period of the EP.	Expected to commence around: Q1 2025 Timing: Approximately 100 days over 5-year period of the EP.
Operational areas / Exclusionary zones	Temporary 500 m safety exclusion zone will apply around the project vessels conducting survey activities in the State and Commonwealth Operational Areas to manage vessel movements.	
Vessels	Multi-purpose project vessel, supply vessel, jack-up barge supported by small tug or multi cat, smaller craft for nearshore, uncrewed surface vessels.	Multi-purpose project vessel, supply vessel, geotechnical drilling vessel, uncrewed surface vessels.

Feedback:
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Your feedback and our response will be included in our EPs. The Commonwealth EP 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). The State EP will be submitted to Department of Energy, Mines, Industry Regulation and Safety (DEMIRS) pending review of the Petroleum (Submerged Lands) (Environment) Regulations 2012 (WA). Both support other regulatory processes associated with the planned activities (which may or may not be confidential)
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6.1.15 Email to Department of Primary Industries and Regional Development (DPIRD) - 8 July 2024

Woodside is planning to submit the Angel Carbon Capture and Storage (CCS) Geophysical and Geotechnical Surveys Commonwealth and State Environment Plans.

Overview
For the proposed Angel CCS Project in the North-West region of Western Australia, Woodside, as Operator of the Angel CCS Joint Venture, plans to undertake geophysical and geotechnical surveys to provide data to support the greenhouse gas (GHG) activity program. Data from the surveys, in Commonwealth and State waters, is intended to inform the design for the pipeline and umbilical routes, subsea structure foundation locations and planning for mobile offshore drilling unit

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anchoring or jack-up rig placement. The surveys will also support baseline studies to provide data on existing infrastructure and potential future activities.
The Angel CCS Project involves the development of a Carbon Dioxide (CO2) gathering system, collecting CO2 via new pipelines from emitters onshore or through imported options via ships. Collected CO2 would be transported to a central compression facility prior to being transported offshore via a subsea pipeline and injected into the subsea geological formation.
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Activity: Angel CCS Geophysical and Geotechnical Surveys Commonwealth and State Environment Plans

Angel CCS Geophysical and Geotechnical Surveys Commonwealth and State Environmental Plans		
Summary	Series of geophysical and geotechnical surveys to provide data to support the GHG activity program, inform design of the Angel CCS Project and support baselines studies to provide data on existing infrastructure and potential future activities.	
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Permit Area	Vacant acreage	Vacant acreage, G-10-AP, WA-3-L, WA-4-L, WA-9-L, WA-52-L, WA-28-P, WA-1-L, G-9-AP, WA-208-P, Vacant acreage release area W22-4
Location	North West Shelf Province ~ 9 km north-east of Dampier, Western Australia	North West Shelf ~ 35 km to 140 km north of Dampier, Western Australia
Approx. water depth (m)	Up to 45 m	35-135 m

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Angel CCS Geophysical and Geotechnical Surveys Commonwealth and State Environmental Plans		
Timing	Expected to commence around: Q1 2025 Timing: Approximately 80 days over 5-year period of the EP.	Expected to commence around: Q1 2025 Timing: Approximately 100 days over 5-year period of the EP.
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Vessels	Multi-purpose project vessel, supply vessel, jack-up barge supported by small tug or multi cat, smaller craft for nearshore, uncrewed surface vessels.	Multi-purpose project vessel, supply vessel, geotechnical drilling vessel, uncrewed surface vessels.
State Fisheries	Active in the State Operational Area: Mackerel Managed Fishery (Area 2) Marine Aquarium Fish Managed Fishery Nickol Bay Prawn Managed Fishery Onslow Prawn Managed Fishery Pilbara Crab Managed Fishery Pilbara Trawl Fishery Pilbara Trap Fishery Pilbara Line Fishery Specimen Shell Managed Fishery	Active in the Commonwealth Operational Area: Mackerel Managed Fishery (Area 2) Marine Aquarium Fish Managed Fishery Nickol Bay Prawn Managed Fishery Onslow Prawn Managed Fishery Pilbara Crab Managed Fishery Pilbara Trawl Fishery Pilbara Trap Fishery Pilbara Line Fishery Specimen Shell Managed Fishery Active in the Commonwealth EMBA: Mackerel Managed Fishery (Area 2) Marine Aquarium Fish Managed Fishery Nickol Bay Prawn Managed Fishery Onslow Prawn Managed Fishery Pilbara Crab Managed Fishery Pilbara Trawl Fishery Pilbara Trap Fishery Pilbara Line Fishery Specimen Shell Managed Fishery Western Australian Sea Cucumber

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Angel CCS Geophysical and Geotechnical Surveys Commonwealth and State Environmental Plans		

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6.1.16 Email to Department of Transport and Major Infrastructure (DTMI, formerly DoT) - 8 July 2024

Woodside is planning to submit the Angel Carbon Capture and Storage (CCS) Geophysical and Geotechnical Surveys Commonwealth and State Environment Plans.

Overview
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Environment that may be affected (EMBA)

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hydrocarbons from a vessel collision. A vessel collision and release of this kind is highly unlikely to occur.
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Consultation information
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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: Angel CCS Geophysical and Geotechnical Surveys Commonwealth and State Environment Plans

Angel CCS Geophysical and Geotechnical Surveys Commonwealth and State Environmental Plans		
Summary	Series of geophysical and geotechnical surveys to provide data to support the GHG activity program, inform design of the Angel CCS Project and support baselines studies to provide data on existing infrastructure and potential future activities.	
	State	Commonwealth
Permit Area	Vacant acreage	Vacant acreage, G-10-AP, WA-3-L, WA-4-L, WA-9-L, WA-52-L, WA-28-P, WA-1-L, G-9-AP, WA-208-P, Vacant acreage release area W22-4
Location	North West Shelf Province ~ 9 km north-east of Dampier, Western Australia	North West Shelf ~ 35 km to 140 km north of Dampier, Western Australia
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Timing	Expected to commence around: Q1 2025 Timing: Approximately 80 days over 5-year period of the EP.	Expected to commence around: Q1 2025 Timing: Approximately 100 days over 5-year period of the EP.
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Feedback:

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6.1.17 Email to Department of Planning, Lands and Heritage (DPLH) - 8 July 2024

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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: Angel CCS Geophysical and Geotechnical Surveys Commonwealth and State Environment Plans

Angel CCS Geophysical and Geotechnical Surveys Commonwealth and State Environmental Plans		
Summary	Series of geophysical and geotechnical surveys to provide data to support the GHG activity program, inform design of the Angel CCS Project and support baselines studies to provide data on existing infrastructure and potential future activities.	
	State	Commonwealth
Permit Area	Vacant acreage	Vacant acreage, G-10-AP, WA-3-L, WA-4-L, WA-9-L, WA-52-L, WA-28-P, WA-1-L, G-9-AP, WA-208-P, Vacant acreage release area W22-4
Location	North West Shelf Province ~ 9 km north-east of Dampier, Western Australia	North West Shelf ~ 35 km to 140 km north of Dampier, Western Australia
Approx. water depth (m)	Up to 45 m	35-135 m
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Your feedback and our response will be included in our EPs. The Commonwealth EP will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority

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(NOPSEMA) for acceptance in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth). The State EP will be submitted to Department of Energy, Mines, Industry Regulation and Safety (DEMIRS) pending review of the Petroleum (Submerged Lands) (Environment) Regulations 2012 (WA). Both support other regulatory processes associated with the planned activities (which may or may not be confidential)
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6.1.18 Email to Western Australian Museum (WAM) - 9 July 2024

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Overview
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Please also find attached the details of WA shipwrecks that are relevant for this EP.

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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: Angel CCS Geophysical and Geotechnical Surveys Commonwealth and State Environment Plans

Angel CCS Geophysical and Geotechnical Surveys Commonwealth and State Environmental Plans		
Summary	Series of geophysical and geotechnical surveys to provide data to support the GHG activity program, inform design of the Angel CCS Project and support baselines studies to provide data on existing infrastructure and potential future activities.	
	State	Commonwealth
Permit Area	Vacant acreage	Vacant acreage, G-10-AP, WA-3-L, WA-4-L, WA-9-L, WA-52-L, WA-28-P, WA-1-L, G-9-AP, WA-208-P, Vacant acreage release area W22-4
Location	North West Shelf Province ~ 9 km north-east of Dampier, Western Australia	North West Shelf ~ 35 km to 140 km north of Dampier, Western Australia
Approx. water depth (m)	Up to 45 m	35-135 m
Timing	Expected to commence around: Q1 2025 Timing: Approximately 80 days over 5-year period of the EP.	Expected to commence around: Q1 2025 Timing: Approximately 100 days over 5-year period of the EP.
Operational areas / Exclusionary zones	Temporary 500 m safety exclusion zone will apply around the project vessels conducting survey activities in the State and Commonwealth Operational Areas to manage vessel movements.	
Vessels	Multi-purpose project vessel, supply vessel, jack-up barge supported by small tug or multi cat, smaller craft for nearshore, uncrewed surface vessels.	Multi-purpose project vessel, supply vessel, geotechnical drilling vessel, uncrewed surface vessels.

Feedback:
If you have feedback specific to the proposed activities described under the proposed EPs, we would welcome your feedback via email at Feedback@woodside.com or phone call at 1800 442 977, or via the feedback form on our website by 9 August 2024.
Your feedback and our response will be included in our EPs. The Commonwealth EP 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). The State EP will be submitted to Department of Energy, Mines, Industry Regulation and Safety (DEMIRS) pending review of the Petroleum

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(Submerged Lands) (Environment) Regulations 2012 (WA). Both support other regulatory processes associated with the planned activities (which may or may not be confidential)
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6.1.19 Email to Department of Agriculture, Fisheries and Forestry (DAFF) - Biosecurity - 8 July 2024

Woodside is planning to submit the Angel Carbon Capture and Storage (CCS) Geophysical and Geotechnical Surveys Commonwealth and State Environment Plans.

Overview
For the proposed Angel CCS Project in the North-West region of Western Australia, Woodside, as Operator of the Angel CCS Joint Venture, plans to undertake geophysical and geotechnical surveys to provide data to support the greenhouse gas (GHG) activity program. Data from the surveys, in Commonwealth and State waters, is intended to inform the design for the pipeline and umbilical routes, subsea structure foundation locations and planning for mobile offshore drilling unit anchoring or jack-up rig placement. The surveys will also support baseline studies to provide data on existing infrastructure and potential future activities.
The Angel CCS Project involves the development of a Carbon Dioxide (CO2) gathering system, collecting CO2 via new pipelines from emitters onshore or through imported options via ships. Collected CO2 would be transported to a central compression facility prior to being transported offshore via a subsea pipeline and injected into the subsea geological formation.
Exclusionary / Cautionary Zones
Temporary 500 m exclusion zone around vessels conducting survey activities to manage vessel movements.
No restrictions to other vessels within the Operational Area apart from being advised to take care during the survey vessel 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 these environment plans, is determined by modelling a release of hydrocarbons from a vessel collision. A vessel collision and release of this kind is highly unlikely to occur.
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Consultation information
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.

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Activity: Angel CCS Geophysical and Geotechnical Surveys Commonwealth and State Environment Plans

Angel CCS Geophysical and Geotechnical Surveys Commonwealth and State Environmental Plans		
Summary	Series of geophysical and geotechnical surveys to provide data to support the GHG activity program, inform design of the Angel CCS Project and support baselines studies to provide data on existing infrastructure and potential future activities.	
	State	Commonwealth
Permit Area	Vacant acreage	Vacant acreage, G-10-AP, WA-3-L, WA-4-L, WA-9-L, WA-52-L, WA-28-P, WA-1-L, G-9-AP, WA-208-P, Vacant acreage release area W22-4
Location	North West Shelf Province ~ 9 km north-east of Dampier, Western Australia	North West Shelf ~ 35 km to 140 km north of Dampier, Western Australia
Approx. water depth (m)	Up to 45 m	35-135 m
Timing	Expected to commence around: Q1 2025 Timing: Approximately 80 days over 5-year period of the EP.	Expected to commence around: Q1 2025 Timing: Approximately 100 days over 5-year period of the EP.
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Vessels	Multi-purpose project vessel, supply vessel, jack-up barge supported by small tug or multi cat, smaller craft for nearshore, uncrewed surface vessels.	Multi-purpose project vessel, supply vessel, geotechnical drilling vessel, uncrewed surface vessels.
Fisheries	Active in the State Operational Area: none	Active in the Commonwealth Operational Area: none Active in the Commonwealth EMBA: North-West Slope Trawl Fishery

Biosecurity
With respect to the biosecurity matters, please note the following information below:

Operational Area:

The Operational Area is located within the North-west Marine Region (NWMR) in State water depths of up to 45 m deep, and in Commonwealth water depths between 35 m to 135 m on the continental shelf. The bathymetry within the Operational Area is generally flat, which is consistent with the broader NWS Province shelf region.

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Potential IMS risk	IMS risk mitigation management
Accidental introduction and establishment of invasive marine species (IMS)	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 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.

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6.1.20 Email to Department of Climate Change, Energy, the Environment and Water (DCCEEW) - 9 July 2024

Woodside is planning to submit the Angel Carbon Capture and Storage (CCS) Geophysical and Geotechnical Surveys Commonwealth and State Environment Plans.

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Please also find attached the details of commonwealth shipwrecks that are relevant for this EP.

Activity: Angel CCS Geophysical and Geotechnical Surveys Commonwealth and State Environment Plans

Angel CCS Geophysical and Geotechnical Surveys Commonwealth and State Environmental Plans		
Summary	Series of geophysical and geotechnical surveys to provide data to support the GHG activity program, inform design of the Angel CCS Project and support baselines studies to provide data on existing infrastructure and potential future activities.	
	State	Commonwealth
Permit Area	Vacant acreage	Vacant acreage, G-10-AP, WA-3-L, WA-4-L, WA-9-L, WA-52-L, WA-28-P, WA-1-L, G-9-AP, WA-

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Angel CCS Geophysical and Geotechnical Surveys Commonwealth and State Environmental Plans		
		208-P, Vacant acreage release area W22-4
Location	North West Shelf Province ~ 9 km north-east of Dampier, Western Australia	North West Shelf ~ 35 km to 140 km north of Dampier, Western Australia
Approx. water depth (m)	Up to 45 m	35-135 m
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6.1.21 Email to Director of National Parks − 8 July 2024

Woodside is planning to submit the Angel Carbon Capture and Storage (CCS) Geophysical and Geotechnical Surveys Commonwealth and State Environment Plans.

Overview

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For the proposed Angel CCS Project in the North-West region of Western Australia, Woodside, as Operator of the Angel CCS Joint Venture, plans to undertake geophysical and geotechnical surveys to provide data to support the greenhouse gas (GHG) activity program. Data from the surveys, in Commonwealth and State waters, is intended to inform the design for the pipeline and umbilical routes, subsea structure foundation locations and planning for mobile offshore drilling unit anchoring or jack-up rig placement. The surveys will also support baseline studies to provide data on existing infrastructure and potential future activities.
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Activity: Angel CCS Geophysical and Geotechnical Surveys Commonwealth and State Environment Plans

Angel CCS Geophysical and Geotechnical Surveys Commonwealth and State Environmental Plans		
Summary	Series of geophysical and geotechnical surveys to provide data to support the GHG activity program, inform design of the Angel CCS Project and support baselines studies to provide data on existing infrastructure and potential future activities.	
	State	Commonwealth
Permit Area	Vacant acreage	Vacant acreage, G-10-AP, WA-3-L, WA-4-L, WA-9-L, WA-52-L, WA-28-P, WA-1-L, G-9-AP, WA-208-P, Vacant acreage release area W22-4
Location	North West Shelf Province ~ 9 km north-east of Dampier, Western Australia	North West Shelf ~ 35 km to 140 km north of Dampier, Western Australia
Approx. water depth (m)	Up to 45 m	35-135 m

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Angel CCS Geophysical and Geotechnical Surveys Commonwealth and State Environmental Plans		
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Vessels	Multi-purpose project vessel, supply vessel, jack-up barge supported by small tug or multi cat, smaller craft for nearshore, uncrewed surface vessels.	Multi-purpose project vessel, supply vessel, geotechnical drilling vessel, uncrewed surface vessels.

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 Commonwealth Operational Area located ~9 km west of the Commonwealth boundary of the Dampier Marine Park. The borrow ground is adjacent to the Dampier Habitat Protection Zone. The Murujuga National Park is adjacent to the State Operational Area.
- We have assessed potential risks to AMPs in the development of the proposed EPs 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 for the EPs is the highly unlikely event of a vessel collision resulting in a release of marine diesel. Through review of hydrocarbon spill modelling, and with consideration of a 50 ppb dissolved and 100 ppb entrained hydrocarbon threshold, the Dampier Marine Park may be contacted in the event of a spill. 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:

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6.1.22 Email to North West Slope Trawl Fishery, Commonwealth Fisheries Association (CFA) – 8 July 2024

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Environment that may be affected (EMBA)
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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: Angel CCS Geophysical and Geotechnical Surveys Commonwealth and State Environment Plans

Angel CCS Geophysical and Geotechnical Surveys Commonwealth and State Environmental Plans		
Summary	Series of geophysical and geotechnical surveys to provide data to support the GHG activity program, inform design of the Angel CCS Project and support baselines studies to provide data on existing infrastructure and potential future activities.	
	State	Commonwealth
Permit Area	Vacant acreage	Vacant acreage, G-10-AP, WA-3-L, WA-4-L, WA-9-L, WA-52-L, WA-28-P, WA-1-L, G-9-AP, WA-208-P, Vacant acreage release area W22-4
Location	North West Shelf Province ~ 9 km north-east of Dampier, Western Australia	North West Shelf ~ 35 km to 140 km north of Dampier, Western Australia
Approx. water depth (m)	Up to 45 m	35-135 m
Timing	Expected to commence around: Q1 2025 Timing: Approximately 80 days over 5-year period of the EP.	Expected to commence around: Q1 2025 Timing: Approximately 100 days over 5-year period of the EP.
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Fisheries	Active in the State Operational Area: none	Active in the Commonwealth Operational Area: none Active in the Commonwealth EMBA: North-West Slope Trawl Fishery

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6.1.23 Email to Western Australian Fishing Industry Council (WAFIC)

See SI Report, reference 11.1.

6.1.23.1 Email sent from WAFIC on behalf of Woodside to Marine Aquarium Managed Fishery, Mackerel Managed Fishery (Area 2), Nickol Bay Prawn Managed Fishery, Onslow Prawn Managed Fishery (Areas 1 and 2), Pilbara Crab Managed Fishery, Pilbara Line Fishery, Pilbara Trap Fishery, Pilbara Trawl Fishery

See SI Report, reference 11.8.

6.1.24 Email to Recfishwest, Marine Tourism WA, WA Game Fishing Association − 8 July 2024

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6.1.25 Email to Pilbara/Kimberley Recreational Marine Users − 8 July 2024

Woodside is planning to submit the Angel Carbon Capture and Storage (CCS) Geophysical and Geotechnical Surveys Commonwealth and State Environment Plans.

Overview
For the proposed Angel CCS Project in the North-West region of Western Australia, Woodside, as Operator of the Angel CCS Joint Venture, plans to undertake geophysical and geotechnical surveys to provide data to support the greenhouse gas (GHG) activity program. Data from the surveys, in Commonwealth and State waters, is intended to inform the design for the pipeline and umbilical routes, subsea structure foundation locations and planning for mobile offshore drilling unit anchoring or jack-up rig placement. The surveys will also support baseline studies to provide data on existing infrastructure and potential future activities.
The Angel CCS Project involves the development of a Carbon Dioxide (CO2) gathering system, collecting CO2 via new pipelines from emitters onshore or through imported options via ships. Collected CO2 would be transported to a central compression facility prior to being transported offshore via a subsea pipeline and injected into the subsea geological formation.
Exclusionary / Cautionary Zones
Temporary 500 m exclusion zone around vessels conducting survey activities to manage vessel movements.

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No restrictions to other vessels within the Operational Area apart from being advised to take care during the survey vessel 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 these environment plans, is determined by modelling a release of hydrocarbons from a vessel collision. A vessel collision and 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 hydrocarbon release does occur, the whole EMBA will not be affected.
Consultation information
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: Angel CCS Geophysical and Geotechnical Surveys Commonwealth and State Environment Plans

Angel CCS Geophysical and Geotechnical Surveys Commonwealth and State Environmental Plans		
Summary	Series of geophysical and geotechnical surveys to provide data to support the GHG activity program, inform design of the Angel CCS Project and support baselines studies to provide data on existing infrastructure and potential future activities.	
	State	Commonwealth
Permit Area	Vacant acreage	Vacant acreage, G-10-AP, WA-3-L, WA-4-L, WA-9-L, WA-52-L, WA-28-P, WA-1-L, G-9-AP, WA-208-P, Vacant acreage release area W22-4
Location	North West Shelf Province ~ 9 km north-east of Dampier, Western Australia	North West Shelf ~ 35 km to 140 km north of Dampier, Western Australia
Approx. water depth (m)	Up to 45 m	35-135 m
Timing	Expected to commence around: Q1 2025 Timing: Approximately 80 days over 5-year period of the EP.	Expected to commence around: Q1 2025 Timing: Approximately 100 days over 5-year period of the EP.
Operational areas / Exclusionary zones	Temporary 500 m safety exclusion zone will apply around the project vessels conducting survey activities in the State and Commonwealth Operational Areas to manage vessel movements.	

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Angel CCS Geophysical and Geotechnical Surveys Commonwealth and State Environmental Plans		
Vessels	Multi-purpose project vessel, supply vessel, jack-up barge supported by small tug or multi cat, smaller craft for nearshore, uncrewed surface vessels.	Multi-purpose project vessel, supply vessel, geotechnical drilling vessel, uncrewed surface vessels.

Feedback:
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6.1.26 Letter sent to Pilbara/Kimberley Recreational Marine Users − 8 July 2024

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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

08 July 2024

Dear Recreational Marine user

Woodside is planning to submit the **Angel Carbon Capture and Storage (CCS) Geophysical and Geotechnical Surveys Commonwealth and State Environment Plans.**

Overview
For the proposed Angel CCS Project in the North-West region of Western Australia, Woodside, as Operator of the Angel CCS Joint Venture, plans to undertake geophysical and geotechnical surveys to provide data to support the greenhouse gas (GHG) activity program. Data from the surveys, in Commonwealth and State waters, is intended to inform the design for the pipeline and umbilical routes, subsea structure foundation locations and planning for mobile offshore drilling unit anchoring or jack-up rig placement. The surveys will also support baseline studies to provide data on existing infrastructure and potential future activities.

The Angel CCS Project involves the development of a Carbon Dioxide (CO_2) gathering system, collecting CO_2 via new pipelines from emitters onshore or through imported options via ships. Collected CO_2 would be transported to a central compression facility prior to being transported offshore via a subsea pipeline and injected into the subsea geological formation.

Exclusionary / Cautionary Zones

- Temporary 500 m exclusion zone around vessels conducting survey activities to manage vessel movements.
- No restrictions to other vessels within the Operational Area apart from being advised to take care during the survey vessel 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 these environment plans, is determined by modelling a release of hydrocarbons from a vessel collision. A vessel collision and 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 hydrocarbon release does occur, the whole EMBA will not be affected.

Consultation information
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.

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Activity: Angel CCS Geophysical and Geotechnical Surveys Commonwealth and State Environment Plans

Angel CCS Geophysical and Geotechnical Surveys Commonwealth and State Environmental Plans		
Summary	Series of geophysical and geotechnical surveys to provide data to support the GHG activity program, inform design of the Angel CCS Project and support baselines studies to provide data on existing infrastructure and potential future activities.	
	State	**Commonwealth**
Permit Area	Vacant acreage	Vacant acreage, G-10-AP, WA-3-L, WA-4-L, WA-9-L, WA-52-L, WA-28-P, WA-1-L, G-9-AP, WA-208-P, Vacant acreage release area W22-4
Location	North West Shelf Province ~ 9 km north-east of Dampier, Western Australia	North West Shelf ~ 35 km to 140 km north of Dampier, Western Australia
Approx. water depth (m)	Up to 45 m	35-135 m
Timing	Expected to commence around: Q1 2025 Timing: Approximately 80 days over 5-year period of the EP.	Expected to commence around: Q1 2025 Timing: Approximately 100 days over 5-year period of the EP.
Operational areas / Exclusionary zones	Temporary 500 m safety exclusion zone will apply around the project vessels conducting survey activities in the State and Commonwealth Operational Areas to manage vessel movements.	
Vessels	Multi-purpose project vessel, supply vessel, jack-up barge supported by small tug or multi cat, smaller craft for nearshore, uncrewed surface vessels.	Multi-purpose project vessel, supply vessel, geotechnical drilling vessel, uncrewed surface vessels.

Feedback:

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Your feedback and our response will be included in our EPs. The Commonwealth EP 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).* The State EP will be submitted to Department of Energy, Mines, Industry Regulation and Safety (DEMIRS) pending review of the *Petroleum (Submerged Lands) (Environment) Regulations 2012 (WA).* Both support other regulatory processes associated with the planned activities (which may or may not be confidential)

NOPSEMA has published a brochure entitled *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. It can be accessed online through the QR code provided below.

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Regards

Woodside Energy Feedback

Woodside Energy
Mia Yellagonga
Karlak, 11 Mount Street
Perth WA 6000
Australia

T: 1800 442 977
E: feedback@woodside.com
www.woodside.com

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6.1.27 Email to Chevron − 8 July 2024

Woodside is planning to submit the Angel Carbon Capture and Storage (CCS) Geophysical and Geotechnical Surveys Commonwealth and State Environment Plans.

Overview
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Please also find attached GIS Shape files.

Activity: Angel CCS Geophysical and Geotechnical Surveys Commonwealth and State Environment Plans

Angel CCS Geophysical and Geotechnical Surveys Commonwealth and State Environmental Plans		
Summary	Series of geophysical and geotechnical surveys to provide data to support the GHG activity program, inform design of the Angel CCS Project and support baselines studies to provide data on existing infrastructure and potential future activities.	
	State	Commonwealth
Permit Area	Vacant acreage	Vacant acreage, G-10-AP, WA-3-L, WA-4-L, WA-9-L, WA-52-L, WA-28-P, WA-1-L, G-9-AP, WA-208-P, Vacant acreage release area W22-4

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Angel CCS Geophysical and Geotechnical Surveys Commonwealth and State Environmental Plans		
Location	North West Shelf Province ~ 9 km north-east of Dampier, Western Australia	North West Shelf ~ 35 km to 140 km north of Dampier, Western Australia
Approx. water depth (m)	Up to 45 m	35-135 m
Timing	Expected to commence around: Q1 2025 Timing: Approximately 80 days over 5-year period of the EP.	Expected to commence around: Q1 2025 Timing: Approximately 100 days over 5-year period of the EP.
Operational areas / Exclusionary zones	Temporary 500 m safety exclusion zone will apply around the project vessels conducting survey activities in the State and Commonwealth Operational Areas to manage vessel movements.	
Vessels	Multi-purpose project vessel, supply vessel, jack-up barge supported by small tug or multi cat, smaller craft for nearshore, uncrewed surface vessels.	Multi-purpose project vessel, supply vessel, geotechnical drilling vessel, uncrewed surface vessels.

Feedback:
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6.1.28 Email to City of Karratha, Karratha Community Liaison Group (CLG), Karratha & Districts Chamber of Commerce and Industry (KDCCI) − 9 July 2024

Woodside is planning to submit the Angel Carbon Capture and Storage (CCS) Geophysical and Geotechnical Surveys Commonwealth and State Environment Plans.

Overview
For the proposed Angel CCS Project in the North-West region of Western Australia, Woodside, as Operator of the Angel CCS Joint Venture, plans to undertake geophysical and geotechnical

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surveys to provide data to support the greenhouse gas (GHG) activity program. Data from the surveys, in Commonwealth and State waters, is intended to inform the design for the pipeline and umbilical routes, subsea structure foundation locations and planning for mobile offshore drilling unit anchoring or jack-up rig placement. The surveys will also support baseline studies to provide data on existing infrastructure and potential future activities.
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Activity: Angel CCS Geophysical and Geotechnical Surveys Commonwealth and State Environment Plans

Angel CCS Geophysical and Geotechnical Surveys Commonwealth and State Environmental Plans		
Summary	Series of geophysical and geotechnical surveys to provide data to support the GHG activity program, inform design of the Angel CCS Project and support baselines studies to provide data on existing infrastructure and potential future activities.	
	State	Commonwealth
Permit Area	Vacant acreage	Vacant acreage, G-10-AP, WA-3-L, WA-4-L, WA-9-L, WA-52-L, WA-28-P, WA-1-L, G-9-AP, WA-208-P, Vacant acreage release area W22-4
Location	North West Shelf Province ~ 9 km north-east of Dampier, Western Australia	North West Shelf ~ 35 km to 140 km north of Dampier, Western Australia
Approx. water depth (m)	Up to 45 m	35-135 m
Timing	Expected to commence around: Q1 2025 Timing: Approximately 80 days over 5-year period of the EP.	Expected to commence around: Q1 2025 Timing: Approximately 100 days over 5-year period of the EP.

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Angel CCS Geophysical and Geotechnical Surveys Commonwealth and State Environmental Plans		
Operational areas / Exclusionary zones	Temporary 500 m safety exclusion zone will apply around the project vessels conducting survey activities in the State and Commonwealth Operational Areas to manage vessel movements.	
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6.1.29 Email to Telstra − 8 July 2024

Woodside is planning to submit the Angel Carbon Capture and Storage (CCS) Geophysical and Geotechnical Surveys Commonwealth and State Environment Plans.

Overview
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Environment that may be affected (EMBA)

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hydrocarbons from a vessel collision. A vessel collision and release of this kind is highly unlikely to occur.
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Please also find attached a map of the submarine communication cables in the vicinity of the Operational Area which belong to Telstra.

Activity: Angel CCS Geophysical and Geotechnical Surveys Commonwealth and State Environment Plans

Angel CCS Geophysical and Geotechnical Surveys Commonwealth and State Environmental Plans		
Summary	Series of geophysical and geotechnical surveys to provide data to support the GHG activity program, inform design of the Angel CCS Project and support baselines studies to provide data on existing infrastructure and potential future activities.	
	State	Commonwealth
Permit Area	Vacant acreage	Vacant acreage, G-10-AP, WA-3-L, WA-4-L, WA-9-L, WA-52-L, WA-28-P, WA-1-L, G-9-AP, WA-208-P, Vacant acreage release area W22-4
Location	North West Shelf Province ~ 9 km north-east of Dampier, Western Australia	North West Shelf ~ 35 km to 140 km north of Dampier, Western Australia
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6.1.30 Email to Vocus − 15 July 2024

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Overview
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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: Angel CCS Geophysical and Geotechnical Surveys Commonwealth and State Environment Plans

Angel CCS Geophysical and Geotechnical Surveys Commonwealth and State Environmental Plans		
Summary	Series of geophysical and geotechnical surveys to provide data to support the GHG activity program, inform design of the Angel CCS Project and support baselines studies to provide data on existing infrastructure and potential future activities.	
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Permit Area	Vacant acreage	Vacant acreage, G-10-AP, WA-3-L, WA-4-L, WA-9-L, WA-52-L, WA-28-P, WA-1-L, G-9-AP, WA-208-P, Vacant acreage release area W22-4
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Feedback:
If you have feedback specific to the proposed activities described under the proposed EPs, we would welcome your feedback via email at Feedback@woodside.com or phone call at 1800 442 977, or via the feedback form on our website by 9 August 2024.
Your feedback and our response will be included in our EPs. The Commonwealth EP 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). The State EP will be submitted to Department of Energy, Mines, Industry Regulation and Safety (DEMIRS) pending review of the Petroleum (Submerged Lands) (Environment) Regulations 2012 (WA). Both support other regulatory processes associated with the planned activities (which may or may not be confidential)

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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.
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.

6.1.31 Email to University of Western Australia (UWA), Curtin University, Murdoch University, Western Australian Marine Science Institution (WAMSI), Commonwealth Scientific and Industrial Research Organisation (CSIRO), Australian Institute of Marine Science (AIMS) – 8 July 2024

Woodside is planning to submit the Angel Carbon Capture and Storage (CCS) Geophysical and Geotechnical Surveys Commonwealth and State Environment Plans.

Overview
For the proposed Angel CCS Project in the North-West region of Western Australia, Woodside, as Operator of the Angel CCS Joint Venture, plans to undertake geophysical and geotechnical surveys to provide data to support the greenhouse gas (GHG) activity program. Data from the surveys, in Commonwealth and State waters, is intended to inform the design for the pipeline and umbilical routes, subsea structure foundation locations and planning for mobile offshore drilling unit anchoring or jack-up rig placement. The surveys will also support baseline studies to provide data on existing infrastructure and potential future activities.
The Angel CCS Project involves the development of a Carbon Dioxide (CO2) gathering system, collecting CO2 via new pipelines from emitters onshore or through imported options via ships. Collected CO2 would be transported to a central compression facility prior to being transported offshore via a subsea pipeline and injected into the subsea geological formation.
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 these environment plans, is determined by modelling a release of hydrocarbons from a vessel collision. A vessel collision and 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 hydrocarbon release does occur, the whole EMBA will not be affected.
Consultation information
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: Angel CCS Geophysical and Geotechnical Surveys Commonwealth and State Environment Plans

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Angel CCS Geophysical and Geotechnical Surveys Commonwealth and State Environmental Plans		
Summary	Series of geophysical and geotechnical surveys to provide data to support the GHG activity program, inform design of the Angel CCS Project and support baselines studies to provide data on existing infrastructure and potential future activities.	
	State	Commonwealth
Permit Area	Vacant acreage	Vacant acreage, G-10-AP, WA-3-L, WA-4-L, WA-9-L, WA-52-L, WA-28-P, WA-1-L, G-9-AP, WA-208-P, Vacant acreage release area W22-4
Location	North West Shelf Province ~ 9 km north-east of Dampier, Western Australia	North West Shelf ~ 35 km to 140 km north of Dampier, Western Australia
Approx. water depth (m)	Up to 45 m	35-135 m
Timing	Expected to commence around: Q1 2025 Timing: Approximately 80 days over 5-year period of the EP.	Expected to commence around: Q1 2025 Timing: Approximately 100 days over 5-year period of the EP.
Operational areas / Exclusionary zones	Temporary 500 m safety exclusion zone will apply around the project vessels conducting survey activities in the State and Commonwealth Operational Areas to manage vessel movements.	
Vessels	Multi-purpose project vessel, supply vessel, jack-up barge supported by small tug or multi cat, smaller craft for nearshore, uncrewed surface vessels.	Multi-purpose project vessel, supply vessel, geotechnical drilling vessel, uncrewed surface vessels.

Feedback:
If you have feedback specific to the proposed activities described under the proposed EPs, we would welcome your feedback via email at Feedback@woodside.com or phone call at 1800 442 977, or via the feedback form on our website by 9 August 2024.
Your feedback and our response will be included in our EPs. The Commonwealth EP 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). The State EP will be submitted to Department of Energy, Mines, Industry Regulation and Safety (DEMIRS) pending review of the Petroleum (Submerged Lands) (Environment) Regulations 2012 (WA). Both 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.
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.

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6.1.32 Email to Murujuga Aboriginal Corporation – 9 July 2024

Hi [Individual 2]

Woodside is seeking feedback from Murujuga Aboriginal Corporation about its **Angel Carbon and Capture Storage (CCS) Geophysical and Geotechnical Surveys Environment Plan**.

The purpose of this email is to:

- inform you about Woodside's plans for the Angel CCS Project;
- invite you to submit feedback about the activity;
- provide an opportunity to discuss this activity with you and your members; and/or
- discuss further ways to consult and engage with your members.

What Woodside plans to do

Woodside is planning a carbon capture and storage (CCS) project in the North-West of Western Australia (WA).

CCS is the process of capturing carbon and storing it underground in geological structures.

The proposed Angel CCS Project would involve the development of a Carbon Dioxide (CO2) gathering system, collecting CO2 via new pipelines from emitters on shore or through imported options via ships. Collected CO2 would then be transported to a central compression facility prior to being transported offshore via subsea pipeline and injected into the subsea geological formation.

To assist with the planning associated with the proposed Angel CCS Project, Woodside is proposing to undertake a series of geophysical and geotechnical surveys in both Commonwealth and State waters. The proposed route for the surveys is from the state waters adjacent to the Karratha Gas Plant (KGP) to the Angel Field, a distance of approximately 140 km.

The surveys are anticipated to commence around Q1, 2025.

The attached Summary Information Sheet provides a high-level overview of the Angel CCS Environment Plan, including the Environment that May Be Affected (EMBA) map. The Consultation Information Sheet provides further details about the activity including an assessment of the potential impacts and risks to the environment, as well as mitigation and management measures.

What Woodside is seeking

We are keen to know, understand and gather your feedback about the following:

1. How could these activities impact your cultural values, interests, and activities?
2. Does protecting the environment do enough to protect your cultural values?
3. What are your concerns about the proposed activities and how can we resolve those issues?
4. What other elements should be considered in the Environment Plan?
5. Are there any other individuals, groups, or organisations you think we should talk to?

Your feedback, opinions and comments will be reflected in the EP and considered by the Commonwealth regulator, NOPSEMA, and WA State regulator, DEMIRS (see further information below).

Woodside would welcome the opportunity to speak with Elders, office holders and other interested parties about this activity. We are also keen to build on our relationship with Murujuga Aboriginal Corporation to make it easier for you to contribute to other EPs.

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Please let us know how you would like us to consult with you and if you require any specific support or information. This includes meeting with you face-to-face.

Feedback

If you have feedback specific to this EP, please email us at Feedback@woodside.com or call 1800 442 977 by **9 August 2024.**

It is important to know that we will continue to accept feedback from you for the life of the EP.

If you have information that you do not wish to be published, please let us know so we can inform NOPSEMA and DEMIRS.

Further information about NOPSEMA

Feedback can also be submitted directly to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) via email communications@nopsema.gov.au or telephone (08) 6188 8700.

NOPSEMA has published a brochure titled *Consultation on offshore petroleum environment plans – Information for the community* to help peak bodies, communities and the public understand the requirements and participate in the consultation for Commonwealth EPs.

Additional sources of information are located on NOPSEMA's website (Document Hub | NOPSEMA) and listed below:

- **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).

Further information about DEMIRS

EPs that relate to activities within WA's Waters will be submitted to the Department of Energy, Mines, Industry Regulation and Safety (DEMIRS) for acceptance in accordance with the *Petroleum (Submerged Lands) (Environment) Regulations 2012 (WA).*

*P*lease feel free to forward this email and the attached document to members of the Murujuga 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,

[Attachment: Summary Information Sheet and Consultation Information Sheet]

6.1.33 Email to Ngarluma Aboriginal Corporation – 12 July 2024

Dear [Individual 3]

This document is protected by copyright. No part of this document may be reproduced, adapted, transmitted, or stored in any form by any process (electronic or otherwise) without the specific written consent of Woodside. All rights are reserved.

Woodside is seeking feedback from Ngarluma Aboriginal Corporation (NAC) about its **Angel Carbon and Capture Storage (CCS) Geophysical and Geotechnical Surveys Environment Plan**.

The purpose of this email is to:

- inform you about Woodside's plans for the Angel CCS Project;
- invite you to submit feedback about the activity;
- provide an opportunity to discuss this activity with you and your members; and/or
- discuss further ways to consult and engage with your members.

What Woodside plans to do

Woodside is planning a carbon capture and storage (CCS) project in the North-West of Western Australia (WA).

CCS is the process of capturing carbon and storing it underground in geological structures.

The proposed Angel CCS Project would involve the development of a Carbon Dioxide (CO2) gathering system, collecting CO2 via new pipelines from emitters on shore or through imported options via ships. Collected CO2 would then be transported to a central compression facility prior to being transported offshore via subsea pipeline and injected into the subsea geological formation.

To assist with the planning associated with the proposed Angel CCS Project, Woodside is proposing to undertake a series of geophysical and geotechnical surveys in both Commonwealth and State waters. The proposed route for the surveys is from the state waters adjacent to the Karratha Gas Plant (KGP) to the Angel Field, a distance of approximately 140 km.

The surveys are anticipated to commence around Q1, 2025.

The attached Summary Information Sheet provides a high-level overview of the Angel CCS Environment Plan, including the Environment that May Be Affected (EMBA) map. The Consultation Information Sheet provides further details about the activity including an assessment of the potential impacts and risks to the environment, as well as mitigation and management measures.

What Woodside is seeking

We are keen to receive your feedback about the following:

1. How could these activities impact your cultural values, interests, and activities?
2. Does protecting the environment do enough to protect your cultural values?
3. What are your concerns about the proposed activities and how can we resolve those issues?
4. What other elements should be considered in the Environment Plan?
5. Are there any other individuals, groups, or organisations you think we should talk to?

Your feedback, opinions and comments will be reflected in the EP and considered by the Commonwealth regulator, NOPSEMA, and WA State regulator, DEMIRS (see further information below).

Woodside would welcome the opportunity to speak with Elders, office holders and other interested parties about this activity.

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We understand NAC was considering the establishment of a working group for EP consultations. Please let us know if this has been established or alternatively, let us know how you would like us to consult with you and if you require any specific support or information.

Feedback
If you have feedback specific to this EP, please email us at Feedback@woodside.com or call 1800 442 977 by **12 August 2024.**

It is important to know that we will continue to accept feedback from you for the life of the EP.

If you have information that you do not wish to be published, please let us know so we can inform NOPSEMA and DEMIRS.

Further information about NOPSEMA

Feedback can also be submitted directly to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) via email communications@nopsema.gov.au or telephone (08) 6188 8700.

NOPSEMA has published a brochure titled *Consultation on offshore petroleum environment plans – Information for the community* to help peak bodies, communities and the public understand the requirements and participate in the consultation for Commonwealth EPs.

Additional sources of information are located on NOPSEMA's website (Document Hub | NOPSEMA) and listed below:

- **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).

Further information about DEMIRS
EPs that relate to activities within WA's Waters will be submitted to the Department of Energy, Mines, Industry Regulation and Safety (DEMIRS) for acceptance in accordance with the *Petroleum (Submerged Lands) (Environment) Regulations 2012 (WA).*

Please feel free to forward this email and the attached document to the NAC Board, it's members and any other people and organisations who may be interested.

I look forward to hearing from you.

Kind regards

[Attachment: Summary Information Sheet and Consultation Information Sheet]

6.1.34 Email to Robe River Kuruma Aboriginal Corporation – 8 July 2024

Dear [Individual 4] (& [Individual 5]),

We have another EP that is relevant to RRKAC that I wanted to send through. I have spoken to the team, and they are going to get back to me this week on the Sea mapping Project. It looks like

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there are a few groups interested so we are looking at options and how best we can support everyone. I'll let you know the outcome from these discussions later in the week.

Woodside is seeking feedback from **Robe River Kurama Aboriginal Corporation** about its **Angel Carbon and Capture Storage (CCS) Geophysical and Geotechnical Surveys Environment Plan**.

The purpose of this email is to:

- inform you about Woodside's plans for the Angel CCS Project;
- invite you to submit feedback about the activity;
- provide an opportunity to discuss this activity with you and your members; and/or
- discuss further ways to consult and engage with your members.

What Woodside plans to do

Woodside is planning a carbon capture and storage (CCS) project in the North-West of Western Australia (WA).

CCS is the process of capturing carbon and storing it underground in geological structures.

The proposed Angel CCS Project would involve the development of a Carbon Dioxide (CO2) gathering system, collecting CO2 via new pipelines from emitters on shore or through imported options via ships. Collected CO2 would then be transported to a central compression facility prior to being transported offshore via subsea pipeline and injected into the subsea geological formation.

To assist with the planning associated with the proposed Angel CCS Project, Woodside is proposing to undertake a series of geophysical and geotechnical surveys in both Commonwealth and State waters. The proposed route for the surveys is from the state waters adjacent to the Karratha Gas Plant (KGP) to the Angel Field, a distance of approximately 140 km.

The surveys are anticipated to commence around Q1, 2025.

The attached Summary Information Sheet provides a high-level overview of the Angel CCS Environment Plan, including the Environment that May Be Affected (EMBA) map. The Consultation Information Sheet provides further details about the activity including an assessment of the potential impacts and risks to the environment, as well as mitigation and management measures.

What Woodside is seeking

We are keen to know, understand and gather your feedback about the following:

1. How could these activities impact your cultural values, interests, and activities?
2. Does protecting the environment do enough to protect your cultural values?
3. What are your concerns about the proposed activities and how can we resolve those issues?
4. What other elements should be considered in the Environment Plan?
5. Are there any other individuals, groups, or organisations you think we should talk to?

Your feedback, opinions and comments will be reflected in the EP and considered by the Commonwealth regulator, NOPSEMA, and WA State regulator, DEMIRS (see further information below).

Woodside would welcome the opportunity to speak with Elders, office holders and other interested parties about this activity. We are also keen to build on our relationship with **Robe River Kurama Aboriginal Corporation** to make it easier for you to contribute to other EPs.

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Please let us know how you would like us to consult with you and if you require any specific support or information. This includes meeting with you face-to-face.

Feedback

If you have feedback specific to this EP, please email us at Feedback@woodside.com or call 1800 442 977 by **9 August 2024.**

It is important to know that we will continue to accept feedback from you for the life of the EP.

If you have information that you do not wish to be published, please let us know so we can inform NOPSEMA and DEMIRS.

Further information about NOPSEMA

Feedback can also be submitted directly to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) via email communications@nopsema.gov.au or telephone (08) 6188 8700.

NOPSEMA has published a brochure titled *Consultation on offshore petroleum environment plans – Information for the community* to help peak bodies, communities and the public understand the requirements and participate in the consultation for Commonwealth EPs.

Additional sources of information are located on NOPSEMA's website (Document Hub | NOPSEMA) and listed below:

- **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).

Further information about DEMIRS

EPs that relate to activities within WA's Waters will be submitted to the Department of Energy, Mines, Industry Regulation and Safety (DEMIRS) for acceptance in accordance with the *Petroleum (Submerged Lands) (Environment) Regulations 2012 (WA).*

*P*lease feel free to forward this email and the attached document to members of the **Robe River Kurama 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

[Attachment: Summary Information Sheet and Consultation Information Sheet]

6.1.35 Email to Wirrawandi Aboriginal Corporation – 8 July 2024

Dear [Individual 6],

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Woodside is seeking feedback from **Wirrawandi Aboriginal Corporation** about its **Angel Carbon and Capture Storage (CCS) Geophysical and Geotechnical Surveys Environment Plan**.

The purpose of this email is to:

- inform you about Woodside's plans for the Angel CCS Project;
- invite you to submit feedback about the activity;
- provide an opportunity to discuss this activity with you and your members; and/or
- discuss further ways to consult and engage with your members.

What Woodside plans to do

Woodside is planning a carbon capture and storage (CCS) project in the North-West of Western Australia (WA).

CCS is the process of capturing carbon and storing it underground in geological structures.

The proposed Angel CCS Project would involve the development of a Carbon Dioxide (CO2) gathering system, collecting CO2 via new pipelines from emitters on shore or through imported options via ships. Collected CO2 would then be transported to a central compression facility prior to being transported offshore via subsea pipeline and injected into the subsea geological formation.

To assist with the planning associated with the proposed Angel CCS Project, Woodside is proposing to undertake a series of geophysical and geotechnical surveys in both Commonwealth and State waters. The proposed route for the surveys is from the state waters adjacent to the Karratha Gas Plant (KGP) to the Angel Field, a distance of approximately 140 km.

The surveys are anticipated to commence around Q1, 2025.

The attached Summary Information Sheet provides a high-level overview of the Angel CCS Environment Plan, including the Environment that May Be Affected (EMBA) map. The Consultation Information Sheet provides further details about the activity including an assessment of the potential impacts and risks to the environment, as well as mitigation and management measures.

What Woodside is seeking

We are keen to know, understand and gather your feedback about the following:

2. How could these activities impact your cultural values, interests, and activities?
3. Does protecting the environment do enough to protect your cultural values?
4. What are your concerns about the proposed activities and how can we resolve those issues?
5. What other elements should be considered in the Environment Plan?
6. Are there any other individuals, groups, or organisations you think we should talk to?

Your feedback, opinions and comments will be reflected in the EP and considered by the Commonwealth regulator, NOPSEMA, and WA State regulator, DEMIRS (see further information below).

Woodside would welcome the opportunity to speak with Elders, office holders and other interested parties about this activity. We are also keen to build on our relationship with **Wirrawandi Aboriginal Corporation** to make it easier for you to contribute to other EPs.

Please let us know how you would like us to consult with you and if you require any specific support or information. This includes meeting with you face-to-face.

Feedback

This document is protected by copyright. No part of this document may be reproduced, adapted, transmitted, or stored in any form by any process (electronic or otherwise) without the specific written consent of Woodside. All rights are reserved.

If you have feedback specific to this EP, please email us at Feedback@woodside.com or call 1800 442 977 by **9 August 2024.**

It is important to know that we will continue to accept feedback from you for the life of the EP.

If you have information that you do not wish to be published, please let us know so we can inform NOPSEMA and DEMIRS.

Further information about NOPSEMA

Feedback can also be submitted directly to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) via email communications@nopsema.gov.au or telephone (08) 6188 8700.

NOPSEMA has published a brochure titled *Consultation on offshore petroleum environment plans – Information for the community* to help peak bodies, communities and the public understand the requirements and participate in the consultation for Commonwealth EPs.

Additional sources of information are located on NOPSEMA's website (Document Hub | NOPSEMA) and listed below:

- **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).

Further information about DEMIRS
EPs that relate to activities within WA's Waters will be submitted to the Department of Energy, Mines, Industry Regulation and Safety (DEMIRS) for acceptance in accordance with the *Petroleum (Submerged Lands) (Environment) Regulations 2012 (WA).*

*P*lease feel free to forward this email and the attached document to members of the **Wirrawandi 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

[Attachment: Summary Information Sheet and Consultation Information Sheet]

6.1.36 Email to Yindjibarndi Aboriginal Corporation – 8 July 2024

Hi [Individual 7],

As the delegated cultural representative for Yindjibarndi Aboriginal Corporation please see below information relating to one of Woodsides Activities. Again, please let me know if the YAC members and/or Traditional Owners would like further information or an opportunity to provide feedback.

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Woodside is seeking feedback from **Yindjibarndi Aboriginal Corporation (YAC)** about its **Angel Carbon and Capture Storage (CCS) Geophysical and Geotechnical Surveys Environment Plan**.

The purpose of this email is to:

- inform you about Woodside's plans for the Angel CCS Project;
- invite you to submit feedback about the activity;
- provide an opportunity to discuss this activity with you and your members; and/or
- discuss further ways to consult and engage with your members.

What Woodside plans to do

Woodside is planning a carbon capture and storage (CCS) project in the North-West of Western Australia (WA).

CCS is the process of capturing carbon and storing it underground in geological structures.

The proposed Angel CCS Project would involve the development of a Carbon Dioxide (CO2) gathering system, collecting CO2 via new pipelines from emitters on shore or through imported options via ships. Collected CO2 would then be transported to a central compression facility prior to being transported offshore via subsea pipeline and injected into the subsea geological formation.

To assist with the planning associated with the proposed Angel CCS Project, Woodside is proposing to undertake a series of geophysical and geotechnical surveys in both Commonwealth and State waters. The proposed route for the surveys is from the state waters adjacent to the Karratha Gas Plant (KGP) to the Angel Field, a distance of approximately 140 km.

The surveys are anticipated to commence around Q1, 2025.

The attached Summary Information Sheet provides a high-level overview of the Angel CCS Environment Plan, including the Environment that May Be Affected (EMBA) map. The Consultation Information Sheet provides further details about the activity including an assessment of the potential impacts and risks to the environment, as well as mitigation and management measures.

What Woodside is seeking

We are keen to know, understand and gather your feedback about the following:

3. How could these activities impact your cultural values, interests, and activities?
4. Does protecting the environment do enough to protect your cultural values?
5. What are your concerns about the proposed activities and how can we resolve those issues?
6. What other elements should be considered in the Environment Plan?
7. Are there any other individuals, groups, or organisations you think we should talk to?

Your feedback, opinions and comments will be reflected in the EP and considered by the Commonwealth regulator, NOPSEMA, and WA State regulator, DEMIRS (see further information below).

Woodside would welcome the opportunity to speak with Elders, office holders and other interested parties about this activity. We are also keen to build on our relationship with **Yindjibarndi Aboriginal Corporation (YAC)** to make it easier for you to contribute to other EPs.

Please let us know how you would like us to consult with you and if you require any specific support or information. This includes meeting with you face-to-face.

Feedback

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If you have feedback specific to this EP, please email us at Feedback@woodside.com or call 1800 442 977 by **9 August 2024.**

It is important to know that we will continue to accept feedback from you for the life of the EP.

If you have information that you do not wish to be published, please let us know so we can inform NOPSEMA and DEMIRS.

Further information about NOPSEMA

Feedback can also be submitted directly to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) via email communications@nopsema.gov.au or telephone (08) 6188 8700.

NOPSEMA has published a brochure titled *Consultation on offshore petroleum environment plans – Information for the community* to help peak bodies, communities and the public understand the requirements and participate in the consultation for Commonwealth EPs.

Additional sources of information are located on NOPSEMA's website (Document Hub | NOPSEMA) and listed below:

- **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).

Further information about DEMIRS
EPs that relate to activities within WA's Waters will be submitted to the Department of Energy, Mines, Industry Regulation and Safety (DEMIRS) for acceptance in accordance with the *Petroleum (Submerged Lands) (Environment) Regulations 2012 (WA).*

*P*lease feel free to forward this email and the attached document to members of the **Yindjibarndi Aboriginal Corporation (YAC)** 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

[Attachment: Summary Information Sheet and Consultation Information Sheet]

6.1.37 Email to Kimberley Land Council – 9 July 2024

Hi [Individual 8]

I hope all is well.

Woodside is seeking feedback from Kimberley Land Council about its **Angel Carbon and Capture Storage (CCS) Geophysical and Geotechnical Surveys Environment Plan**.

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The purpose of this email is to:

- inform you about Woodside's plans for the Angel CCS Project;
- invite you to submit feedback about the activity;
- provide an opportunity to discuss this activity with you and your members; and/or
- discuss further ways to consult and engage with your members.

What Woodside plans to do

Woodside is planning a carbon capture and storage (CCS) project in the North-West of Western Australia (WA).

CCS is the process of capturing carbon and storing it underground in geological structures.

The proposed Angel CCS Project would involve the development of a Carbon Dioxide (CO2) gathering system, collecting CO2 via new pipelines from emitters on shore or through imported options via ships. Collected CO2 would then be transported to a central compression facility prior to being transported offshore via subsea pipeline and injected into the subsea geological formation.

To assist with the planning associated with the proposed Angel CCS Project, Woodside is proposing to undertake a series of geophysical and geotechnical surveys in both Commonwealth and State waters. The proposed route for the surveys is from the state waters adjacent to the Karratha Gas Plant (KGP) to the Angel Field, a distance of approximately 140 km.

The surveys are anticipated to commence around Q1, 2025.

The attached Summary Information Sheet provides a high-level overview of the Angel CCS Environment Plan, including the Environment that May Be Affected (EMBA) map. The Consultation Information Sheet provides further details about the activity including an assessment of the potential impacts and risks to the environment, as well as mitigation and management measures.

What Woodside is seeking

We are keen to know, understand and gather your feedback about the following:

2. How could these activities impact your cultural values, interests, and activities?
3. Does protecting the environment do enough to protect your cultural values?
4. What are your concerns about the proposed activities and how can we resolve those issues?
5. What other elements should be considered in the Environment Plan?
6. Are there any other individuals, groups, or organisations you think we should talk to?

Your feedback, opinions and comments will be reflected in the EP and considered by the Commonwealth regulator, NOPSEMA, and WA State regulator, DEMIRS (see further information below).
Woodside would welcome the opportunity to speak with Kimberley Land Council, office holders and other interested parties about this activity.

Please let us know how you would like us to consult with you and if you require any specific support or information. This includes meeting with you face-to-face.

Feedback

If you have feedback specific to this EP, please email us at Feedback@woodside.com or call 1800 442 977 by **9 August 2024.**

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It is important to know that we will continue to accept feedback from you for the life of the EP.

If you have information that you do not wish to be published, please let us know so we can inform NOPSEMA and DEMIRS.

Further information about NOPSEMA

Feedback can also be submitted directly to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) via email communications@nopsema.gov.au or telephone (08) 6188 8700.

NOPSEMA has published a brochure titled *Consultation on offshore petroleum environment plans – Information for the community* to help peak bodies, communities and the public understand the requirements and participate in the consultation for Commonwealth EPs.

Additional sources of information are located on NOPSEMA's website (Document Hub | NOPSEMA) and listed below:

- **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).

Further information about DEMIRS
EPs that relate to activities within WA's Waters will be submitted to the Department of Energy, Mines, Industry Regulation and Safety (DEMIRS) for acceptance in accordance with the *Petroleum (Submerged Lands) (Environment) Regulations 2012 (WA).*

*P*lease feel free to forward this email and the attached document to members of the Kimberley Land Council, 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,

[Attachment: Summary Information Sheet and Consultation Information Sheet]

6.1.38 Email to Yamatji Marlpa Aboriginal Corporation – 8 July 2024

Hi [Individual 9],

Woodside is seeking feedback from **Yamatji Marlpa Aboriginal Corporation (YMAC)** about its **Angel Carbon and Capture Storage (CCS) Geophysical and Geotechnical Surveys Environment Plan**.

The purpose of this email is to:

- inform you about Woodside's plans for the Angel CCS Project;
- invite you to submit feedback about the activity;
- provide an opportunity to discuss this activity with you and your members; and/or
- discuss further ways to consult and engage with your members.

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What Woodside plans to do

Woodside is planning a carbon capture and storage (CCS) project in the North-West of Western Australia (WA).

CCS is the process of capturing carbon and storing it underground in geological structures.

The proposed Angel CCS Project would involve the development of a Carbon Dioxide (CO2) gathering system, collecting CO2 via new pipelines from emitters on shore or through imported options via ships. Collected CO2 would then be transported to a central compression facility prior to being transported offshore via subsea pipeline and injected into the subsea geological formation.

To assist with the planning associated with the proposed Angel CCS Project, Woodside is proposing to undertake a series of geophysical and geotechnical surveys in both Commonwealth and State waters. The proposed route for the surveys is from the state waters adjacent to the Karratha Gas Plant (KGP) to the Angel Field, a distance of approximately 140 km.

The surveys are anticipated to commence around Q1, 2025.

The attached Summary Information Sheet provides a high-level overview of the Angel CCS Environment Plan, including the Environment that May Be Affected (EMBA) map. The Consultation Information Sheet provides further details about the activity including an assessment of the potential impacts and risks to the environment, as well as mitigation and management measures.

What Woodside is seeking

We are keen to know, understand and gather your feedback about the following:

4. How could these activities impact your cultural values, interests, and activities?
5. Does protecting the environment do enough to protect your cultural values?
6. What are your concerns about the proposed activities and how can we resolve those issues?
7. What other elements should be considered in the Environment Plan?
8. Are there any other individuals, groups, or organisations you think we should talk to?

Your feedback, opinions and comments will be reflected in the EP and considered by the Commonwealth regulator, NOPSEMA, and WA State regulator, DEMIRS (see further information below).

Woodside would welcome the opportunity to speak with Elders, office holders and other interested parties about this activity. We are also keen to build on our relationship with **Yamatji Marlpa Aboriginal Corporation (YMAC)** to make it easier for you to contribute to other EPs.

Please let us know how you would like us to consult with you and if you require any specific support or information. This includes meeting with you face-to-face.

Feedback

If you have feedback specific to this EP, please email us at Feedback@woodside.com or call 1800 442 977 by **9 August 2024.**

It is important to know that we will continue to accept feedback from you for the life of the EP.

If you have information that you do not wish to be published, please let us know so we can inform NOPSEMA and DEMIRS.

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Further information about NOPSEMA

Feedback can also be submitted directly to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) via email communications@nopsema.gov.au or telephone (08) 6188 8700.

NOPSEMA has published a brochure titled *Consultation on offshore petroleum environment plans – Information for the community* to help peak bodies, communities and the public understand the requirements and participate in the consultation for Commonwealth EPs.

Additional sources of information are located on NOPSEMA's website (Document Hub | NOPSEMA) and listed below:

- **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).

Further information about DEMIRS
EPs that relate to activities within WA's Waters will be submitted to the Department of Energy, Mines, Industry Regulation and Safety (DEMIRS) for acceptance in accordance with the *Petroleum (Submerged Lands) (Environment) Regulations 2012 (WA).*

*P*lease feel free to forward this email and the attached document to members of the **Yamatji Marlpa Aboriginal Corporation (YMAC)** Traditional Owners and other people and organisations who may be interested within the Pilbara (Karratha Area).

I look forward to your response and please feel free to call and send through guidance on next steps.

Kind regards

[Attachment: Summary Information Sheet and Consultation Information Sheet]

6.1.39 Email to Ngarluma Yindjibarndi Foundation Ltd – 8 July 2024

Hi [Individual 7],

Please see below another EP that may be of relevance to the Ngarluma and Yindjibarndi Traditional Owners. Hopefully we can work through the Consultation Agreement discussions soon. In the meantime, please let us know if the community would like more information or an opportunity to provide feedback on the Angel CCS EP.

Woodside is seeking feedback from **Ngarluma Yindjibarndi Foundation Ltd (NYFL)** about its **Angel Carbon and Capture Storage (CCS) Geophysical and Geotechnical Surveys Environment Plan**.

The purpose of this email is to:

- inform you about Woodside's plans for the Angel CCS Project;
- invite you to submit feedback about the activity;
- provide an opportunity to discuss this activity with you and your members; and/or
- discuss further ways to consult and engage with your members.

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What Woodside plans to do

Woodside is planning a carbon capture and storage (CCS) project in the North-West of Western Australia (WA).

CCS is the process of capturing carbon and storing it underground in geological structures.

The proposed Angel CCS Project would involve the development of a Carbon Dioxide (CO2) gathering system, collecting CO2 via new pipelines from emitters on shore or through imported options via ships. Collected CO2 would then be transported to a central compression facility prior to being transported offshore via subsea pipeline and injected into the subsea geological formation.

To assist with the planning associated with the proposed Angel CCS Project, Woodside is proposing to undertake a series of geophysical and geotechnical surveys in both Commonwealth and State waters. The proposed route for the surveys is from the state waters adjacent to the Karratha Gas Plant (KGP) to the Angel Field, a distance of approximately 140 km.

The surveys are anticipated to commence around Q1, 2025.

The attached Summary Information Sheet provides a high-level overview of the Angel CCS Environment Plan, including the Environment that May Be Affected (EMBA) map. The Consultation Information Sheet provides further details about the activity including an assessment of the potential impacts and risks to the environment, as well as mitigation and management measures.

What Woodside is seeking

We are keen to know, understand and gather your feedback about the following:

5. How could these activities impact your cultural values, interests, and activities?
6. Does protecting the environment do enough to protect your cultural values?
7. What are your concerns about the proposed activities and how can we resolve those issues?
8. What other elements should be considered in the Environment Plan?
9. Are there any other individuals, groups, or organisations you think we should talk to?

Your feedback, opinions and comments will be reflected in the EP and considered by the Commonwealth regulator, NOPSEMA, and WA State regulator, DEMIRS (see further information below).

Woodside would welcome the opportunity to speak with Elders, office holders and other interested parties about this activity. We are also keen to build on our relationship with **Ngarluma Yindjibarndi Foundation Ltd (NYFL)** to make it easier for you to contribute to other EPs. Please let us know how you would like us to consult with you and if you require any specific support or information. This includes meeting with you face-to-face.

Feedback

If you have feedback specific to this EP, please email us at Feedback@woodside.com or call 1800 442 977 by **9 August 2024.**

It is important to know that we will continue to accept feedback from you for the life of the EP.

If you have information that you do not wish to be published, please let us know so we can inform NOPSEMA and DEMIRS.

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Further information about NOPSEMA

Feedback can also be submitted directly to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) via email communications@nopsema.gov.au or telephone (08) 6188 8700.

NOPSEMA has published a brochure titled *Consultation on offshore petroleum environment plans – Information for the community* to help peak bodies, communities and the public understand the requirements and participate in the consultation for Commonwealth EPs.

Additional sources of information are located on NOPSEMA's website (Document Hub | NOPSEMA) and listed below:

- **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).

Further information about DEMIRS
EPs that relate to activities within WA's Waters will be submitted to the Department of Energy, Mines, Industry Regulation and Safety (DEMIRS) for acceptance in accordance with the *Petroleum (Submerged Lands) (Environment) Regulations 2012 (WA).*

*P*lease feel free to forward this email and the attached document to members of the **Ngarluma Yindjibarndi Foundation Ltd (NYFL)** 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

[Attachment: Summary Information Sheet and Consultation Information Sheet]

6.1.40 Email to Save Our Songlines – 8 July 2024

Dear [Individual 1],

Woodside is seeking feedback from you and Save our Songlines about its **Angel Carbon and Capture Storage (CCS) Geophysical and Geotechnical Surveys Environment Plan**.

The purpose of this email is to:
- inform you about Woodside's plans for the Angel CCS Project;
- invite you to submit feedback about the activity;
- provide an opportunity to discuss this activity with you; and/or
- discuss further ways to consult and engage with yourself and Save our Songlines.

What Woodside plans to do
Woodside is planning a carbon capture and storage (CCS) project in the North-West of Western Australia (WA).

CCS is the process of capturing carbon and storing it underground in geological structures.

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The proposed Angel CCS Project would involve the development of a Carbon Dioxide (CO2) gathering system, collecting CO2 via new pipelines from emitters on shore or through imported options via ships. Collected CO2 would then be transported to a central compression facility prior to being transported offshore via subsea pipeline and injected into the subsea geological formation.

To assist with the planning associated with the proposed Angel CCS Project, Woodside is proposing to undertake a series of geophysical and geotechnical surveys in both Commonwealth and State waters. The proposed route for the surveys is from the state waters adjacent to the Karratha Gas Plant (KGP) to the Angel Field, a distance of approximately 140 km.

The surveys are anticipated to commence around Q1, 2025.

The attached Summary Information Sheet provides a high-level overview of the Angel CCS Environment Plan, including the Environment that May Be Affected (EMBA) map. The Consultation Information Sheet provides further details about the activity including an assessment of the potential impacts and risks to the environment, as well as mitigation and management measures.

What Woodside is seeking

We are keen to know, understand and gather your feedback about the following:

1. How could these activities impact your cultural values, interests, and activities?
2. Does protecting the environment do enough to protect your cultural values?
3. What are your concerns about the proposed activities and how can we resolve those issues?
4. What other elements should be considered in the Environment Plan?
5. Are there any other individuals, groups, or organisations you think we should talk to?

Your feedback, opinions and comments will be reflected in the EP and considered by the Commonwealth regulator, NOPSEMA, and WA State regulator, DEMIRS (see further information below).

Woodside would welcome the opportunity to speak with Elders, office holders and other interested parties about this activity. We are also keen to build on our relationship with you and Save our Songlines to make it easier for you to contribute to other EPs.

Please let us know how you would like us to consult with you and if you require any specific support or information. This includes meeting with you face-to-face.

Feedback

If you have feedback specific to this EP, please provide this feedback to Feedback@woodside.com or call 1800 442 977 by **9 August 2024.**

It is important to know that we will continue to accept feedback from you for the life of the EP.

If you have information that you do not wish to be published, please let us know so we can inform NOPSEMA and DEMIRS.

Further information about NOPSEMA

Feedback can also be submitted directly to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) via email communications@nopsema.gov.au or telephone (08) 6188 8700.

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NOPSEMA has published a brochure titled *Consultation on offshore petroleum environment plans – Information for the community* to help peak bodies, communities and the public understand the requirements and participate in the consultation for Commonwealth EPs.

Additional sources of information are located on NOPSEMA's website (Document Hub | NOPSEMA) and listed below:

- **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).

Further information about DEMIRS

EPs that relate to activities within WA's Waters will be submitted to the Department of Energy, Mines, Industry Regulation and Safety (DEMIRS) for acceptance in accordance with the *Petroleum (Submerged Lands) (Environment) Regulations 2012 (WA).*

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,

Woodside Feedback

[Attachment: Summary Information Sheet]

6.2 Follow-up consultation

6.2.1 Email to Australian Border Force (ABF), Australian Conservation Foundation (ACF), Australian Energy Producers (AEP), Australian Fishery Management Authority (AFMA), Australian Maritime Safety Authority (AMSA) – Marine Pollution, Australian Maritime Safety Authority (AMSA) – Nav Safety, Australian Marine Conservation Society (AMCS), Australasian Centre for Corporate Responsibility (ACCR), Bounty Oil and Gas, Chevron, City of Karratha, Coastal Oil and Gas/Fox Resources, Commonwealth Fisheries Association (CFA), Conservation Council of Western Australia (CCWA), CSIRO, Curtin University, Department of Agriculture, Fisheries and Forestry (DAFF) – Biosecurity, Department of Agriculture, Fisheries and Forestry (DAFF) – Fisheries, Department of Biodiversity, Conservations and Attractions (DBCA), Department of Climate Change, Energy, the Environment and Water (DCCEEW), Department of Defence (DoD), Department of Mines,

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Petroleum and Exploration (DMPE, formerly DEMIRS), Department of Industry, Sciences and Resources (DISR), Department of Planning, Lands and Heritage (DPLH), Department of Primary Industries and Regional Development (DPIRD), Director of National Parks (DNP), Doctors for the Environment (DEA), Exxon Mobil, Finder Energy, Greenpeace Australia Pacific (GAP), Jadestone Energy, JX Nippon, Karratha & Districts Chamber of Commerce and Industry, Karratha Community Liaison Group, KATO Energy KUFPEC Australia, Longreach Capital Investments/Beagle No. 1, Market Force, Marine Tourism WA, Murdoch University, North West Slope Trawl Fishery, Pilbara Ports, Pilbara/Kimberley Recreational Marine Users, Recfishwest, Santos, Skye Napoleon, Telstra, University Western Australia (UWA), Vocus, Vermillion Oil & Gas, WA Game Fishing Association, Western Australian Museum (WAM), Western Australian Marine Science Institution (WAMSI) − 23 July 2024

Woodside previously consulted you on its plans to submit the Angel CCS Geophysical and Geotechnical Surveys Environment Plans (EPs).

For the proposed Angel CCS Project in the North-West region of Western Australia, Woodside, as Operator of the Angel CCS Joint Venture, plans to undertake geophysical and geotechnical surveys to provide data to support the greenhouse gas (GHG) activity program. Data from the surveys, in Commonwealth and State waters, is intended to inform the design for the pipeline and umbilical routes, subsea structure foundation locations and planning for mobile offshore drilling unit anchoring or jack-up rig placement. The surveys will also support baseline studies to provide data on existing infrastructure and potential future activities.

The Angel CCS Project involves the development of a Carbon Dioxide (CO2) gathering system, collecting CO2 via new pipelines from emitters onshore or through imported options via ships. Collected CO2 would be transported to a central compression facility prior to being transported offshore via a subsea pipeline and injected into the subsea geological formation.

Information on the EP is provided in the email below and in the Consultation Information Sheet, which is available on Woodside's website.

If you have feedback specific to the activities and the proposed EP, Woodside welcomes it at Feedback@woodside.com or 1800 442 977 by 9 August 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.

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6.2.2 Letter sent to Pilbara/Kimberley Recreational Marine Users – 25 July 2024

Please direct all responses/queries to:
Woodside Energy Feedback
T: 1800 442 977
E: feedback@woodside.com

25 July 2024

1

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 Angel CCS Geophysical and Geotechnical Surveys Environment Plans (EPs).

For the proposed Angel CCS Project in the North-West region of Western Australia, Woodside, as Operator of the Angel CCS Joint Venture, plans to undertake geophysical and geotechnical surveys to provide data to support the greenhouse gas (GHG) activity program. Data from the surveys, in Commonwealth and State waters, is intended to inform the design for the pipeline and umbilical routes, subsea structure foundation locations and planning for mobile offshore drilling unit anchoring or jack-up rig placement. The surveys will also support baseline studies to provide data on existing infrastructure and potential future activities.

The Angel CCS Project involves the development of a Carbon Dioxide (CO_2) gathering system, collecting CO_2 via new pipelines from emitters onshore or through imported options via ships. Collected CO_2 would be transported to a central compression facility prior to being transported offshore via a subsea pipeline and injected into the subsea geological formation.

Further information on the proposed activities is provided in the Consultation Information Sheet, which is available via the QR code below:

If you have feedback specific to the activities and the proposed EP, Woodside welcomes it at Feedback@woodside.com or 1800 442 977 by **9 August 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 Feedback

Woodside Energy
Mia Yellagonga
Karlak, 11 Mount Street
Perth WA 6000
Australia

T: 1800 442 977
E: feedback@woodside.com
www.woodside.com

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6.3 2025 Consultation update

6.3.1 2025 Consultation Information Sheet

Woodside Energy

Consultation Information Sheet
October 2025

Angel CCS Geophysical and Geotechnical Surveys Environment Plan

North West Shelf, North-West Australia

Activity Overview

The Angel Carbon Capture and Storage (CCS) Geophysical and Geotechnical (GPGT) Surveys EP covers:

- Geophysical and geotechnical surveys involving seafloor sampling and scanning.
- Project vessel operations.

The Angel CCS GPGT Surveys will provide data for aspects of the Angel CCS Project, an opportunity identified In the North-West region of Western Australia (WA).

Data from the surveys is intended to inform the design of pipeline and umbilical routes, subsea structure foundation locations and planning for mobile offshore drilling unit (MODU) anchoring or jack-up rig placement.

Location

- In Commonwealth waters between approximately 35km and 140km to Dampier (**Figure 1**).

Water depth

- ~35m - 125m deep.

Timing and duration

- Survey activities are planned to be conducted as multiple campaigns over the five-year approval period of the EP with activities estimated to start In Q1 2027.
- Duration is estimated to take ~100 days.
- Timing and duration is subject to change due to factors including approvals, weather, project vessel availability, and other unforeseen circumstances.

Joint Venture

- Operator – Woodside Energy Ltd.
- Joint Venture Participants – Woodside Energy Ltd, BP Developments Australia Pty Ltd, Japan Australia LNG (MIMI) Pty Ltd, Shell Australia Pty Ltd, and Chevron Australia Pty Ltd.

We would like to hear from you

We would like relevant persons whose functions, interests or activities may be affected by the proposed activity to have the opportunity to provide feedback on our proposed activity, in accordance with the intended outcome of consultation.

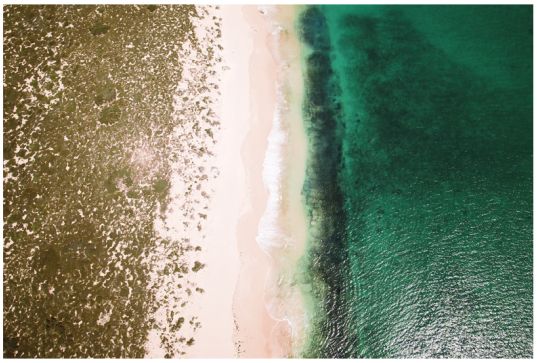
Woodside must consult relevant persons when developing an Environment Plan (EP) to confirm current measures or identify additional measures, which could lessen or avoid potential adverse effects of the proposed activity on the environment.

Woodside aims to ensure the proposed activity is consistent with the principles of ecologically sustainable development, by which the environmental impacts and risks of the activity are reduced to as low as reasonably practicable (ALARP) and of an acceptable level.

If you are an individual, organisation or community group and believe your functions, interests or activities may be impacted by the activities under this EP, we would like your feedback by **31 October 2025**.

consultation@feedback.woodside.com
Toll free: 1800 442 977
woodside.com

A summary of the activity and location is found in **Table 1** and **2**.



Woodside Energy recognises Aboriginal and Torres Strait Islander peoples as Australia's First Peoples. We acknowledge their connection to land, waters and the environment and pay our respects to ancestors and Elders, past and present. We extend this recognition and respect to First Nations peoples and communities around the world.

1 Angel CCS Geophysical and Geotechnical Surveys EP | October 2025

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Activity Location

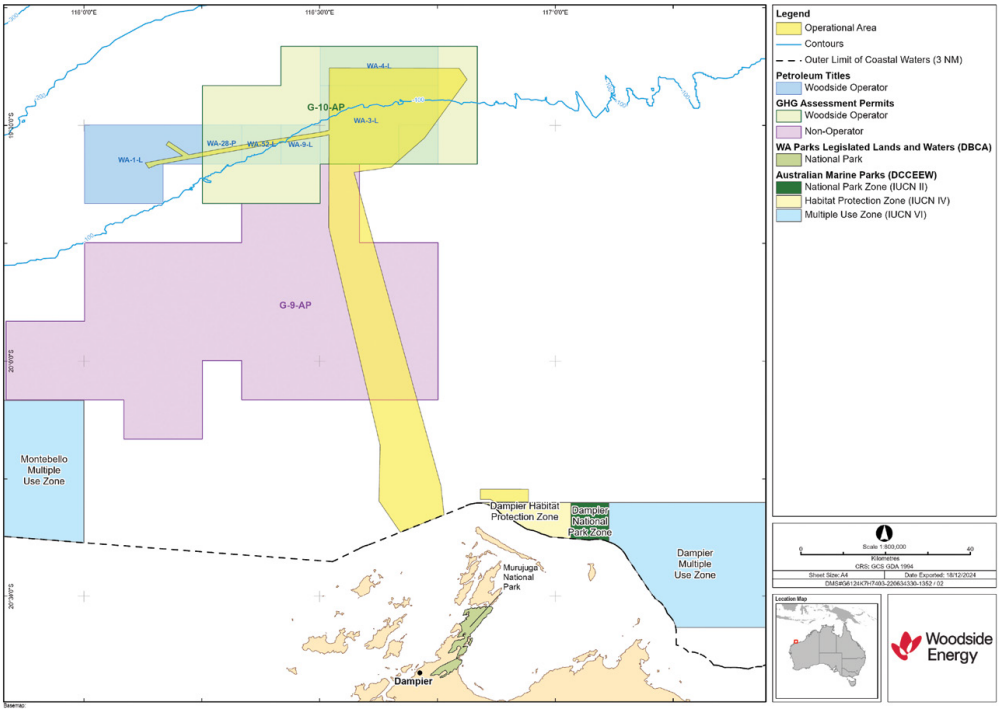


Figure 1. Operational Area for Angel CCS Geophysical and Geotechnical Surveys EP

Table 1 – Activity and Location Summary

Angel CCS Geophysical and Geotechnical Surveys EP	
Activity details	**Geophysical surveys**: • Geophysical surveys in this GPGT Survey Program involve acoustic measurements to characterise the seabed features and sub-seabed sediment types. • Geophysical survey techniques include but are not limited to; multibeam echo sounders, single beam echo sounders, altimeters; side scan sonar; magnetometers; sub-bottom profilers; refraction sub-bottom profiler (including mini airgun). **Geotechnical surveys**: • The geotechnical surveys will be performed using standard industry equipment and will consist of in situ testing and the recovery of soil/rock samples at locations within the Operational Area to ground truth existing geophysical data and provide geotechnical data for engineering design. • Geotechnical survey methods include but are not limited to; box cores/grab samplers; shallow cores and probes: piston cores/gravity cores/vibrocores; drilling core holes; piezocone penetrometer testing. **Other surveys**: • Other surveys using; water samplers; sound velocity sensors and multi-parameter conductivity-temperature-depth profilers (CTDs); ultra-short baseline (USBL) positioning system; doppler velocity log and inertial navigation systems; underwater cameras; underwater laser scanners; remotely operated vehicles (ROVs); autonomous underwater vehicles (AUVs).
Titles	**Operational Area includes operating title G-10-AP (Angel CCS title) and overlapping GHG and petroleum titles**: • Within G-10-AP: A-3-L, WA-4-L, WA-9-L, WA-52-L, WA-28-P *(Woodside as Operator)*. • Outside G-10-AP: *WA-1-L (Woodside as Operator)*, G-9-AP and WA-208-P *(other titleholders' license areas that may be subject to Access Authority and Special Prospecting Authority)*. • Vacant acreage and vacant acreage release area W22-4.
Vessels	• Multi-purpose project vessel, supply vessel, geotechnical drilling vessel, uncrewed surface vessels controlled from a remote operations centre.
Operational area and exclusion zones	• Temporary 500m exclusion zone around vessels conducting survey activities to manage vessel movements. • No restrictions to other vessels within the Operational Area apart from being advised to take care during the survey vessel activities.
Communication with mariners	• A 500m safety exclusion zone will apply around the project vessels conducting survey activities to manage vessel movements. • Commercial fishers and other marine users are permitted to use the Operational Area but should take care around operations by adhering to standard navigation rules and remain clear of the safety exclusion zone. • Marine notices will be issued prior to activity commencement to alert vessels which may be operating in waters nearby.
Distance to nearest marine park/nature reserve	• ~150 m north of Dampier Habitat Protection Zone (borrow ground) • ~7.5 km west of Dampier Habitat Protection Zone

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Table 2 – Approximate locations of the Angel CCS Geophysical Geotechnical Surveys Operational Area

Latitude	Longitude
Survey Area	
19° 31' 34.359" S	116° 43' 22.354" E
19° 35' 18.320" S	116° 39' 06.558" E
19° 35' 57.638" S	116° 34' 23.093" E
20° 15' 54.774" S	116° 45' 27.037" E
20° 19' 33.990" S	116° 45' 50.227" E
20° 21' 46.789" S	116° 40' 16.961" E
20° 17' 49.079" S	116° 37' 33.362" E
20° 10' 42.448" S	116° 37' 42.242" E
19° 42' 58.071" S	116° 31' 09.470" E
19° 31' 10.091" S	116° 31' 11.574" E
19° 31' 19.011" S	116° 30' 38.038" E
19° 32' 39.510" S	116° 22' 16.080" E
19° 35' 01.321" S	116° 09' 14.078" E
19° 35' 26.418" S	116° 08' 14.970" E
19° 34' 45.208" S	116° 07' 47.574" E
19° 33' 52.082" S	116° 12' 33.998" E
19° 32' 28.487" S	116° 10' 27.117" E
19° 32' 01.775" S	116° 10' 46.702" E
19° 33' 43.511" S	116° 13' 21.128" E
19° 32' 07.493" S	116° 22' 09.990" E
19° 30' 47.223" S	116° 30' 30.517" E
19° 30' 36.276" S	116° 31' 11.673" E
19° 22' 40.255" S	116° 31' 13.073" E
19° 22' 42.119" S	116° 47' 45.355" E
19° 24' 08.149" S	116° 48' 46.696" E
19° 31' 34.359" S	116° 43' 22.354" E
Borrow Ground	
20° 16' 17.851" S	116° 56' 34.716" E
20° 17' 55.121" S	116° 56' 34.626" E
20° 17' 54.855" S	116° 52' 14.764" E
20° 17' 36.215" S	116° 51' 45.215" E
20° 17' 36.333" S	116° 50' 27.616" E
20° 16' 17.443" S	116° 50' 27.487" E
20° 16' 17.851" S	116° 56' 34.716" E



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Environment that May Be Affected (EMBA)

The EMBA is the largest geographic area where an unplanned event could potentially have an environmental consequence. The broadest extent of the EMBA takes into consideration planned activities and unplanned events. The EMBA was developed combining numerous modelling outputs based on highly unlikely releases of hydrocarbons to the environment. The most credible modelling scenarios that inform the EMBA are based on a hydrocarbon release as a result of a vessel collision. The EMBA is depicted in **Figure 2**.

The EMBA does not represent the extent of the predicted impact of a highly unlikely hydrocarbon release. Rather, the EMBA represents the merged area of many possible paths that a highly unlikely hydrocarbon release could travel, which depends on the weather and ocean conditions at the time of a release. This means that in the highly unlikely event that a hydrocarbon release does occur, the whole EMBA will not be affected. The specific and minimal part of the EMBA that is affected will only be known if there is a release. To learn more about an EMBA, please see the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) video on oil spill modelling at **www.nopsema.gov.au**.

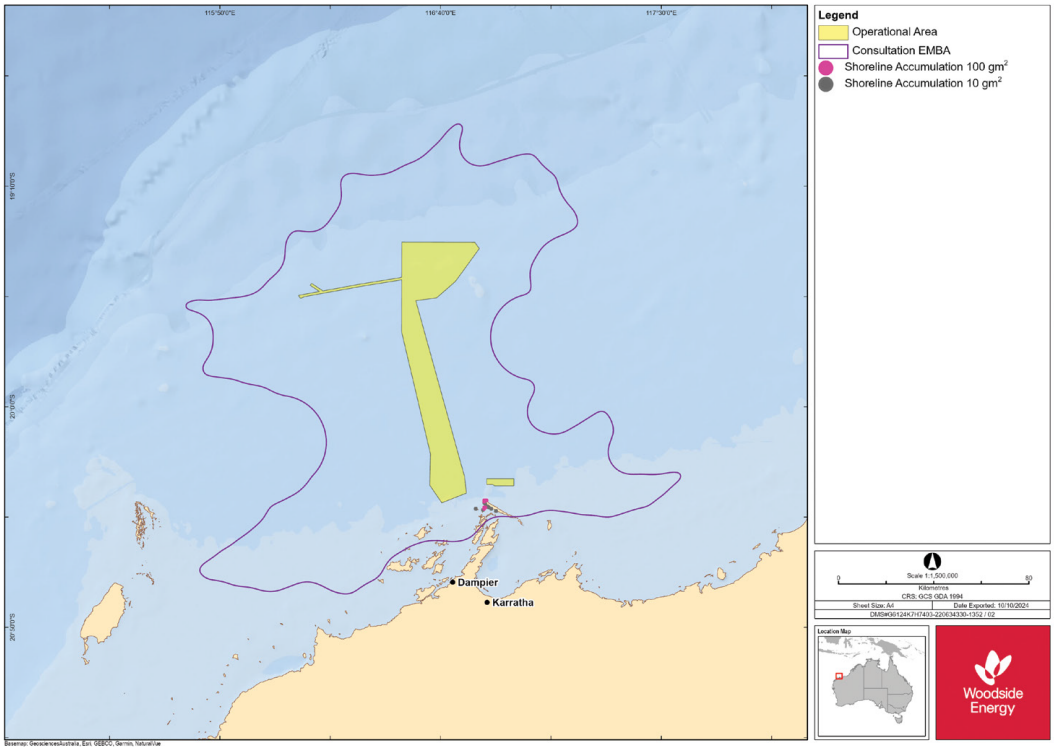


Figure 2. EMBA for Angel CCS Geophysical and Geotechnical Surveys EP

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Impacts/Risks, and Mitigation and/or Management Measures

Woodside assessed the impacts and risks to the environment arising from the planned activities and unplanned events. This assessment considers the timing, duration and location of the activities. Proposed mitigation and management measures are summarised in **Table 3**. Further details will be provided in the EP.

In preparing the EP, Woodside's intent is to minimise environmental, social and cultural impacts and risks associated with the proposed activities, and Woodside seeks your feedback to inform our decision-making.

Table 3 – Summary of key impacts and risks and proposed management measures

Impact/Risk	Description of Source of Impact/Risk	Description of Impact/Risk	Proposed Mitigation and/or Management Measure
Planned activities (routine and non-routine)			
Physical presence: ***interaction with other marine users***	• The physical presence and movement of project vessels within the Operational Area has the potential to interfere with/ displace other marine users. • The following vessels will be involved in survey activities: - multi-purpose project vessels - geotechnical vessels (geotechnical drilling vessels) - uncrewed surface vessels (USVs). • Survey activities are planned to be conducted as multiple campaigns over the five-year approval period of the EP (2026 – 2030).	• Displacement of commercial fishing activities and commercial shipping vessels. • Other marine users may be present in the Operational Area. These include recreational fishing areas, tourism, and commercial shipping fairways. • Due to the localised nature of the activity, any displacement is expected to be negligible with no lasting effect.	• Establish a temporary 500 m safety exclusion zone around the project vessels which is communicated to marine users. • Vessels to adhere to the navigation safety requirements including the Navigation Act 2012 and any subsequent Marine Orders. • Notify Australian Hydrographic Office (AHO) of activities and movements. • Notify relevant government departments, fishing industry representative bodies and licence holders (where requested during consultation) of activities. • Consult with marine users so they are informed of the proposed activities.
Physical presence: ***disturbance to seabed from geotechnical and geophysical surveys***	• Geotechnical survey activities are likely to result in localised and temporary physical modification and disturbance to a small area of the seabed. • The source of impact from geotechnical surveys are: - box cores/grab samplers - shallow cores and probes: piston/ gravity/vibrocores - cored bore holes - penetrometer testing (CPT/PCPT/CPTu). • The geotechnical seabed coring may result in the indirect discharge of a small quantity of drill cuttings and fluid at the seafloor. • Placing the geotechnical equipment on the seafloor will result in minor localised physical disturbance to the seafloor beneath the equipment.	• Environmental values potentially impacted: - seabed habitat - key ecological features (KEFs) - marine primary producers - cultural heritage. • The Operational Area is expected to consist mainly of sandy substrate. • The Operational Area overlaps the Ancient Coastline and Glomar Shoal Key Ecological Features (KEFs). • Activities will be localised and of short duration, physical impacts to the seabed are expected to be negligible.	• No routine anchoring will occur during surveys. • Monitor inventory deployed to the field and track removal of equipment during activity. • Chemicals will be selected with the lowest practicable environmental impacts and risks subject to technical constraints and approved through the Woodside chemical assessment process. No seabed disturbance will occur on shoals within the Operational Area. • An Unexpected Finds Procedure will be in place in the event of the discovery of what appears to be Underwater Cultural Heritage. • Desktop heritage assessment prior to starting the activities. • Comply with regulatory requirements for Underwater Cultural Heritage.

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Impact/Risk	Description of Source of Impact/Risk	Description of Impact/Risk	Proposed Mitigation and/or Management Measure
Routine acoustic emissions: ***generation of noise from survey vessels, and from geophysical and geotechnical survey equipment***	• Generation of underwater noise from project vessels. • Generation of acoustic signals from dynamic positioning systems. • The key sound sources during geotechnical surveys include the penetration tests and sampling boreholes undertaken at the seabed. • Underwater noise generated by geophysical sources during surveys and positioning equipment (transponders).	• Elevated underwater noise may affect marine fauna, including marine mammals, turtles and fish in three main ways: 1. By causing direct physical effects, including injury or hearing impairment. Hearing impairment may be temporary or permanent. 2. Through disturbance leading to behavioural changes or displacement from important areas. The occurrence and intensity of disturbance is highly variable and depends on a range of factors rating to the animal and situation. 3. By masking or interfering with other biologically important sounds (including vocal communication, echolocation, signals and sounds produced by predators or prey). • The frequency of the transponders is at the upper limit of the bandwidth of low frequency cetaceans. Low frequency cetaceans such as pygmy blue whales are therefore unlikely to be impacted by sound generated from the transponders. • The continuous noise generated by vessels is not expected to cause temporary or permanent change in hearing sensitivity to cetaceans due to the level of exposure required to trigger this. Impacts may relate to temporary behavioural changes such as avoidance with no lasting effect. • Biologically Important Areas (BIAs) overlapping the Operational Area include the pygmy blue whale distribution BIA, the humpback whale migration BIA. • The Operational Area overlaps internesting buffers for the hawksbill, loggerhead, green turtles and flatback turtles. Marine turtles may avoid the low-frequency sounds generated by vessel noise. • The Operational Area overlaps a foraging BIA for whale sharks however as the thresholds for impacts are higher than the noise generated by the activities, impacts are not expected.	• Comply with EPBC Regulations 2000 Part 8 Division 8.1 for interactions with marine fauna. • Comply with Biodiversity Conservation Regulations 2018 for whale sharks. • Project vessels will not travel greater than 6 knots within 300 m of a turtle (caution zone). If the turtle shows signs of being disturbed, project vessels will immediately withdraw from the caution zone at a constant speed of less than 6 knots. • Start-up of geophysical survey equipment will be delayed if a whale is sighted within the observation zone (150 m). • Implementation of an observation zone for 30 minutes prior to start up around geophysical survey equipment.

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Impact/Risk	Description of Source of Impact/Risk	Description of Impact/Risk	Proposed Mitigation and/or Management Measure
Routine and non-routine discharges: ***from survey vessels***	• Routine discharge of sewage, grey water and putrescible wastes to marine environment from project vessels. • Routine discharge of deck and bilge water to marine environment from project vessels.	• The main 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 including short-term, localised impacts to water quality. • No significant impacts are expected to water quality from planned discharges because of the minor quantities involved, the expected localised mixing zone, and the high level of dilution into the open water marine environment of the Operational Area. • Similarly, although some marine fauna may transit the Operational Area, potential for impacts remains low due to the localised nature of discharges and rapid dilution.	• Vessel discharges will be managed according to regulatory requirements. • Chemicals will be selected with the lowest practicable environmental impacts and risks subject to technical constraints and approved through the Woodside chemical assessment process.
Routine and non-routine discharges: ***drill cuttings and drilling fluids during geotechnical drilling***	• Drill cuttings and fluids will be discharged at the borehole location during geotechnical seabed coring. • Drilling fluid will consist primarily of seawater and may include low-toxicity additives.	• Geotechnical survey activities are likely to result in localised and temporary physical modification and disturbance to a small area of the seabed. Potential impacts include: - localised reduction in water and sediment quality - loss or damage to benthic habitats. • The Operational Area overlaps with the Ancient Coastline KEF and Glomar Shoals KEFs. Impacts to benthic marine fauna as a result of geotechnical surveying are expected to be highly localised to surface area of the borehole, drill cuttings and the footprint of the geotechnical equipment, which is a relatively small area compared to the regional extent of the Ancient Coastline KEF.	• All chemicals intended or likely to be discharged into the marine environment reduced to as low as reasonably practicable (ALARP) using Woodside's chemical assessment process.
Routine light emissions: ***external lighting on survey vessels***	• Project vessels will use external lighting to navigate and conduct safe operations at night, including to maintain good night visibility for crew members and to communicate the vessel's presence to other marine users.	• Light emissions may affect fauna (such as marine turtles and birds) in two main ways: 1. Behaviour: artificial lighting has the potential to create a constant level of light at night that can override natural levels and cycles. 2. Orientation: if an artificial light source is brighter than a natural source, the artificial light may override natural cues, leading to disorientation. • The Operational Area overlaps internesting buffers for the hawksbill, loggerhead, green turtles and flatback turtles. The Operational Area supports several breeding BIAs for the wedge-tailed shearwater, roseate tern, and fairy terns.	• Implementation of the Woodside Offshore Seabird Management Plan. • Lighting will be limited to the minimum required for navigation and safe operational requirements, with the exception of emergency events.

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Impact/Risk	Description of Source of Impact/Risk	Description of Impact/Risk	Proposed Mitigation and/or Management Measure
Routine and non-routine: ***atmospheric and GHG emissions***	• Atmospheric emissions and GHG emissions associated with project vessels. • Emissions are generated from internal combustion engines, machinery, and incinerators on vessels.	• Emissions associated with project vessels and could result in temporary, localised reductions in air quality in the immediate vicinity. • The exposed location of the project vessels is expected to result in the rapid dispersion of the low volumes of atmospheric emissions, as such the potential impacts are expected to be localised and of no lasting effect.	• Comply with regulatory requirements for GHG emissions reporting. • Vessel operations planned, where practicable, to minimise fuel consumption and associated GHG/ air emissions. • Fuel types will be selected to reduce expected GHG emissions (I.e., Project vessels will not use heavy fuel oil (HFO) or intermediate fuel oil (IFO)).
Unplanned events (accidents / incidents)			
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. • There is also a remote potential that cross contamination between vessels can also occur (such as IMS translocated between project vessels) or onto benthic habitat within shallower areas.	• It is not credible for IMS to be introduced and establish on the seabed or subsea structures in the Operational Area as these deep waters are not conducive to the settlement and establishment of IMS. • Given the low likelihood of IMS translocation to and colonisation within the Operational Area, project activities are unlikely to result in establishment of IMS, and as such will not adversely affect other marine user activities in the region.	• 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.
Unplanned interaction 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 supporting the survey activities.	• BIAs overlapping the Operational Area include the pygmy blue whale distribution BIA, the humpback whale migration BIA, marine turtle internesting buffers, internesting, foraging, migration corridors, mating, and nesting BIAs, marine turtle critical habitat areas, and the whale shark foraging BIA. • Given the adopted controls, it is considered that if a collision or entanglement were to occur, it will not result in a potential impact greater than a localised impact to environmental receptors, with no lasting effect to marine fauna populations.	• Comply with EPBC Regulations 2000 - Part 8 Division 8.1 Interacting with Cetaceans to reduce the likelihood of an accidental collision occurring.

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Impact/Risk	Description of Source of Impact/Risk	Description of Impact/Risk	Proposed Mitigation and/or Management Measure
Physical presence: ***disturbance to seabed from dropped objects, equipment loss***	• Dropped objects resulting in the disturbance of seabed habitat.	• Unplanned seabed disturbance may result in localised changes to water and sediment quality or a localised temporary impact to benthic communities and is therefore considered to present a negligible risk. • Potential impacts to KEFs which intersect the Operational Area are considered to have a temporary disruption and no lasting effects to a small area of the seabed, as they would be limited to the footprint of a dropped object resulting in potential highly localised and temporary change in habitat. Dropped objects within the Ancient Landscape could impact cultural heritage associated with this area, however, this would also comprise a small area.	• Project vessel inductions include control measures for dropped object prevention. • Dropped objects and geophysical/ geotechnical equipment to be recovered and relocated where safe and practicable to do so. • Apply safe work procedures to prevent dropped objects from survey vessels and during deployment and retrieval of equipment.
Unplanned discharges: ***loss of solid hazardous and non-hazardous wastes/ equipment***	• Accidental discharge of hydrocarbons/ chemicals from project vessels deck activities and equipment, from subsea ROV hydraulic leaks. • Unplanned release of chemicals or hydraulic fluid due to failure of subsea equipment. • Accidental loss of hazardous or nonhazardous solid wastes / equipment to the marine environment.	• 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.	• Comply with regulatory requirements for the prevention of marine pollution and handling of hazardous wastes (i.e., Marine Orders 95 and 94). • Implementation of vessel waste management plans. • Solid waste/equipment dropped to the marine environment is to be recovered where safe and practicable to do so.
Unplanned discharges: ***deck and subsea spills from geotechnical and geophysical survey vessels and equipment***	• Accidental discharge to the ocean of other hydrocarbons/ chemicals/ geotechnical drilling fluids from project vessels deck activities and equipment (e.g., cranes). • Unplanned release of chemicals or hydraulic fluid due to failure of geotechnical and geophysical survey equipment.	• Unplanned discharges of non-process chemicals and hydrocarbons may decrease the water quality in the immediate vicinity of the release. Only small volumes are anticipated, resulting in very short-term impacts to water quality, limited to the immediate release location. • As a result of a change in water quality, further impacts to receptors may occur, however impacts to marine fauna are expected to be limited to temporary irritation of sensitive membranes to individuals and are considered slight or less (negligible).	• Comply with regulatory requirements for the prevention of marine pollution for project vessels. • Liquid chemical and fuel storage areas are bunded or secondarily contained when they are not being handled/moved temporarily on project vessels. • Spill kits positioned in high-risk locations around the vessels (near potential spill points such as transfer stations). • Chemicals will be selected with the lowest reasonably practicable environmental impacts and risks subject to technical constraints and approved through the Woodside chemical assessment process.

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Impact/Risk	Description of Source of Impact/Risk	Description of Impact/Risk	Proposed Mitigation and/or Management Measure
Unplanned hydrocarbon release: ***vessel collision***	• Vessels will use marine diesel fuel, meaning a collision involving a project vessel or third-party vessel during the activity may result in the release of marine diesel. • For an interaction to result in the worse-case scenario diesel release, several factors must occur: - Vessel interaction must result in a collision. - The collision has enough force to penetrate the vessel hull and must occur in the location of a fuel tank. • The fuel tank must have a sufficient amount of fuel so that the liquid level is higher than the point of damage.	• In the highly unlikely event of a vessel collision causing a release of hydrocarbon, impact to water quality and marine ecosystems could occur. • Marine diesel is a relatively volatile, non-persistent hydrocarbon. If released to the environment, up to approximately 40% evaporates within the first 24 hours. • In the event of a hydrocarbon release, potential impacts across the EMBA will be assessed including receptors such as plankton, fish, marine turtles, marine mammals, seabirds and migratory shorebirds, marine primary producers, tourism, recreation, commercial fisheries, commercial shipping and cultural heritage. • Considering receptor sensitivity, potential loss of containment volume(s) and potential spill locations, most receptors are expected to be rated as having a potential consequence level of 'Minor' or less (Slight or Negligible).	**Preventing marine vessel collisions**: • Comply with regulatory requirements for navigational safety and prevention of vessel collisions. • Notify relevant government departments, fishing industry representative bodies and licence holders of activities prior to commencement and on completion of activities. • Establish temporary exclusion zones around vessels which are communicated to marine users to reduce the likelihood of collision. • A management plan for simultaneous operations is in place when working in vicinity of other Woodside operations/activities. **Spill response arrangements**: • Arrangements supporting the Oil Pollution Emergency Plan (OPEP) will be tested so that the OPEP can be implemented as planned. • Emergency response activities would be implemented in line with the OPEP.

**These mitigation and management measures are subject to change through the consultation and subsequent assessment process and may not represent content in the publicly available EP or in the final plan once accepted.*

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Feedback

Woodside consults relevant persons in the course of preparing Environment Plans to notify them of the activity and to obtain relevant feedback to inform its planning for greenhouse gas activities.

If you would like to comment on the proposed activities outlined in this information sheet, please provide feedback to Woodside by **31 October 2025** via:

consultation@feedback.woodside.com
Toll free: 1800 442 977

You can subscribe on our website to receive Consultation Information Sheets for proposed activities:
woodside.com/what-we-do/consultation-activities

Please note that stakeholder feedback will be communicated to NOPSEMA as required under legislation. Woodside will communicate any material changes to the proposed activity to affected relevant persons as relevant and appropriate.

Your feedback and our response will be included in our Environment Plan for the proposed activity, which will be submitted to NOPSEMA for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023* (Cth) and support other regulatory processes associated with the planned activities (which may or may not be confidential).

Personal information collected in the course of consultation will be handled in accordance with Woodside's Environment Plan Privacy Collection Notice. To understand how personal information will be handled, please visit:
woodside.com/what-we-do/consultation-activities



6.3.2 2025 Summary Information Sheet

Woodside Energy

Summary Consultation Information Sheet
October 2025



Angel CCS Geophysical and Geotechnical Surveys Commonwealth Environment Plan

North West Shelf, North-West Australia

Woodside Energy recognises Aboriginal and Torres Strait Islander peoples as Australia's First Peoples. We acknowledge their connection to land, waters and the environment and pay our respects to ancestors and Elders, past and present. We extend this recognition and respect to First Nations peoples and communities around the world.

Have Your Say

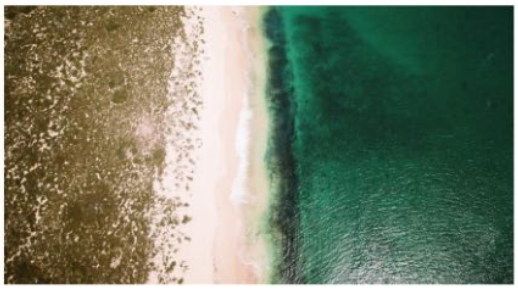
We want to talk, share ideas, and yarn with local community who have a deep connection to the land and sea. Your knowledge helps us do our work better!

We want to understand the environments we want to work in. We want to work in a way which manages the environmental impacts and risks of the activities appropriately. By working together, we want to help protect cultural heritage and keep the Land and Sea Country healthy.

We welcome feedback from First Nations communities and stakeholders whose functions, interests and activities may be affected by our activities under this Environment Plan (EP). If you'd like to share your views, please contact us before **31 October 2025**.

Email: **feedback@woodside.com**
Call: **1800 442 977 (toll-free)**
Visit: **woodside.com/what-we-do/consultation-activities**

Your feedback will be included in our EP submissions to NOPSEMA (National Offshore Petroleum Safety and Environmental Management Authority) and will help guide responsible environmental decision-making.



Activity Overview

The Angel Carbon Capture and Storage (CCS) Geophysical and Geotechnical (GPGT) Surveys EP covers Geophysical and geotechnical surveys involving seafloor sampling and scanning and project vessel operations.

Data from the surveys is intended to inform the design of pipeline and umbilical routes, subsea structure foundation locations and planning for mobile offshore drilling unit (MODU) anchoring or jack-up rig placement.

Location

- In Commonwealth waters between approximately 35km and 140km to Dampier.

Water depth

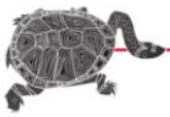
- ~ 35m - 125m deep.

Timing and duration

- Estimated to start In Q1 2027.
- Duration is estimated to take ~ 100 days, planned over multiple campaigns during the five-year approved period of the EP.
- Timing and duration is subject to change due to factors including, approvals, weather, project vessel availability, and other unforeseen circumstances.

Joint Venture

- Operator – Woodside Energy Ltd.
- Joint Venture Participants – Woodside Energy Ltd, BP Developments Australia Pty Ltd, Japan Australia LNG (MIMI) Pty Ltd, Shell Australia Pty Ltd, and Chevron Australia Pty Ltd.



1

Angel CCS GPGT Surveys EP | October 2025

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Activity Location

The EP explains how Woodside will manage environmental risks and impacts while carrying out our activities. These plans help us conduct operations safely and responsibly, with respect for the environment and cultural heritage. The location where the work will be done is known as the Operational Area (**Figure 1**).

Woodside must consult with relevant persons, including Traditional Custodian groups whose functions, interests or activities may be affected by the activities to be carried out under the EP or that are considered relevant, to listen to concerns and, where required, incorporate feedback into the EP.

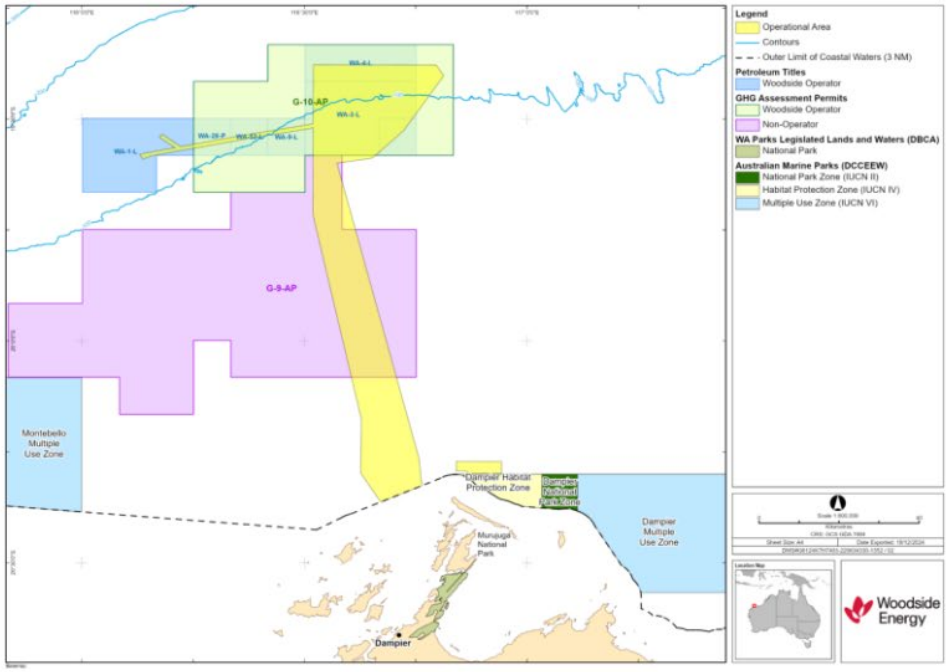


Figure 1: Location of the activity, including Operational Area and associated infrastructure

Planned Activities and Unplanned Events

We assess both planned activities and unplanned events which may result in environmental risks and impacts.

Planned activities are activities that Woodside knows will happen as part of the work under the EP. This could include generating underwater noise, light emissions, associated atmospheric emissions or routine discharges (such as sewage, waste, and deck drainage). We take steps so that planned activities comply with legislative and regulatory requirements.

Unplanned events are very unlikely. They may be the result of an accident, incident or emergency, such as a spill of fuel or oil from a ship (vessel) collision, a spill on the deck of a vessel (like during refuelling), unplanned seabed and/or marine life disturbance, or accidental introduction of invasive species from outside the region.

Planned and unplanned activities, potential impacts, and management measures are included in the Consultation Information Sheet for this activity, available at www.woodside.com/what-we-do/consultation-activities.

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Environment that May Be Affected (EMBA)

The EMBA map (**Figure 2**) is a model of the largest spatial area where the activity could have a potential environmental impact. It combines multiple modelling outputs for both planned and unplanned activities in the highly unlikely event of an oil and natural gas (hydrocarbon) release to the environment. The modelling scenarios that inform the EMBA are based on a hydrocarbon release as a result of a vessel collision.

The EMBA does not show the predicted impact of a single event - it is the merged area of many possible scenarios that a highly unlikely hydrocarbon release could travel, depending on the weather and ocean conditions at the time. This means that if a hydrocarbon release was to occur, the whole EMBA would not be affected. The specific and minimal part of the EMBA that is affected will only be known at the time of a release.

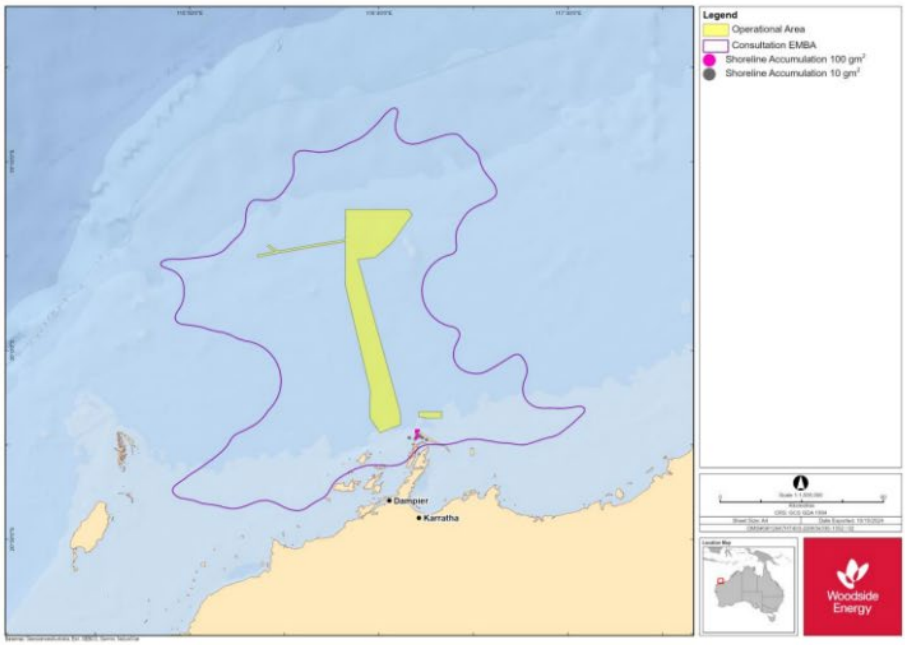


Figure 2: Environment that May Be Affected (EMBA) map

Your Feedback is Important

Woodside consults with relevant persons during the preparation of EPs to notify them about the activity and hear their feedback. By working together, we aim to protect biodiversity and maintain the health of ecosystems while carrying out our projects.

Your feedback helps shape the EP by:

- Identifying additional possible measures to reduce environmental impacts.
- Helping us consider cultural heritage and environmental values.
- Providing information that may help improve Woodside's environmental practices.

If there is particular information that you provide during consultation that you'd prefer not to be published, please let us know. We'll make your request known to NOPSEMA.

We'll manage any personal information collected during our consultation with you in accordance with Woodside's Environment Plan Privacy Collection Notice. To understand more, please visit www.woodside.com/what-we-do/consultation-activities.

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6.3.3 Email to Australian Border Force (ABF), Australian Conservation Foundation (ACF), Australian Energy Producers (AEP), Australian Marine Conservation Society (AMCS), Australasian Centre for Corporate Responsibility (ACCR), Bounty Oil and Gas, Coastal Oil and Gas/Fox Resources, Conservation Council of Western Australia (CCWA), Department of Petroleum, Mines and Exploration (DMPE, formerly DEMIRS), Department of Industry, Sciences and Resources (DISR), Doctors for the Environment (DEA), Exxon Mobil, Greenpeace Australia Pacific (GAP), Jadestone Energy, JX Nippon, KATO Energy, KUFPEC Australia, Longreach Capital Investments/Beagle No. 1, Market Forces, City of Karratha, Karratha Community Liaison Group (CLG), Karratha & Districts Chamber of Commerce and Industry (KDCCI), Skye Napoleon, Vermillion Oil & Gas, Pilbara Ports – 1 October 2025

Woodside previously consulted you in July 2024 on the Angel Carbon Capture and Storage (CCS) Geophysical and Geotechnical (GPGT) Surveys Commonwealth and State Environment Plans (EPs). The Commonwealth and State EPs have not yet been submitted.

While the activity remains unchanged, the estimated start date for the Commonwealth EP surveys has been updated to Q1 2027. Woodside will update on the State EP at a later time.

Activity Overview

As Operator of the Angel CCS Joint Venture, Woodside plans to conduct geophysical and geotechnical surveys in Commonwealth waters off the North-West coast of WA. These surveys will inform pipeline and umbilical routing, subsea infrastructure placement, and drilling unit positioning. They will also support baseline studies for existing and future infrastructure.

Please refer to the attached updated Consultation Information Sheet for details.

Additional Consultation

Due to the revised timing, Woodside is undertaking further consultation. All other aspects of the activity—including location, scope, risks, and mitigation measures—remain as previously outlined and any feedback previously received during the initial 2024 consultation will be included in the EP.

Feedback

If you have feedback specific to the proposed activities, we welcome your feedback at feedback@woodside.com or 1800 442 977 by 31 October 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 so that the information is not included when the EP is published on NOPSEMA's website.

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A Consultation Information Sheet is attached, which provides the proposed activities in Commonwealth waters including summaries of key impacts and risks and associated management measures. This is also available on our website.

Regards.

6.3.4 Email to Australian Communications and Media Authority (ACMA) – 1 October 2025

Woodside previously consulted you in July 2024 on the Angel Carbon Capture and Storage (CCS) Geophysical and Geotechnical (GPGT) Surveys Commonwealth and State Environment Plans (EPs). The Commonwealth and State EPs have not yet been submitted.

While the activity remains unchanged, the estimated start date for the Commonwealth EP surveys has been updated to Q1 2027. Woodside will update on the State EP at a later time.

Activity Overview

As Operator of the Angel CCS Joint Venture, Woodside plans to conduct geophysical and geotechnical surveys in Commonwealth waters off the North-West coast of WA. These surveys will inform pipeline and umbilical routing, subsea infrastructure placement, and drilling unit positioning. They will also support baseline studies for existing and future infrastructure.

Please refer to the attached updated Consultation Information Sheet for details.

Additional Consultation

Due to the revised timing, Woodside is undertaking further consultation. All other aspects of the activity—including location, scope, risks, and mitigation measures—remain as previously outlined and **any feedback previously received during the initial 2024 consultation will be included in the EP**. Telstra and Vocus will receive this update as well.

Feedback

If you have feedback specific to the proposed activities, we welcome your feedback at feedback@woodside.com or 1800 442 977 by **31 October 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 so that the information is not included when the EP is published on NOPSEMA's website.

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A Consultation Information Sheet is attached, which provides the proposed activities in Commonwealth waters including summaries of key impacts and risks and associated management measures. This is also available on our website.

6.3.5 Email to Australian Fisheries Management Authority (AFMA) – 1 October 2025

Woodside previously consulted you in July 2024 on the Angel Carbon Capture and Storage (CCS) Geophysical and Geotechnical (GPGT) Surveys Commonwealth and State Environment Plans (EPs). The Commonwealth and State EPs have not yet been submitted.

While the activity remains unchanged, the estimated start date for the Commonwealth EP surveys has been updated to Q1 2027. Woodside will update on the State EP at a later time.

Activity Overview As Operator of the Angel CCS Joint Venture, Woodside plans to conduct geophysical and geotechnical surveys in Commonwealth waters off the North-West coast of WA. These surveys will inform pipeline and umbilical routing, subsea infrastructure placement, and drilling unit positioning. They will also support baseline studies for existing and future infrastructure.

Please refer to the attached updated Consultation Information Sheet for details.

Additional Consultation

Due to the revised timing, Woodside is undertaking further consultation. All other aspects of the activity—including location, scope, risks, and mitigation measures—remain as previously outlined and **any feedback previously received during the initial 2024 consultation will be included in the EP**. We are sending the update to CFA, North West Slope Trawl Fishery, Tuna Australia and ASBTIA.

Feedback
If you have feedback specific to the proposed activities, we welcome your feedback at feedback@woodside.com or 1800 442 977 by **31 October 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 so that the information is not included when the EP is published on NOPSEMA's website.

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A Consultation Information Sheet is attached, which provides the proposed activities in Commonwealth waters including summaries of key impacts and risks and associated management measures. This is also available on our website.

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6.3.6 Email to Australian Hydrographic Office (AHO) – 1 October 2025

Woodside previously consulted you in July 2024 on the Angel Carbon Capture and Storage (CCS) Geophysical and Geotechnical (GPGT) Surveys Commonwealth and State Environment Plans (EPs). The Commonwealth and State EPs have not yet been submitted.

While the activity remains unchanged, the estimated start date for the Commonwealth EP surveys has been updated to Q1 2027. Woodside will update on the State EP at a later time.

Activity Overview As Operator of the Angel CCS Joint Venture, Woodside plans to conduct geophysical and geotechnical surveys in Commonwealth waters off the North-West coast of WA. These surveys will inform pipeline and umbilical routing, subsea infrastructure placement, and drilling unit positioning. They will also support baseline studies for existing and future infrastructure.

Please refer to the attached updated Consultation Information Sheet for details.

Additional Consultation Due to the revised timing, Woodside is undertaking further consultation. All other aspects of the activity—including location, scope, risks, and mitigation measures—remain as previously outlined and **any feedback previously received during the initial 2024 consultation will be included in the EP**.

Feedback
If you have feedback specific to the proposed activities, we welcome your feedback at feedback@woodside.com or 1800 442 977 by **31 October 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).

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A Consultation Information Sheet is attached, which provides the proposed activities in Commonwealth waters including summaries of key impacts and risks and associated management measures. This is also available on our website.

6.3.7 Email to Australian Maritime Safety Authority (AMSA) – Marine Safety – 1 October 2025

Woodside previously consulted you in July 2024 on the Angel Carbon Capture and Storage (CCS) Geophysical and Geotechnical (GPGT) Surveys Commonwealth and State Environment Plans (EPs). The Commonwealth and State EPs have not yet been submitted.

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While the activity remains unchanged, the estimated start date for the Commonwealth EP surveys has been updated to Q1 2027. Woodside will update on the State EP at a later time.

Activity Overview As Operator of the Angel CCS Joint Venture, Woodside plans to conduct geophysical and geotechnical surveys in Commonwealth waters off the North-West coast of WA. These surveys will inform pipeline and umbilical routing, subsea infrastructure placement, and drilling unit positioning. They will also support baseline studies for existing and future infrastructure.

Please refer to the attached updated Consultation Information Sheet for details.

Additional Consultation Due to the revised timing, Woodside is undertaking further consultation. All other aspects of the activity—including location, scope, risks, and mitigation measures—remain as previously outlined and **any feedback previously received during the initial 2024 consultation will be included in the EP**.

Feedback
If you have feedback specific to the proposed activities, we welcome your feedback at feedback@woodside.com or 1800 442 977 by **31 October 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).

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A Consultation Information Sheet is attached, which provides the proposed activities in Commonwealth waters including summaries of key impacts and risks and associated management measures. This is also available on our website.

6.3.8 Email to Australian Maritime Safety Authority (AMSA) – Marine Pollution – 1 October 2025

Woodside previously consulted you in July 2024 on the Angel Carbon Capture and Storage (CCS) Geophysical and Geotechnical (GPGT) Surveys Commonwealth and State Environment Plans (EPs). The Commonwealth and State EPs have not yet been submitted.

While the activity remains unchanged, the estimated start date for the Commonwealth EP surveys has been updated to Q1 2027. Woodside will update on the State EP at a later time.

Activity Overview

As Operator of the Angel CCS Joint Venture, Woodside plans to conduct geophysical and geotechnical surveys in Commonwealth waters off the North-West coast of WA. These surveys will inform pipeline and umbilical routing, subsea infrastructure placement, and drilling unit positioning. They will also support baseline studies for existing and future infrastructure.

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Please refer to the attached updated Consultation Information Sheet for details.

Additional Consultation

Due to the revised timing, Woodside is undertaking further consultation. All other aspects of the activity—including location, scope, risks, and mitigation measures—remain as previously outlined and **any feedback previously received during the initial 2024 consultation will be included in the EP**.

Feedback
If you have feedback specific to the proposed activities, we welcome your feedback at feedback@woodside.com or 1800 442 977 by **31 October 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).

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6.3.9 Email to Department of Agriculture, Fisheries and Forestry (DAFF) – Fisheries and Department of Agriculture, Fisheries and Forestry (DAFF) – Biosecurity – 1 October 2025

Woodside previously consulted you in July 2024 on the Angel Carbon Capture and Storage (CCS) Geophysical and Geotechnical (GPGT) Surveys Commonwealth and State Environment Plans (EPs). The Commonwealth and State EPs have not yet been submitted.

While the activity remains unchanged, the estimated start date for the Commonwealth EP surveys has been updated to Q1 2027. Woodside will update on the State EP at a later time.

Activity Overview
As Operator of the Angel CCS Joint Venture, Woodside plans to conduct geophysical and geotechnical surveys in Commonwealth waters off the North-West coast of WA. These surveys will inform pipeline and umbilical routing, subsea infrastructure placement, and drilling unit positioning. They will also support baseline studies for existing and future infrastructure.

Please refer to the attached updated Consultation Information Sheet for details.

Additional Consultation
Due to the revised timing, Woodside is undertaking further consultation. All other aspects of

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the activity—including location, scope, risks, and mitigation measures—remain as previously outlined and **any feedback previously received during the initial 2024 consultation will be included in the EP**.

Feedback
If you have feedback specific to the proposed activities, we welcome your feedback at feedback@woodside.com or 1800 442 977 by **31 October 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).

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A Consultation Information Sheet is attached, which provides the proposed activities in Commonwealth waters including summaries of key impacts and risks and associated management measures. This is also available on our website.

6.3.10 Email to Department of Defence (DoD) – 1 October 2025

Woodside previously consulted you in July 2024 on the Angel Carbon Capture and Storage (CCS) Geophysical and Geotechnical (GPGT) Surveys Commonwealth and State Environment Plans (EPs). The Commonwealth and State EPs have not yet been submitted.
While the activity remains unchanged, the estimated start date for the Commonwealth EP surveys has been updated to Q1 2027. Woodside will update on the State EP at a later time.
Activity Overview
As Operator of the Angel CCS Joint Venture, Woodside plans to conduct geophysical and geotechnical surveys in Commonwealth waters off the North-West coast of WA. These surveys will inform pipeline and umbilical routing, subsea infrastructure placement, and drilling unit positioning. They will also support baseline studies for existing and future infrastructure.
Please refer to the attached updated Consultation Information Sheet for details.
Additional Consultation
Due to the revised timing, Woodside is undertaking further consultation. All other aspects of the activity—including location, scope, risks, and mitigation measures—remain as previously outlined and **any feedback previously received during the initial 2024 consultation will be included in the EP**.
Feedback
If you have feedback specific to the proposed activities, we welcome your feedback at feedback@woodside.com or 1800 442 977 by **31 October 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*

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(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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A Consultation Information Sheet is attached, which provides the proposed activities in Commonwealth waters including summaries of key impacts and risks and associated management measures. This is also available on our website.

6.3.11 Email to Department of Primary Industries and Regional Development (DPIRD) – 1 October 2025

Woodside consulted DPIRD in July 2024 on the Angel Carbon Capture and Storage (CCS) Geophysical and Geotechnical (GPGT) Surveys Commonwealth and State Environment Plans (EPs). The Commonwealth and State EPs have not yet been submitted. Previous emails are below.

While the activity remains unchanged, the estimated start date for the Commonwealth EP surveys has been updated to Q1 2027. Woodside will update on the State EP at a later time.

Activity Overview
As Operator of the Angel CCS Joint Venture, Woodside plans to conduct geophysical and geotechnical surveys in Commonwealth waters off the North-West coast of WA. These surveys will inform pipeline and umbilical routing, subsea infrastructure placement, and drilling unit positioning. They will also support baseline studies for existing and future infrastructure.

Please refer to the attached updated Consultation Information Sheet for details.

Additional Consultation
Due to the revised timing, Woodside is undertaking further consultation. All other aspects of the activity—including location, scope, risks, and mitigation measures—remain as previously outlined and **any feedback previously received during the initial 2024 consultation will be included in the EP**.

Feedback
If you have feedback specific to the proposed activities, we welcome your feedback at feedback@woodside.com or 1800 442 977 by **31 October 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).

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A Consultation Information Sheet is attached, which provides the proposed activities in Commonwealth waters including summaries of key impacts and risks and associated management measures. This is also available on our website.

6.3.12 Email to Department of Transport and Major Infrastructure (DTMI, formerly DoT) – 1 October 2025

Woodside consulted you in July 2024 on the Angel Carbon Capture and Storage (CCS) Geophysical and Geotechnical (GPGT) Surveys Commonwealth and State Environment Plans (EPs). The Commonwealth and State EPs have not yet been submitted.

While the activity remains unchanged, the estimated start date for the Commonwealth EP surveys has been updated to Q1 2027. Woodside will update on the State EP at a later time.

Activity Overview

As Operator of the Angel CCS Joint Venture, Woodside plans to conduct geophysical and geotechnical surveys in Commonwealth waters off the North-West coast of WA. These surveys will inform pipeline and umbilical routing, subsea infrastructure placement, and drilling unit positioning. They will also support baseline studies for existing and future infrastructure.

Please refer to the attached updated Consultation Information Sheet for details.

Additional Consultation

Due to the revised timing, Woodside is undertaking further consultation. All other aspects of the activity—including location, scope, risks, and mitigation measures—remain as previously outlined and **any feedback previously received during the initial 2024 consultation will be included in the EP**.

Feedback
If you have feedback specific to the proposed activities, we welcome your feedback at feedback@woodside.com or 1800 442 977 by **31 October 2025.**

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6.3.13 Email to Department of Planning, Lands and Heritage (DPLH) – 1 October 2025

Woodside consulted you in July 2024 on the Angel Carbon Capture and Storage (CCS) Geophysical and Geotechnical (GPGT) Surveys Commonwealth and State Environment Plans (EPs). The Commonwealth and State EPs have not yet been submitted.

While the activity remains unchanged, the estimated start date for the Commonwealth EP surveys has been updated to Q1 2027. Woodside will update on the State EP at a later time.

Activity Overview

As Operator of the Angel CCS Joint Venture, Woodside plans to conduct geophysical and geotechnical surveys in Commonwealth waters off the North-West coast of WA. These surveys will inform pipeline and umbilical routing, subsea infrastructure placement, and drilling unit positioning. They will also support baseline studies for existing and future infrastructure.

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Additional Consultation

Due to the revised timing, Woodside is undertaking further consultation. All other aspects of the activity—including location, scope, risks, and mitigation measures—remain as previously outlined and **any feedback previously received during the initial 2024 consultation will be included in the EP**.

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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6.3.14 Email to Western Australian Museum (WAM) – 1 October 2025

Woodside consulted you in July 2024 on the Angel Carbon Capture and Storage (CCS) Geophysical and Geotechnical (GPGT) Surveys Commonwealth and State Environment Plans (EPs). The Commonwealth and State EPs have not yet been submitted.

While the activity remains unchanged, the estimated start date for the Commonwealth EP surveys has been updated to Q1 2027. Woodside will update on the State EP at a later time.

Activity Overview

As Operator of the Angel CCS Joint Venture, Woodside plans to conduct geophysical and geotechnical surveys in Commonwealth waters off the North-West coast of WA. These surveys will inform pipeline and umbilical routing, subsea infrastructure placement, and drilling unit positioning. They will also support baseline studies for existing and future infrastructure.

Please refer to the attached updated Consultation Information Sheet for details.

Additional Consultation

Due to the revised timing, Woodside is undertaking further consultation. All other aspects of the activity—including location, scope, risks, and mitigation measures—remain as previously outlined and **any feedback previously received during the initial 2024 consultation will be included in the EP**.

Feedback
If you have feedback specific to the proposed activities, we welcome your feedback at feedback@woodside.com or 1800 442 977 by **31 October 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).

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6.3.15 Email to Department of Climate Change, Energy, the Environment and Water (DCCEEW) – 1 October 2025

Woodside consulted you in July 2024 on the Angel Carbon Capture and Storage (CCS) Geophysical and Geotechnical (GPGT) Surveys Commonwealth and State Environment Plans (EPs). The Commonwealth and State EPs have not yet been submitted.

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Activity Overview

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Additional Consultation

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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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6.3.16 Email to Director of National Parks (DNP) – 1 October 2025

Woodside previously consulted you in July 2024 on the Angel Carbon Capture and Storage (CCS) Geophysical and Geotechnical (GPGT) Surveys Commonwealth and State Environment Plans (EPs). The Commonwealth and State EPs have not yet been submitted.

While the activity remains unchanged, the estimated start date for the Commonwealth EP surveys has been updated to Q1 2027. Woodside will update on the State EP at a later time.

Activity Overview

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Please refer to the attached updated Consultation Information Sheet for details.

Additional Consultation

Due to the revised timing, Woodside is undertaking further consultation. All other aspects of the activity—including location, scope, risks, and mitigation measures—remain as previously outlined and **any feedback previously received during the initial 2024 consultation will be included in the EP**.

Feedback

If you have feedback specific to the proposed activities, we welcome your feedback at feedback@woodside.com or 1800 442 977 by **31 October 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 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.

A Consultation Information Sheet is attached, which provides the proposed activities in Commonwealth waters including summaries of key impacts and risks and associated management measures. This is also available on our website.

6.3.17 Email to North West Slope Trawl Fishery, Commonwealth Fisheries Association (CFA) – 1 October 2025

Woodside previously consulted you in July 2024 on the Angel Carbon Capture and Storage (CCS) Geophysical and Geotechnical (GPGT) Surveys Commonwealth and State Environment Plans (EPs). The Commonwealth and State EPs have not yet been submitted.

While the activity remains unchanged, the estimated start date for the Commonwealth EP surveys has been updated to Q1 2027. Woodside will update on the State EP at a later time.

Activity Overview

As Operator of the Angel CCS Joint Venture, Woodside plans to conduct geophysical and geotechnical surveys in Commonwealth waters off the North-West coast of WA. These surveys will inform pipeline and umbilical routing, subsea infrastructure placement, and drilling unit positioning. They will also support baseline studies for existing and future infrastructure.

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Please refer to the attached updated Consultation Information Sheet for details.

Additional Consultation

Due to the revised timing, Woodside is undertaking further consultation. All other aspects of the activity—including location, scope, risks, and mitigation measures—remain as previously outlined and **any feedback previously received during the initial 2024 consultation will be included in the EP**.

Feedback

If you have feedback specific to the proposed activities, we welcome your feedback at feedback@woodside.com or 1800 442 977 by **31 October 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).

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6.3.18 Email to Australian Southern Bluefin Tuna Industry Association (ASBTIA), Tuna Australia – 3 October 2025

Last July 2024, Woodside started consultation on the Angel Carbon Capture and Storage (CCS) Geophysical and Geotechnical (GPGT) Surveys Commonwealth and State Environment Plans (EPs). The Commonwealth and State EPs have not yet been submitted. Since that time, AFMA requested that we send to your organisation, so we wanted to provide information on the update. The information from the original July 2024 consultation follows below. Please note that no Commonwealth fisheries have been active in the Operational Area in the past 5 years. North West Slope Trawl Fishery has been active in the EMBA within the past 5 years.

While the activity remains unchanged, the estimated start date for the Commonwealth EP surveys has been updated to Q1 2027. Woodside will update on the State EP at a later time.

Activity Overview

As Operator of the Angel CCS Joint Venture, Woodside plans to conduct geophysical and geotechnical surveys in Commonwealth waters off the North-West coast of WA. These surveys will inform pipeline and umbilical routing, subsea infrastructure placement, and drilling unit positioning. They will also support baseline studies for existing and future infrastructure.

Please refer to the attached updated Consultation Information Sheet for details.

Additional Consultation

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Due to the revised timing, Woodside is undertaking further consultation. All other aspects of the activity—including location, scope, risks, and mitigation measures—remain as previously outlined and any feedback previously received during the initial 2024 consultation will be included in the EP.

Feedback

If you have feedback specific to the proposed activities, we welcome your feedback at feedback@woodside.com or 1800 442 977 by 31 October 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).

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A Consultation Information Sheet is attached, which provides the proposed activities in Commonwealth waters including summaries of key impacts and risks and associated management measures. This is also available on our website.

6.3.19 Email to Recfishwest – 1 October 2025

Last July 2024, Woodside started consultation on the Angel Carbon Capture and Storage (CCS) Geophysical and Geotechnical (GPGT) Surveys Commonwealth and State Environment Plans (EPs). The Commonwealth and State EPs have not yet been submitted.

While the activity remains unchanged, the estimated start date for the Commonwealth EP surveys has been updated to Q1 2027. Woodside will update on the State EP at a later time.

Activity Overview

As Operator of the Angel CCS Joint Venture, Woodside plans to conduct geophysical and geotechnical surveys in Commonwealth waters off the North-West coast of WA. These surveys will inform pipeline and umbilical routing, subsea infrastructure placement, and drilling unit positioning. They will also support baseline studies for existing and future infrastructure.

Please refer to the attached updated Consultation Information Sheet for details.

Additional Consultation

Due to the revised timing, Woodside is undertaking further consultation. All other aspects of the activity—including location, scope, risks, and mitigation measures—remain as previously outlined and any feedback previously received during the initial 2024 consultation will be included in the EP.

Feedback

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If you have feedback specific to the proposed activities, we welcome your feedback at feedback@woodside.com or 1800 442 977 by 31 October 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).

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6.3.20 Email to Marine Tourism WA, WA Game Fishing Association, Pilbara/Kimberley Recreational Marine Users – 1 October 2025

Woodside consulted you in July 2024 on the Angel Carbon Capture and Storage (CCS) Geophysical and Geotechnical (GPGT) Surveys Commonwealth and State Environment Plans (EPs). The Commonwealth and State EPs have not yet been submitted.

While the activity remains unchanged, the estimated start date for the Commonwealth EP surveys has been updated to Q1 2027. Woodside will update on the State EP at a later time.

Activity Overview

As Operator of the Angel CCS Joint Venture, Woodside plans to conduct geophysical and geotechnical surveys in Commonwealth waters off the North-West coast of WA. These surveys will inform pipeline and umbilical routing, subsea infrastructure placement, and drilling unit positioning. They will also support baseline studies for existing and future infrastructure.

Please refer to the attached updated Consultation Information Sheet for details.

Additional Consultation

Due to the revised timing, Woodside is undertaking further consultation. All other aspects of the activity—including location, scope, risks, and mitigation measures—remain as previously outlined and **any feedback previously received during the initial 2024 consultation will be included in the EP**.

Feedback
If you have feedback specific to the proposed activities, we welcome your feedback at feedback@woodside.com or 1800 442 977 by **31 October 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*

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(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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A Consultation Information Sheet is attached, which provides the proposed activities in Commonwealth waters including summaries of key impacts and risks and associated management measures. This is also available on our website.

6.3.20.1 Letter to Pilbara/Kimberley Recreational Marine Users – 2 October 2025

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Please direct all responses/queries to:
Woodside Energy Feedback
t: +61 8 (1)800 442 977
e: consultation@feedback.woodside.com.au

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Mia Yellagonga
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Australia
T: +61 8 9348 4000
www.woodside.com

02 October 2025

NAME
ADDRESS
SORRENTO WA 6020

212908 - 1

Dear Stakeholder

ANGEL CARBON CAPTURE AND STORAGE (CCS) GEOPHYSICAL AND GEOTECHICAL (GPGT) SURVEYS ENVIRONMENT PLAN

Woodside previously consulted you in July 2024 on the Angel CCS GPGT Surveys Commonwealth and State Environment Plans (EPs). The Commonwealth and State EPs have not yet been submitted,

While the activity remains unchanged, the estimated start date for the Commonwealth EP has been updated to **Q1 2027**.

Activity Overview

As Operator of the Angel CCS Joint Venture, Woodside plans to conduct geophysical and geotechnical surveys in Commonwealth waters off the North-West coast of WA. These surveys are intended to inform pipeline and umbilical routing, subsea infrastructure placement, and drilling unit positioning. They will also support baseline studies for existing and future infrastructure.

Please refer to the updated Consultation Information Sheet which is included for details.

Additional Consultation

Due to the revised timing, Woodside is undertaking further consultation. All other aspects of the activity —including location, scope, risks, and mitigation measures—remain as previously outlined and any feedback previously received during the initial 2024 consultation will be included in the EP.

Feedback

If you have feedback specific to the activities and the proposed EP, Woodside welcomes it at consultation@feedback.woodside.com or via phone call at 1800 442 977 by **31 October 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.

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Regards

Woodside Energy Consultation

Woodside Energy
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Karlak, 11 Mount Street
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6.3.21 Email to Chevron – 2 October 2025

Woodside previously consulted you in July 2024 on the Angel Carbon Capture and Storage (CCS) Geophysical and Geotechnical (GPGT) Surveys Commonwealth and State Environment Plans (EPs). The Commonwealth and State EPs have not yet been submitted. In August 2024, Chevron's feedback related to cyclone season, and requested cyclone anchor configuration, as well as mooring design, site specific geophysical and geotechnical data, anchor analysis and risk mitigations if activities would take place during cyclone season. (See emails below).

While the activity remains unchanged, the estimated start date for the Commonwealth EP surveys has been updated to Q1 2027. Woodside will update on the State EP at a later time.

Adjacent Titles

With this timing update, we also wanted to confirm that the Operational Area for the GPGT survey activity overlaps adjacent title G-9-AP with Chevron and Santos as titleholders. Image attached. To reduce the impact on adjacent titleholders, Woodside proposes to include adjacent titleholders in Start and End of Activity notifications. Please note these notifications are in addition to other relevant authorisations Woodside requires to carry out activities in adjacent titles.

Activity Overview
As Operator of the Angel CCS Joint Venture, Woodside plans to conduct geophysical and geotechnical surveys in Commonwealth waters off the North-West coast of WA. These surveys will inform pipeline and umbilical routing, subsea infrastructure placement, and drilling unit positioning. They will also support baseline studies for existing and future infrastructure.

Please refer to the attached updated Consultation Information Sheet for details.

Additional Consultation
Due to the revised timing, Woodside is undertaking further consultation. All other aspects of the activity—including location, scope, risks, and mitigation measures—remain as previously outlined and **any feedback previously received during the initial 2024 consultation will be included in the EP**.

Feedback
If you have feedback specific to the proposed activities and/or the overlapping adjacent title, we welcome your feedback at feedback@woodside.com or 1800 442 977 by **31 October 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 so that the information is not included when the EP is published on NOPSEMA's website.

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A Consultation Information Sheet is attached, which provides the proposed activities in Commonwealth waters including summaries of key impacts and risks and associated management measures. This is also available on our website.

6.3.22 Email to Santos – 2 October 2025

Woodside previously consulted you in July 2024 on the Angel Carbon Capture and Storage (CCS) Geophysical and Geotechnical (GPGT) Surveys Commonwealth and State Environment Plans (EPs). At the time, Santos noted that it may have planned operational activities during a similar timeframe and within the vicinity of the proposed activity.

The Commonwealth and State EPs have not yet been submitted. While the activity remains unchanged, the estimated start date for the Commonwealth EP surveys has been updated to Q1 2027. Woodside will update on the State EP at a later time.

Adjacent Titles

With this timing update, we also wanted to confirm that the Operational Area for the GPGT survey activity overlaps Santos' adjacent title G-9-AP. Image attached. We will also notify Chevron as a titleholder. To reduce the impact on adjacent titleholders, Woodside proposes to include adjacent titleholders in Start and End of Activity notifications. Please note these notifications are in addition to other relevant authorisations Woodside requires to carry out activities in adjacent titles.

Activity Overview

As Operator of the Angel CCS Joint Venture, Woodside plans to conduct geophysical and geotechnical surveys in Commonwealth waters off the North-West coast of WA. These surveys will inform pipeline and umbilical routing, subsea infrastructure placement, and drilling unit positioning. They will also support baseline studies for existing and future infrastructure.

Please refer to the attached updated Consultation Information Sheet for details.

Additional Consultation

Due to the revised timing, Woodside is undertaking further consultation. All other aspects of the activity—including location, scope, risks, and mitigation measures—remain as previously outlined and **any feedback previously received during the initial 2024 consultation will be included in the EP**.

Feedback

If you have additional feedback specific to the proposed activities or adjacent titles, we welcome your feedback at feedback@woodside.com or 1800 442 977 by **31 October 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).

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6.3.23 Email to Finder Energy − 1 October 2025

Woodside previously consulted you in July 2024 on the Angel Carbon Capture and Storage (CCS) Geophysical and Geotechnical (GPGT) Surveys Commonwealth and State Environment Plans (EPs). The Commonwealth and State EPs have not yet been submitted.

While the activity remains unchanged, the estimated start date for the Commonwealth EP surveys has been updated to Q1 2027. Woodside will update on the State EP at a later time.

Activity Overview

As Operator of the Angel CCS Joint Venture, Woodside plans to conduct geophysical and geotechnical surveys in Commonwealth waters off the North-West coast of WA. These surveys will inform pipeline and umbilical routing, subsea infrastructure placement, and drilling unit positioning. They will also support baseline studies for existing and future infrastructure.

Please refer to the attached updated Consultation Information Sheet for details.

Additional Consultation

Due to the revised timing, Woodside is undertaking further consultation. All other aspects of the activity—including location, scope, risks, and mitigation measures—remain as previously outlined and **any feedback previously received during the initial 2024 consultation will be included in the EP**. Previous correspondence follows.

Feedback
If you have feedback specific to the proposed activities, we welcome your feedback at feedback@woodside.com or 1800 442 977 by **31 October 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).

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6.3.24 Email to Carbon CQ, InCapture, SK Earthon Australia – 2 October 2025

Woodside previously consulted in July 2024 on the Angel Carbon Capture and Storage (CCS) Geophysical and Geotechnical (GPGT) Surveys Commonwealth and State Environment Plans (EPs). At the time of initial consultation, title G-15-AP had not been granted yet to InCapture, SK Earthon Australia and Carbon CQ. As title G-15-AP falls within the EMBA for the Commonwealth EP, we wanted to share the Angel CCS GPGT Surveys EP consultation updates with the G-15-AP titleholders.

The Commonwealth and State EPs have not yet been submitted. While the activity remains unchanged, the estimated start date for the Commonwealth EP surveys has been updated to Q1 2027. Woodside will update on the State EP at a later time.

Activity Overview

As Operator of the Angel CCS Joint Venture, Woodside plans to conduct geophysical and geotechnical surveys in Commonwealth waters off the North-West coast of WA. These surveys will inform pipeline and umbilical routing, subsea infrastructure placement, and drilling unit positioning. They will also support baseline studies for existing and future infrastructure.

Please refer to the attached updated Consultation Information Sheet for details.

Additional Consultation

Due to the revised timing, Woodside is undertaking further consultation. All other aspects of the activity—including location, scope, risks, and mitigation measures—remain as previously outlined. (Previous correspondence follows this email for reference as needed.)

Feedback
If you have feedback specific to the proposed activities, we welcome your feedback at feedback@woodside.com or 1800 442 977 by **31 October 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).

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6.3.25 Email to Telstra − 2 October 2025

Woodside previously consulted you in July 2024 on the Angel Carbon Capture and Storage (CCS) Geophysical and Geotechnical (GPGT) Surveys Commonwealth and State Environment Plans (EPs). The Commonwealth and State EPs have not yet been submitted.

While the activity remains unchanged, the estimated start date for the Commonwealth EP surveys has been updated to Q1 2027. Woodside will update on the State EP at a later time.

Activity Overview

As Operator of the Angel CCS Joint Venture, Woodside plans to conduct geophysical and geotechnical surveys in Commonwealth waters off the North-West coast of WA. These surveys will inform pipeline and umbilical routing, subsea infrastructure placement, and drilling unit positioning. They will also support baseline studies for existing and future infrastructure.

Please refer to the attached updated Consultation Information Sheet for details.

Additional Consultation

Due to the revised timing, Woodside is undertaking further consultation. All other aspects of the activity—including location, scope, risks, and mitigation measures—remain as previously outlined and **any feedback previously received during the initial 2024 consultation will be included in the EP**.

Feedback
If you have feedback specific to the proposed activities, we welcome your feedback at feedback@woodside.com or 1800 442 977 by **31 October 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).

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6.3.26 Email to Vocus – 2 October 2025

Woodside previously consulted you in July 2024 on the Angel Carbon Capture and Storage (CCS) Geophysical and Geotechnical (GPGT) Surveys Commonwealth and State Environment Plans (EPs). At the time, Robert Knowles wrote to confirm that the Vocus Highclere cable was 15km north of survey area, so there were no comments or concerns. Given we had consulted with you previously, we wanted to share the consultation update on timing of the activities.

The Commonwealth and State EPs have not yet been submitted. While the activity remains unchanged, the estimated start date for the Commonwealth EP surveys has been updated to Q1 2027. Woodside will update on the State EP at a later time.

Activity Overview

As Operator of the Angel CCS Joint Venture, Woodside plans to conduct geophysical and geotechnical surveys in Commonwealth waters off the North-West coast of WA. These surveys will inform pipeline and umbilical routing, subsea infrastructure placement, and drilling unit positioning. They will also support baseline studies for existing and future infrastructure.

Please refer to the attached updated Consultation Information Sheet for details.

Additional Consultation

Due to the revised timing, Woodside is undertaking further consultation. All other aspects of the activity—including location, scope, risks, and mitigation measures—remain as previously outlined and **any feedback previously received during the initial 2024 consultation will be included in the EP**.

Feedback
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6.3.27 Email to Australian Institute of Marine Science (AIMS) − 2 October 2025

Woodside previously consulted you in July 2024 on the Angel Carbon Capture and Storage (CCS) Geophysical and Geotechnical (GPGT) Surveys Commonwealth and State Environment Plans (EPs). Previous correspondence with Matthew Hamilton follows below this email.

The Commonwealth and State EPs have not yet been submitted. While the activity remains unchanged, the estimated start date for the Commonwealth EP surveys has been updated to Q1 2027. Woodside will update on the State EP at a later time.

Activity Overview
As Operator of the Angel CCS Joint Venture, Woodside plans to conduct geophysical and geotechnical surveys in Commonwealth waters off the North-West coast of WA. These surveys will inform pipeline and umbilical routing, subsea infrastructure placement, and drilling unit positioning. They will also support baseline studies for existing and future infrastructure.

Please refer to the attached updated Consultation Information Sheet for details.

Additional Consultation
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Feedback
If you have feedback specific to the proposed activities, we welcome your feedback at feedback@woodside.com or 1800 442 977 by **31 October 2025.**

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6.3.28 Email to University of Western Australia (UWA), Curtin University, Murdoch University, Western Australian Marine Science Institution (WAMSI), Commonwealth Scientific and Industrial Research Organisation (CSIRO) – 2 October 2025

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Woodside consulted you in July 2024 on the Angel Carbon Capture and Storage (CCS) Geophysical and Geotechnical (GPGT) Surveys Commonwealth and State Environment Plans (EPs). The Commonwealth and State EPs have not yet been submitted.

While the activity remains unchanged, the estimated start date for the Commonwealth EP surveys has been updated to Q1 2027. Woodside will update on the State EP at a later time.

Activity Overview

As Operator of the Angel CCS Joint Venture, Woodside plans to conduct geophysical and geotechnical surveys in Commonwealth waters off the North-West coast of WA. These surveys will inform pipeline and umbilical routing, subsea infrastructure placement, and drilling unit positioning. They will also support baseline studies for existing and future infrastructure.

Please refer to the attached updated Consultation Information Sheet for details.

Additional Consultation

Due to the revised timing, Woodside is undertaking further consultation. All other aspects of the activity—including location, scope, risks, and mitigation measures—remain as previously outlined and **any feedback previously received during the initial 2024 consultation will be included in the EP**.

Feedback
If you have feedback specific to the proposed activities, we welcome your feedback at feedback@woodside.com or 1800 442 977 by **31 October 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 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.

A Consultation Information Sheet is attached, which provides the proposed activities in Commonwealth waters including summaries of key impacts and risks and associated management measures. This is also available on our website.

6.3.29 Email to Department of Water and Environmental Regulation (DWER) – 16 October 2025

Dear DWER Team,

DPLH has recommended that we contact DWER in respect to the Angel Carbon Capture and Storage (CCS) GPGT Surveys Commonwealth EP. Please let us know if you have any feedback and/or confirm if DWER would like to be consulted on future Woodside EPs. For historical reference, we've also included the original consultation from July 2024 which follows the email below.

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Woodside first consulted in July 2024 on the Angel Carbon Capture and Storage (CCS) Geophysical and Geotechnical (GPGT) Surveys Commonwealth and State Environment Plans (EPs). The Commonwealth and State EPs have not yet been submitted.

While the activity remains unchanged, the estimated start date for the Commonwealth EP surveys has been updated to Q1 2027. Woodside will update on the State EP at a later time.

Activity Overview

As Operator of the Angel CCS Joint Venture, Woodside plans to conduct geophysical and geotechnical surveys in Commonwealth waters off the North-West coast of WA. These surveys will inform pipeline and umbilical routing, subsea infrastructure placement, and drilling unit positioning. They will also support baseline studies for existing and future infrastructure.

Please refer to the attached updated Consultation Information Sheet for details.

Additional Consultation

Due to the revised timing, Woodside is undertaking further consultation. All other aspects of the activity—including location, scope, risks, and mitigation measures—remain as previously outlined and any feedback previously received during the initial 2024 consultation will be included in the EP.

Feedback

If you have feedback specific to the proposed activities, we welcome your feedback at feedback@woodside.com or 1800 442 977 by 31 October 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 so that the information is not included when the EP is published on NOPSEMA's website.

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A Consultation Information Sheet is attached, which provides the proposed activities in Commonwealth waters including summaries of key impacts and risks and associated management measures. This is also available on our website.

6.3.30 Email sent to Murujuga Aboriginal Corporation (MAC) – 02 October 2025

Dear Murujuga Aboriginal Corporation (MAC),

ACTIVITY UPDATE: ANGEL CARBON CAPTURE AND STORAGE (CCS) GEOPHYSICAL AND GEOTECHNICAL (GPGT) ENVIRONMENT PLAN (EP)

Woodside previously contacted you on 9 and 30 July 2024 to consult with you on the Angel

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CCS GPGT Surveys Environment Plans for both Commonwealth and State waters. Due to operational decisions, the EPs relating to this consultation have not been submitted for assessment with the relevant regulator.

We can confirm that the Angel CCS GPGT EP relating to activities within Commonwealth waters is now planned to be submitted to National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment. While the activities described within the EP remain unchanged since we consulted with you, we wanted to provide an additional opportunity for you to provide feedback about the activity before we submit the EP for assessment. Any feedback provided during the initial 2024 consultation has been incorporated into the EP.

Activity Overview
As an Operator of the Angel CCS Joint Venture, Woodside plans to conduct GPGT surveys in Commonwealth waters off the North-West coast of WA. These surveys will inform pipeline and umbilical routing, subsea infrastructure placement, and drilling unit positioning. They will also support baseline studies for existing and future infrastructure. Please refer to the attached Summary Information Sheet for details or the linked Consultation Information Sheet.

Cultural Values
We have collated information in relation to MAC's cultural values that have either been provided to Woodside during previous EP consultation or via publicly available literature. For your convenience, these are outlined in Appendix A. If there are any changes or additional information about your cultural values that you would like Woodside to consider ahead of the EP's submission, please let us know by 31 October 2025. Please also get in touch if you'd like to know more about how we collected this information.

Feedback
If there is additional information that you would like us to consider, please provide that information to us by no later than 31 October 2025. Feedback can be provided directly, by emailing feedback@woodside.com or by calling 1800 442 977. Woodside manages gender-restricted or other culturally sensitive information carefully and we will work with you to understand how you would like your information to be managed. If you would prefer to provide the information directly to NOPSEMA, please do so by phoning (08) 6188 8700 or via email at communications@nopsema.gov.au.

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.

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APPENDIX A

Cultural Values – Murujuga Aboriginal Corporation (MAC)

Cultural Value	Source	
	Consultation – identified during EP consultation	Literature review (publicly available)
The ecosystem and health of Mermaid Sound.		x
Marine species • Whales: totemic importance • Dolphins: cultural ceremonies • Dugongs: food source • Fish: cultural ceremonies • Sea Snakes: culturally important • Turtles: Songlines • Coral: attract fish and other species • Seagrass: provide protection for animals. Locations include Conzinc Island and between Angel and Gidley Islands. • Stingrays • Sharks • Crustaceans • Octopus • Sea stars • Sea urchins • Sponges • Molluscs	x	x
Marine eco-systems • Mangroves: would have provided shelter, crabbing, digging for shellfish and could be turtle nurseries. Locations include Conzinc Bay north end, Flying Foam Passage, Searipple Passage, North-East Bay of West Lewis Island. • Macroalgal (seaweed) communities: important habitats and food sources. • Subtidal soft bottom communities (ocean bottom): support invertebrate diversity. • Intertidal sand and mudflat communities: support invertebrate diversity and provide food for shorebirds. • Rocky shores: habitats for plants/animals and provide food for shorebirds.	x	x
Fish traps in Conzinc Bay and Angel and Gidley Islands.	x	x
Harvesting squid around Conzinc Bay		x

MAC is the appropriate cultural authority for Murujuga	x	
Submerged landscape: • Potential impact on Jinna (Songlines) • Potential impact to Aboriginal heritage, due to the submerged coastline at initial occupation of the region, landscape features that would have defined the first travel routes used to move through Country.	x	
Murujuga seasonal calendar: • Any change to the feeding, breeding or migratory behaviour of culturally significant species would impact significantly on subsistence, cultural and ceremonial activities.	x	

Kind regards,

6.3.31 Email sent to Ngarluma Aboriginal Corporation (NAC) – 02 October 2025

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Dear Ngarluma Aboriginal Corporation (NAC),

ACTIVITY UPDATE: ANGEL CARBON CAPTURE AND STORAGE (CCS) GEOPHYSICAL AND GEOTECHNICAL (GPGT) ENVIRONMENT PLAN (EP)

Woodside previously contacted you on 12 July 2024 and 7 August 2024 to consult with you on the Angel CCS GPGT Surveys Environment Plans for both Commonwealth and State waters. Due to operational decisions, the EPs relating to this consultation have not been submitted for assessment with the relevant regulator.

We can confirm that the Angel CCS GPGT EP relating to activities within Commonwealth waters is now planned to be submitted to National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment. While the activities described within the EP remain unchanged since we consulted with you, we wanted to provide an additional opportunity for you to provide feedback about the activity before we submit the EP for assessment. Any feedback provided during the initial 2024 consultation has been incorporated into the EP.

Activity Overview
As an Operator of the Angel CCS Joint Venture, Woodside plans to conduct GPGT surveys in Commonwealth waters off the North-West coast of WA. These surveys will inform pipeline and umbilical routing, subsea infrastructure placement, and drilling unit positioning. They will also support baseline studies for existing and future infrastructure. Please refer to the attached Summary Information Sheet for details or the linked Consultation Information Sheet.

Cultural Values
We have collated information in relation to NAC's cultural values that have either been provided to Woodside during previous EP consultation or via publicly available literature. For your convenience, these are outlined in Appendix A. If there are any changes or additional information about your cultural values that you would like Woodside to consider ahead of the EP's submission, please let us know by 31 October 2025. Please also get in touch if you'd like to know more about how we collected this information.

Feedback
If there is additional information that you would like us to consider, please provide that information to us by no later than 31 October 2025. Feedback can be provided directly, by emailing feedback@woodside.com or by calling 1800 442 977. Woodside manages gender-restricted or other culturally sensitive information carefully and we will work with you to understand how you would like your information to be managed. If you would prefer to provide the information directly to NOPSEMA, please do so by phoning (08) 6188 8700 or via email at communications@nopsema.gov.au.

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We also acknowledge our discussions relating to the consultation framework agreement have been ongoing and appreciate that these discussions will progress in parallel with consultation for this EP.

APPENDIX A

Cultural Values – Ngarluma Aboriginal Corporation (NAC)

Cultural Value	Source	
	Consultation	Literature review (publicly available)
Onshore heritage: interest in management of heritage sites.	x	
Potential submerged heritage.	x	
Manggan - (creative beings) used supernatural force to shape the hills, rivers, seas and landforms.		x

Kind regards,

6.3.32 Email sent to Robe River Kuruma Aboriginal Corporation (RRKAC) – 02 October 2025

Dear Robe River Kuruma Aboriginal Corporation (RRKAC),

ACTIVITY UPDATE: ANGEL CARBON CAPTURE AND STORAGE (CCS) GEOPHYSICAL AND GEOTECHNICAL (GPGT) ENVIRONMENT PLAN (EP)

Woodside previously contacted you on 8 and 30 July 2024 as well as 6 September 2024 to consult with you on the Angel CCS GPGT Surveys Environment Plans for both Commonwealth and State waters. Due to operational decisions, the EPs relating to this consultation have not been submitted for assessment with the relevant regulator.

We can confirm that the Angel CCS GPGT EP relating to activities within Commonwealth waters is now planned to be submitted to National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment. While the activities described within the EP remain unchanged since we consulted with you, we wanted to provide an additional opportunity for you to provide feedback about the activity before we submit the EP for assessment. Any feedback provided during the initial 2024 consultation has been incorporated into the EP.

Activity Overview
As an Operator of the Angel CCS Joint Venture, Woodside plans to conduct GPGT surveys in Commonwealth waters off the North-West coast of WA. These surveys will inform pipeline and umbilical routing, subsea infrastructure placement, and drilling unit positioning. They will also support baseline studies for existing and future infrastructure. Please refer to the attached Summary Information Sheet for details or the linked Consultation Information Sheet.

Cultural Values
We have collated information in relation to RRKAC's cultural values that have either been

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provided to Woodside during previous EP consultation or via publicly available literature. For your convenience, these are outlined in Appendix A. If there are any changes or additional information about your cultural values that you would like Woodside to consider ahead of the EP's submission, please let us know by 31 October 2025. Please also get in touch if you'd like to know more about how we collected this information.

Feedback
If there is additional information that you would like us to consider, please provide that information to us by no later than 31 October 2025. Feedback can be provided directly, by emailing feedback@woodside.com or by calling 1800 442 977. Woodside manages gender-restricted or other culturally sensitive information carefully and we will work with you to understand how you would like your information to be managed. If you would prefer to provide the information directly to NOPSEMA, please do so by phoning (08) 6188 8700 or via email at communications@nopsema.gov.au.

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.

We also acknowledge our discussions relating to the consultation framework agreement have been ongoing and appreciate that these discussions will progress in parallel with consultation for this EP.

APPENDIX A

Cultural Values - Robe River Kuruma Aboriginal Corporation (RRKAC)

Cultural Value	Source	
	Consultation	Literature review (publicly available)
Underwater heritage – concerns about impacts to heritage at shoreline.	x	
Coastline	x	

Kind regards,

6.3.33 Email sent to Wirrawandi Aboriginal Corporation (WAC) – 02 October 2025

Dear Wirrawandi Aboriginal Corporation (WAC),

ACTIVITY UPDATE: ANGEL CARBON CAPTURE AND STORAGE (CCS) GEOPHYSICAL AND GEOTECHNICAL (GPGT) ENVIRONMENT PLAN (EP)

Woodside previously contacted you on 8 July 2024 and met on 15 July 2024 to consult with you on the Angel CCS GPGT Surveys Environment Plans for both Commonwealth and State

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waters. Due to operational decisions, the EPs relating to this consultation have not been submitted for assessment with the relevant regulator. Whilst you advised your satisfaction with the consultation with Woodside on 15 July 2024, we wanted to provide an opportunity to provide additional information.

We can confirm that the Angel CCS GPGT EP relating to activities within Commonwealth waters is now planned to be submitted to National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment. While the activities described within the EP remain unchanged since we consulted with you, we wanted to provide an additional opportunity for you to provide feedback about the activity before we submit the EP for assessment. Any feedback provided during the initial 2024 consultation has been incorporated into the EP.

Activity Overview
As an Operator of the Angel CCS Joint Venture, Woodside plans to conduct GPGT surveys in Commonwealth waters off the North-West coast of WA. These surveys will inform pipeline and umbilical routing, subsea infrastructure placement, and drilling unit positioning. They will also support baseline studies for existing and future infrastructure. Please refer to the attached Summary Information Sheet for details or the linked Consultation Information Sheet.

Cultural Values
We have collated information in relation to WAC's cultural values that have either been provided to Woodside during previous EP consultation or via publicly available literature. For your convenience, these are outlined in Appendix A. If there are any changes or additional information about your cultural values that you would like Woodside to consider ahead of the EP's submission, please let us know by 31 October 2025. Please also get in touch if you'd like to know more about how we collected this information.

Feedback
If there is additional information that you would like us to consider, please provide that information to us by no later than 31 October 2025. Feedback can be provided directly, by emailing feedback@woodside.com or by calling 1800 442 977. Woodside manages gender-restricted or other culturally sensitive information carefully and we will work with you to understand how you would like your information to be managed. If you would prefer to provide the information directly to NOPSEMA, please do so by phoning (08) 6188 8700 or via email at communications@nopsema.gov.au.

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We also acknowledge our discussions relating to the consultation framework agreement have been ongoing and appreciate that these discussions will progress in parallel with consultation for this EP.

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APPENDIX A

Cultural Values – Wirrawandi Aboriginal Corporation (WAC)

Cultural Value	Source	
	Consultation	Literature review (publicly available)
Marine Species • Whales: migration and potential impact of noise on whale communication • Turtles: general interest around management and monitoring.	x	
Rock art: potential impact of emissions from activities.	x	
Underwater heritage: impacts particularly given recent finding of artefacts.	x	
Onshore heritage: management of sites.	x	

Kind regards,

6.3.34 Email sent to Yindjibarndi Aboriginal Corporation (via NYFL) – 02 October 2025

We are contacting you as the delegated representative for Yindjibarndi Aboriginal Corporation and Ngarluma Yindjibarndi Foundation Ltd (NYFL).

ACTIVITY UPDATE: ANGEL CARBON CAPTURE AND STORAGE (CCS) GEOPHYSICAL AND GEOTECHNICAL (GPGT) ENVIRONMENT PLAN (EP)

Woodside previously contacted you on 8, 9, 23 July 2024 and 9 August 2024 to consult with you on the Angel CCS GPGT Surveys Environment Plans for both Commonwealth and State waters. Due to operational decisions, the EPs relating to this consultation have not been submitted for assessment with the relevant regulator.

We can confirm that the Angel CCS GPGT EP relating to activities within Commonwealth waters is now planned to be submitted to National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment. While the activities described within the EP remain unchanged since we consulted with you, we wanted to provide an additional opportunity for you to provide feedback about the activity before we submit the EP for assessment. Any feedback provided during the initial 2024 consultation has been incorporated into the EP.

Activity Overview
As an Operator of the Angel CCS Joint Venture, Woodside plans to conduct GPGT surveys in Commonwealth waters off the North-West coast of WA. These surveys will inform pipeline and umbilical routing, subsea infrastructure placement, and drilling unit positioning. They will also support baseline studies for existing and future infrastructure. Please refer to the attached Summary Information Sheet for details or the linked Consultation Information Sheet.

Feedback
If there is additional information that you would like us to consider, please provide that information to us by no later than 31 October 2025. Feedback can be provided directly, by emailing feedback@woodside.com or by calling 1800 442 977. Woodside manages gender-restricted or other culturally sensitive information carefully and we will work with you to understand how you would like your information to be managed. If you would prefer to

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provide the information directly to NOPSEMA, please do so by phoning (08) 6188 8700 or via email at communications@nopsema.gov.au.

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We also acknowledge our discussions relating to the consultation framework agreement have been ongoing and appreciate that these discussions will progress in parallel with consultation for this EP.

Kind regards,

6.3.35 Email sent to Kimberley Land Council (KLC) – 02 October 2025

Dear Kimberley Land Council (KLC),

ACTIVITY UPDATE: ANGEL CARBON CAPTURE AND STORAGE (CCS) GEOPHYSICAL AND GEOTECHNICAL (GPGT) ENVIRONMENT PLAN (EP)

Woodside previously contacted you on 9 and 30 July 2024 to consult with you on the Angel CCS GPGT Surveys Environment Plans for both Commonwealth and State waters. Due to operational decisions, the EPs relating to this consultation have not been submitted for assessment with the relevant regulator.

We can confirm that the Angel CCS GPGT EP relating to activities within Commonwealth waters is now planned to be submitted to National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment. While the activities described within the EP remain unchanged since we consulted with you, we wanted to provide an additional opportunity for you to provide feedback about the activity before we submit the EP for assessment. Any feedback provided during the initial 2024 consultation has been incorporated into the EP.

Activity Overview
As an Operator of the Angel CCS Joint Venture, Woodside plans to conduct GPGT surveys in Commonwealth waters off the North-West coast of WA. These surveys will inform pipeline and umbilical routing, subsea infrastructure placement, and drilling unit positioning. They will also support baseline studies for existing and future infrastructure. Please refer to the attached Summary Information Sheet for details or the linked Consultation Information Sheet.

Feedback
If there is additional information that you would like us to consider, please provide that information to us by no later than 31 October 2025. Feedback can be provided directly, by emailing feedback@woodside.com or by calling 1800 442 977. Woodside manages gender-restricted or other culturally sensitive information carefully and we will work with you to

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understand how you would like your information to be managed. If you would prefer to provide the information directly to NOPSEMA, please do so by phoning (08) 6188 8700 or via email at communications@nopsema.gov.au.

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Kind regards,

6.3.36 Email sent to Yamatji Marlpa Aboriginal Corporation (YMAC) – 02 October 2025

Dear Yamatji Marlpa Aboriginal Corporation (YMAC),

ACTIVITY UPDATE: ANGEL CARBON CAPTURE AND STORAGE (CCS) GEOPHYSICAL AND GEOTECHNICAL (GPGT) ENVIRONMENT PLAN (EP)

Woodside previously contacted you on 8, 16 and 23 July 2024 to consult with you on the Angel CCS GPGT Surveys Environment Plans for both Commonwealth and State waters. Due to operational decisions, the EPs relating to this consultation have not been submitted for assessment with the relevant regulator.

We can confirm that the Angel CCS GPGT EP relating to activities within Commonwealth waters is now planned to be submitted to National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment. While the activities described within the EP remain unchanged since we consulted with you, we wanted to provide an additional opportunity for you to provide feedback about the activity before we submit the EP for assessment. Any feedback provided during the initial 2024 consultation has been incorporated into the EP.

Activity Overview
As an Operator of the Angel CCS Joint Venture, Woodside plans to conduct GPGT surveys in Commonwealth waters off the North-West coast of WA. These surveys will inform pipeline and umbilical routing, subsea infrastructure placement, and drilling unit positioning. They will also support baseline studies for existing and future infrastructure. Please refer to the attached Summary Information Sheet for details or the linked Consultation Information Sheet.

Feedback
If there is additional information that you would like us to consider, please provide that information to us by no later than 31 October 2025. Feedback can be provided directly, by emailing feedback@woodside.com or by calling 1800 442 977. Woodside manages gender-restricted or other culturally sensitive information carefully and we will work with you to understand how you would like your information to be managed. If you would prefer to provide the information directly to NOPSEMA, please do so by phoning (08) 6188 8700 or

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via email at communications@nopsema.gov.au.

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We also acknowledge our discussions relating to the consultation framework agreement have been ongoing and appreciate that these discussions will progress in parallel with consultation for this EP.

Kind regards,

6.3.37 Email sent to Ngarluma Yindjibarndi Foundation Ltd (NYFL) – 02 October 2025

We are contacting you as the delegated representative for Yindjibarndi Aboriginal Corporation and Ngarluma Yindjibarndi Foundation Ltd (NYFL).

ACTIVITY UPDATE: ANGEL CARBON CAPTURE AND STORAGE (CCS) GEOPHYSICAL AND GEOTECHNICAL (GPGT) ENVIRONMENT PLAN (EP)

Woodside previously contacted you on 8, 9, 23 July 2024 and 9 August 2024 to consult with you on the Angel CCS GPGT Surveys Environment Plans for both Commonwealth and State waters. Due to operational decisions, the EPs relating to this consultation have not been submitted for assessment with the relevant regulator.

We can confirm that the Angel CCS GPGT EP relating to activities within Commonwealth waters is now planned to be submitted to National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment. While the activities described within the EP remain unchanged since we consulted with you, we wanted to provide an additional opportunity for you to provide feedback about the activity before we submit the EP for assessment. Any feedback provided during the initial 2024 consultation has been incorporated into the EP.

Activity Overview
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Feedback
If there is additional information that you would like us to consider, please provide that information to us by no later than 31 October 2025. Feedback can be provided directly, by emailing feedback@woodside.com or by calling 1800 442 977. Woodside manages gender-

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We also acknowledge our discussions relating to the consultation framework agreement have been ongoing and appreciate that these discussions will progress in parallel with consultation for this EP.

Kind regards,

6.3.38 Email sent to Save Our Songlines (SOS) (via legal representative) – 02 October 2025

Dear Save Our Songlines (SOS),

ACTIVITY UPDATE: ANGEL CARBON CAPTURE AND STORAGE (CCS) GEOPHYSICAL AND GEOTECHNICAL (GPGT) ENVIRONMENT PLAN (EP)

Woodside previously contacted you on 8 and 30 July 2024 to consult with you on the Angel CCS GPGT Surveys Environment Plans for both Commonwealth and State waters. Due to operational decisions, the EPs relating to this consultation have not been submitted for assessment with the relevant regulator.

We can confirm that the Angel CCS GPGT EP relating to activities within Commonwealth waters is now planned to be submitted to National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment. While the activities described within the EP remain unchanged since we consulted with you, we wanted to provide an additional opportunity for you to provide feedback about the activity before we submit the EP for assessment. Any feedback provided during the initial 2024 consultation has been incorporated into the EP.

Activity Overview
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Feedback
If there is additional information that you would like us to consider, please provide that

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information to us by no later than 31 October 2025. Feedback can be provided directly, by emailing feedback@woodside.com or by calling 1800 442 977. Woodside manages gender-restricted or other culturally sensitive information carefully and we will work with you to understand how you would like your information to be managed. If you would prefer to provide the information directly to NOPSEMA, please do so by phoning (08) 6188 8700 or via email at communications@nopsema.gov.au.

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.

Kind regards,

6.3.39 Email sent to WAFIC

See SI Report reference 11.16

6.3.39.1 Email sent from WAFIC on behalf of Woodside to Marine Aquarium Managed Fishery, Mackerel Managed Fishery (Area 2), Nickol Bay Prawn Managed Fishery, Onslow Prawn Managed Fishery (Areas 1 and 2), Pilbara Crab Managed Fishery, Pilbara Line Fishery, Pilbara Trap Fishery, Pilbara Trawl Fishery – 1 October 2025

See SI Report reference 11.18.

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6.3.40 Email to Department of Biodiversity, Conservations and Attractions (DBCA) – 1 October 2025

Woodside previously consulted you in July 2024 on the Angel Carbon Capture and Storage (CCS) Geophysical and Geotechnical (GPGT) Surveys Commonwealth and State Environment Plans (EPs). The Commonwealth and State EPs have not yet been submitted.

While the activity remains unchanged, the estimated start date for the Commonwealth EP surveys has been updated to Q1 2027. Woodside will update on the State EP at a later time.

Activity Overview
As Operator of the Angel CCS Joint Venture, Woodside plans to conduct geophysical and geotechnical surveys in Commonwealth waters off the North-West coast of WA. These surveys will inform pipeline and umbilical routing, subsea infrastructure placement, and drilling unit positioning. They will also support baseline studies for existing and future infrastructure.

Please refer to the attached updated Consultation Information Sheet for details.

Additional Consultation
Due to the revised timing, Woodside is undertaking further consultation. All other aspects of the activity—including location, scope, risks, and mitigation measures—remain as previously outlined and **any feedback previously received during the initial 2024 consultation will be included in the EP**.

Feedback
If you have feedback specific to the proposed activities, we welcome your feedback at feedback@woodside.com or 1800 442 977 by **31 October 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 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.

A Consultation Information Sheet is attached, which provides the proposed activities in Commonwealth waters including summaries of key impacts and risks and associated management measures. This is also available on our website.

6.3.41 Email to Southern Bluefin Tuna Fishery, Western Skipjack Tuna Fishery and Western Tuna and Billfish Fishery – 25 November 2025

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Last July 2024, Woodside started consultation on the Angel Carbon Capture and Storage (CCS) Geophysical and Geotechnical (GPGT) Surveys Commonwealth and State Environment Plans (EPs). The Commonwealth and State EPs have not yet been submitted. Based on estimated start date now in Q1 2027, we are consulting your organisation on the Commonwealth EP and providing the 2025 update.

Woodside has also consulted Tuna Australia and Australian Southern Bluefin Tuna Industry Association (ASBTIA). Below please find the activity overview, and the original July 2024 consultation follows that for reference. Please note that no Commonwealth fisheries have been active in the Operational Area in the past 5 years. North West Slope Trawl Fishery has been active in the EMBA within the past 5 years.

While the activity remains unchanged, the estimated start date for the Commonwealth EP surveys has been updated to Q1 2027. Woodside will update on the State EP at a later time.

Activity Overview
As Operator of the Angel CCS Joint Venture, Woodside plans to conduct geophysical and geotechnical surveys in Commonwealth waters off the North-West coast of WA. These surveys will inform pipeline and umbilical routing, subsea infrastructure placement, and drilling unit positioning. They will also support baseline studies for existing and future infrastructure.
Please refer to the attached updated Consultation Information Sheet for details, which provides the proposed activities in Commonwealth waters including summaries of key impacts and risks and associated management measures. This is also available on our website.

Consultation
Due to the revised timing, Woodside is undertaking further consultation. All other aspects of the activity—including location, scope, risks, and mitigation measures—remain as previously outlined and highlighted in the attached Consultation Information Sheet.
Please let us know if you require notification prior to and on completion of the proposed activities.

Feedback
If you have feedback specific to the proposed activities, we welcome your feedback at consultation@feedback.woodside.com or 1800 442 977 by 29 December 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 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.
Regards.

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The personal information that Woodside Energy Group Ltd (Woodside) collects in our engagement with you will be processed in accordance with our privacy statement. Email our Privacy Officer if you have questions about how we handle your personal information.

From: Woodside Consultation
Sent: Monday, July 8, 2024
Subject: Woodside Consultation Information ANGEL CCS GPGT Surveys EPs

Dear Stakeholder

Woodside is planning to submit the Angel Carbon Capture and Storage (CCS) Geophysical and Geotechnical Surveys Commonwealth and State Environment Plans.

Overview
For the proposed Angel CCS Project in the North-West region of Western Australia, Woodside, as Operator of the Angel CCS Joint Venture, plans to undertake geophysical and geotechnical surveys to provide data to support the greenhouse gas (GHG) activity program. Data from the surveys, in Commonwealth and State waters, is intended to inform the design for the pipeline and umbilical routes, subsea structure foundation locations and planning for mobile offshore drilling unit anchoring or jack-up rig placement. The surveys will also support baseline studies to provide data on existing infrastructure and potential future activities.

The Angel CCS Project involves the development of a Carbon Dioxide (CO2) gathering system, collecting CO2 via new pipelines from emitters onshore or through imported options via ships. Collected CO2 would be transported to a central compression facility prior to being transported offshore via a subsea pipeline and injected into the subsea geological formation.

Exclusionary / Cautionary Zones
- Temporary 500 m exclusion zone around vessels conducting survey activities to manage vessel movements.
- No restrictions to other vessels within the Operational Area apart from being advised to take care during the survey vessel 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 these environment plans, is determined by modelling a release of hydrocarbons from a vessel collision. A vessel collision and 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 hydrocarbon release does occur, the whole EMBA will not be affected.

Consultation information
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

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to our newsletter Let's Talk – Our Plans, Your Say and to receive updates on our consultation activities.

Please let us know if you require notification prior to and on completion of the proposed activities.

Activity: Angel CCS Geophysical and Geotechnical Surveys Commonwealth and State Environment Plans

Angel CCS Geophysical and Geotechnical Surveys Commonwealth and State Environmental Plans		
Summary	Series of geophysical and geotechnical surveys to provide data to support the GHG activity program, inform design of the Angel CCS Project and support baselines studies to provide data on existing infrastructure and potential future activities.	
	State	Commonwealth
Permit Area	Vacant acreage	Vacant acreage, G-10-AP, WA-3-L, WA-4-L, WA-9-L, WA-52-L, WA-28-P, WA-1-L, G-9-AP, WA-208-P, Vacant acreage release area W22-4
Location	North West Shelf Province ~ 9 km north-east of Dampier, Western Australia	North West Shelf ~ 35 km to 140 km north of Dampier, Western Australia
Approx. water depth (m)	Up to 45 m	35-135 m
Timing	Expected to commence around: Q1 2025 Timing: Approximately 80 days over 5-year period of the EP.	Expected to commence around: Q1 2025 Timing: Approximately 100 days over 5-year period of the EP.
Operational areas / Exclusionary zones	Temporary 500 m safety exclusion zone will apply around the project vessels conducting survey activities in the State and Commonwealth Operational Areas to manage vessel movements.	
Vessels	Multi-purpose project vessel, supply vessel, jack-up barge supported by small tug or multi cat, smaller craft for nearshore, uncrewed surface vessels.	Multi-purpose project vessel, supply vessel, geotechnical drilling vessel, uncrewed surface vessels.
Fisheries	Active in the State Operational Area: none	Active in the Commonwealth Operational Area: none Active in the Commonwealth EMBA: North-West Slope Trawl Fishery

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Feedback:
If you have feedback specific to the proposed activities described under the proposed EPs, we would welcome your feedback via email at Feedback@woodside.com or phone call at 1800 442 977, or via the feedback form on our website by 9 August 2024.

Your feedback and our response will be included in our EPs. The Commonwealth EP 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). The State EP will be submitted to Department of Energy, Mines, Industry Regulation and Safety (DEMIRS) pending review of the Petroleum (Submerged Lands) (Environment) Regulations 2012 (WA). Both 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.

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.

6.3.42 Email to Aquaculture Council of Western Australia (ACWA) – 1 October 2025

Last July 2024, Woodside started consultation on the Angel Carbon Capture and Storage (CCS) Geophysical and Geotechnical (GPGT) Surveys Commonwealth and State Environment Plans (EPs). The Commonwealth and State EPs have not yet been submitted. Since that time, we have started consulting ACWA so wanted to provide information on the update. While there are no aquaculture sites that overlap the EMBA, there are two pearling leases, located in Flying Foam Passages A and B. The information from the original July 2024 consultation follows below.
While the activity remains unchanged, the estimated start date for the Commonwealth EP surveys has been updated to Q1 2027. Woodside will update on the State EP at a later time.

Activity Overview
As Operator of the Angel CCS Joint Venture, Woodside plans to conduct geophysical and geotechnical surveys in Commonwealth waters off the North-West coast of WA. These surveys will inform pipeline and umbilical routing, subsea infrastructure placement, and drilling unit positioning. They will also support baseline studies for existing and future infrastructure.

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Please refer to the attached updated Consultation Information Sheet for details.

Additional Consultation
Due to the revised timing, Woodside is undertaking further consultation. All other aspects of the activity—including location, scope, risks, and mitigation measures—remain as previously outlined and **any feedback previously received during the initial 2024 consultation will be included in the EP**.

Feedback
If you have feedback specific to the proposed activities, we welcome your feedback at feedback@woodside.com or 1800 442 977 by **31 October 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 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.
A Consultation Information Sheet is attached, which provides the proposed activities in Commonwealth waters including summaries of key impacts and risks and associated management measures. This is also available on our website.

6.4 2025 Follow-up consultation update

6.4.1 Email to Australian Border Force (ABF), Australian Communications and Media Authority (ACMA), Aquaculture Council of Western Australia (ACWA), Australasian Centre for Corporate Responsibility (ACCR), Australian Conservation Foundation (ACF), Australian Energy Producers (AEP), AMSA – Marine Pollution, AMSA - Marine Safety, Australian Marine Conservation Society (AMCS), Australian Border Force (ABF), Bounty Oil and Gas, Carbon CQ, Chevron, Commonwealth Fisheries Association (CFA), City of Karratha, Coastal Oil and Gas/Fox Resources, Conservation Council of Western Australia (CCWA), DAFF-Biosecurity, DAFF-Fisheries, Department of Climate Change, Energy, the Environment and Water (DCCEEW), Department of Defence (DoD), Doctors for the Environment (DEA), Department of Biodiversity, Conservation and Attractions (DBCA), Department of Water and Environmental Regulation (DWER), Department of Industry, Sciences and Resources (DISR), Department of Petroleum, Mines and Exploration (DMPE, formerly DEMIRS), Department of Planning, Lands and Heritage), Department of Primary Industries and Regional Development (DPIRD), Department of Transport and Major Infrastructure (DTMI, formerly DoT)

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Exxon Mobil, Finder Energy, Greenpeace Australia Pacific (GAP), Jadestone Energy, JX Nippon, Karratha & Districts Chamber of Commerce and Industry (KDCCI), Karratha Community Liaison Group (CLG), KATO Energy, KUFPEC Australia, Longreach Capital Investments/Beagle No. 1, Market Forces, North West Slope Trawl Fishery, Pilbara Ports, Santos, SK Earthon, Skye Napoleon, Vermillion Oil & Gas, Western Australian Museum (WAM), Australian Institute of Marine Science (AIMS), University of Western Australia (UWA), Curtin University, Murdoch University, Western Australian Marine Science Institution (WAMSI), Commonwealth Scientific and Industrial Research Organisation (CSIRO), Marine Tourism WA, Recfishwest, WA Game Fishing Association, Pilbara/Kimberley Recreational Marine Users, Telstra, Vocus, Tuna Australia, Australian Southern Bluefin Tuna Industry Association (ASBTIA) − 21 October 2025

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6.4.2 Letter to Pilbara/Kimberley Recreational Marine Users – 21 October 2025

Please direct all responses/queries to:
Woodside Energy Consultation
t: 1800 442 977
e: consultation@feedback.woodside.com.au

Woodside Energy Group Ltd
ACN 004 898 962
Mia Yellagonga
11 Mount Street
Perth WA 6000
Australia
T: +61 8 9348 4000
www.woodside.com

21 October 2025

1
ADDRESS

213030 - 1

CONSULTATION UPDATE

Angel Carbon Capture and Storage (CCS) Geophysical and Geotechnical (GPGT) Surveys Commonwealth Environment Plan (EP)

Dear Stakeholder

Woodside previously consulted you on the Angel CCS GPGT Surveys Commonwealth EP.

As Operator of the Angel CCS Joint Venture, Woodside plans to conduct geophysical and geotechnical surveys in Commonwealth waters off the North-West coast of WA.

Additional information on the EP is provided in the Consultation Information Sheet, which is available on Woodside's website https://www.woodside.com/what-we-do/consultation-activities, accessible through this QR Code:

Feedback

If you have feedback specific to the proposed activities, we welcome your feedback at consultation@feedback.woodside.com or 1800 442 977 by **31 October 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 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 https://www.woodside.com/privacy.

Regards

Woodside 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

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6.4.3 Email to Southern Bluefin Tuna Fishery, Western Skipjack Tuna Fishery and Western Tuna and Billfish Fishery – 16 December 2025

Dear Stakeholder

Woodside previously consulted you on the **Angel Carbon Capture and Storage (CCS) Geophysical and Geotechnical (GPGT) Surveys Commonwealth Environment Plan (EP)**. As Operator of the Angel CCS Joint Venture, Woodside plans to conduct geophysical and geotechnical surveys in Commonwealth waters off the North-West coast of WA. Additional information on the EP is provided in the previous email below and in the Consultation Information Sheet, which is attached and available on Woodside's website.

Feedback
If you have feedback specific to the proposed activities, we welcome your feedback at consultation@ feedback.woodside.com or 1800 442 977 by **29 December 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 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.

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6.5 Newspaper advertisements

6.5.1.1 The Australian – 8 July 2024



6 THE NATION

Millions seek justice for missing mum

EXCLUSIVE

Loans rejigged to ease pressure

EXCLUSIVE

ANGEL CCS GEOPHYSICAL AND GEOTECHNICAL SURVEYS COMMONWEALTH AND STATE ENVIRONMENT PLANS

The environment that may be affected (EMBA)

Our activities

We want to hear from you

Want to know more or provide input?

Farmers go full cycle from record highs to new lows

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6.5.1.2 The West Australian – 8 July 2024

The West Australian
Monday, July 8, 2024



Main: Amy Wensley & David Simmons with their daughters Naya and Tay.
Below inset: Amy's mother Nancy.

is now, that is not how Amy died.

"How could she hold a double-barrel shotgun? How could she turn her head like that? It doesn't make sense," she says.

While Nancy has raised Amy's children, her sister Anna has raised Amy's violent death at every opportunity, in a bid to get to the truth.

"They were just babies, just little girls – and they were Amy's babies and she should be here," Anna says.

The memories those girls now hold are predominantly positive ones, especially movie nights on Friday dressed in matching onesies.

But her older daughter Naya also remembers that final night.

"She told me that she needed to go back inside to grab something. And she told me that the next movie we're going to watch would be Rio — and then she went inside, and she never came back," Naya said.

"It does have an effect on me, but I don't think it affects me as much as it does everyone else.

"It's not too painful for me. But I know that some people get really emotional and upset with these things.

"And this could have happened a lot easier if it was done properly. It's still going on, like 10 years now. And we shouldn't have come to the point where we didn't know what happened.

"We should have just known on the day."

Anyone with information can email thetruthaboutamy@seven.com.au or leave an anonymous tip at www.thetruthaboutamy.org
Lifeline 13 11 14

Scores drown across Russia

Seven children are among 49 people who have drowned in waters across Russia as scorching heat blankets large areas of the country.

"A total of 65 incidents were registered on the country's water bodies over the past 24 hours — 49 people died," the Ministry for Emergency Situations said on Sunday on the Telegram messaging app.

That was 10 more drowning incidents than on the same day in 2023, Russia's RIA state news agency reported.

In the past week, Russians braved some of the hottest weather in more than a century, with Moscow breaking a 1917 record and cities across the world's biggest country sizzling in temperatures well above 35C.

Russia's Service for Hydrometeorology said on Friday on its website that abnormal, sweltering heat was expected across most of the south of European parts of Russia at the weekend, with temperatures rising to more than 40C in some places.

In the Nizhny Novgorod region in central Russia, a 10-year-old girl drowned in the vast Volga River and her six-year-old sister disappeared, with divers still searching for her, the Emergency Ministry said.

In the Bashkiria region, which lies between the Volga River and the Ural Mountains, three people drowned, including a 16-year-old girl, the Ministry said.

ANGEL CCS GEOPHYSICAL AND GEOTECHNICAL SURVEYS COMMONWEALTH AND STATE ENVIRONMENT PLANS

For more than 35 years, Woodside has been developing and operating LNG and oil projects in Australia. Our focus is the safety, reliability, efficiency and environmental performance of our operations and activities.

Woodside consults so that feedback is considered and used to inform the **Angel Carbon Capture and Storage (CCS) Geophysical Geotechnical Surveys Commonwealth and State Environment Plans.**

Our activities

For the proposed Angel CCS Project in the North-West region of Western Australia, Woodside, as Operator of the Angel CCS Joint Venture, plans to undertake geophysical and geotechnical surveys to provide data to support the greenhouse gas (GHG) activity program. Data from the surveys, in Commonwealth and State waters, is intended to inform the design for the pipeline and umbilical routes, subsea structure foundation locations and planning for mobile offshore drilling unit anchoring or jack-up rig placement. The surveys will also support baseline studies to provide data on existing infrastructure and potential future activities.

The Angel CCS Project involves the development of a Carbon Dioxide (CO_2) gathering system, collecting CO_2 via new pipelines from emitters onshore or through imported options via ships. Collected CO_2 would be transported to a central compression facility prior to being transported offshore via a subsea pipeline and injected into the subsea geological formation.

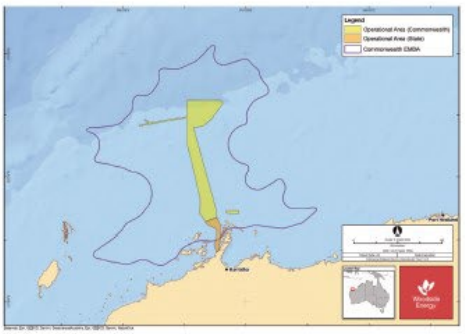
The environment that may be affected (EMBA)

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 these Environment Plans, is determined by modelling a release of hydrocarbons from a vessel collision. A vessel collision and 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 hydrocarbon release does occur, the whole EMBA will not be affected.

We want to hear from you

If you are an individual, organisation or community group and believe your functions, interests or activities may be impacted by the activities under these Environment Plans, we would like to hear from you by **9 August 2024.**



Want to know more or provide input?

A feedback form and more information can be found at:
www.woodside.com/what-we-do/consultation-activities

You can also subscribe via our website to receive future information on upcoming activities.

E: Feedback@woodside.com
Toll free: 1800 442 977
woodside.com

Woodside Energy

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6.5.1.3 Pilbara News – 10 July 2024

Pilbara NEWS
Wednesday, July 10, 2024
pilbaranews.com.au



Public school teachers will take home a 12 per cent pay rise over the next three years. Picture: Riley Churchman

Teachers to pocket 12pc rise in pay

DYLAN CAPORN

Public school teachers have endorsed a pay deal with the State Government, pocketing 12 per cent in pay rises over the next three years.

In a ballot run by the State School Teachers Union of WA, 70.5 per cent of those members who voted were in favour, 29.13 per cent against and 0.37 per cent abstained.

Under the deal, teachers will receive a five per cent rise this year, followed by four per cent in 2025 and three per cent in the final year of the agreement.

SSTUWA president Matt Jarman said he hoped the agreement was registered with the Western Australian Industrial Relations Commission quickly to allow for back pay and the claims and conditions to begin to flow to members.

However, Mr Jarman said the campaign over class sizes would become a broader issue as part of a community campaign.

"Whilst gains were made on the management of oversize classes through this agreement, the new measures must be monitored to assess their effectiveness as well as the extent of class size issues across the system. This will require broad membership support," he said.

"The union will also be ensuring the new Workload Ministerial Taskforce begins operations immediately so that the extensive issues affecting members and taking teachers away from actual teaching can be addressed urgently.

"With both State and Federal elections due in the first half of 2025 the SSTUWA will be seeking to ensure public education, including the ongoing campaign for genuine full funding, becomes a central issue in both elections."

The deal comes after a protracted six-month bargaining process with the Government, which saw teachers walk off the job for a half day — the first strike in more than a decade.

The Cook Government has been embroiled in a number of heated pay negotiations, with public sector workers unimpressed with six years of wages suppression.

The second deal put before teachers was for a wage rise of 11 per cent over three years.

ANGEL CCS GEOPHYSICAL AND GEOTECHNICAL SURVEYS COMMONWEALTH AND STATE ENVIRONMENT PLANS

For more than 35 years, Woodside has been developing and operating LNG and oil projects in Australia. Our focus is the safety, reliability, efficiency and environmental performance of our operations and activities.

Woodside consults so that feedback is considered and used to inform the **Angel Carbon Capture and Storage (CCS) Geophysical Geotechnical Surveys Commonwealth and State Environment Plans.**

Our activities

For the proposed Angel CCS Project in the North-West region of Western Australia, Woodside, as Operator of the Angel CCS Joint Venture, plans to undertake geophysical and geotechnical surveys to provide data to support the greenhouse gas (GHG) activity program. Data from the surveys, in Commonwealth and State waters, is intended to inform the design for the pipeline and umbilical routes, subsea structure foundation locations and planning for mobile offshore drilling unit anchoring or jack-up rig placement. The surveys will also support baseline studies to provide data on existing infrastructure and potential future activities.

The Angel CCS Project involves the development of a Carbon Dioxide (CO_2) gathering system, collecting CO_2 via new pipelines from emitters onshore or through imported options via ships. Collected CO_2 would be transported to a central compression facility prior to being transported offshore via a subsea pipeline and injected into the subsea geological formation.

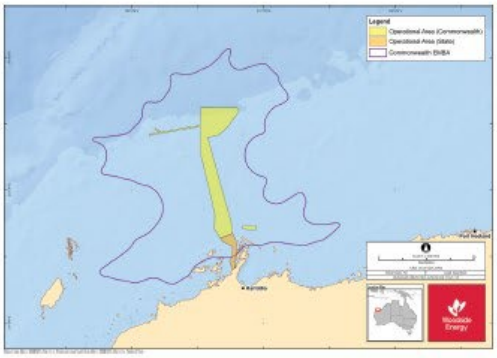
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6.5.1.4 Midwest Times – 10 July 2024

Times
Wednesday, July 10, 2024
midwesttimes.com.au

Compelling portrait of deception and lies



Asher Keddie gives a career-best performance in Fake alongside David Wenham.

TV REVIEW

Fake
Starring Asher Keddie, David Wenham, Heather Mitchell
Streaming on Paramount+
Review Wamai Ma
VERDICT 4/5

We all think we're savvy. If someone's asking to be paid in gift cards, you know it's a scam. Likewise, if an unsolicited email purporting to be from your bank asks you to reset your password.

But when it comes to matters of the heart, we're all vulnerable. We want to believe in someone because if they're true, then it leads to the best possible version of our future.

When someone tells you you're amazing and whispers those magic words, "I love you", it overrides our instincts to be suspicious. Never trusting anyone, we're told, leads to loneliness and bitterness. No one wants to be that person.

So it was that Birdie Bell (Asher Keddie, a journalist who sniffs out bulls..t for a living, came to fall for Joe Burt (David Wenham).

The eight-episode drama Fake was inspired by the memoirs of Stephanie Wood, a writer and journalist, who met a man through a dating website and was sucked into his elaborate web of deception.

It's a gripping drama, an almost forensic exploration of how under the right circumstances, anyone is prey to someone's manipulations.

Birdie is almost 50 and single. Her first date with Joe is a disaster. They met for drinks at a trendy Melbourne restaurant. He talked about himself the whole time and only asked one question of her. Birdie told a friend. She left early and ignored his calls. But Joe persisted and talked her into a second date. He's a greater chat a farmer's of sheep. He's divorced with two kids. He doesn't have a credit card because he objects to bank fees. He's consulting with chinese investors.

If it sounds too good to be true, it probably is. It's not as if Birdie's spidey senses aren't tingling, they're screaming.

But she does everything she can to push them down.

She wants Joe to be the right one. But the abruptly cancelled plans, the no-shows and the ghosting for days all add up, and Birdie knows, in her heart of hearts, that something isn't right. Fake is a vivid portrait of the emotional abuse in this dynamic. Joe is gaslighting her, making her think she's crazy, diminishing her legitimate questions.

The scripting by creator Anya Beyersdorf and her team is super compelling while the series directors including the always wonderful Emma Freeman pull everything together. It's anxiety-ridden and frustrating, because it's evoking a visceral response. But it's not melodramatic. Keddie sheds some of the more mannered quirks of previous roles and gives a fantastic performance that's restrained and relatable. A fifth episode where Birdie is slowly unravelling over the length of an Uber ride to the airport is masterful stuff.

Heather Mitchell as Birdie's awful mother reveals much about Birdie's psychology and why she so desperately wants Joe to be the real deal.

Sometimes, when we're watching stories about scammers, narcissists and con-artists, we keep them at a distance. That could never be me, you say. Fake provides a persuasive argument that it could be.

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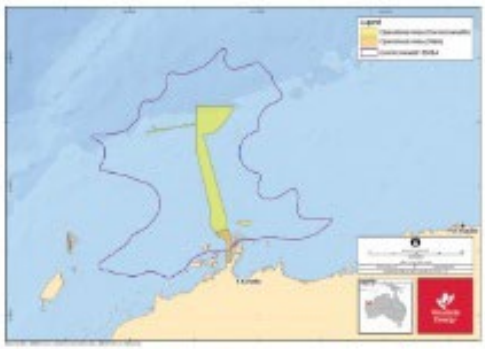
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6.5.1.5 North West Telegraph – 10 July 2024

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Phone (08) 9172 7850
After hours emergency 0425 734 422
Website northwesttelegraph.com.au
Facebook facebook.com/NorthWestTelegraph
Digital edition northwesttelegraph.com.au/editions

Advertising
Phone (08) 9172 7850
Classified advertising
Email. ads@northwesttelegraph.com.au
Friday noon, week prior to publication
General advertising
Email. ads@northwesttelegraph.com.au
Wednesday 10am, week prior to publication
Advertising sales
Branch manager Sean Casey, sean.casey@wnews.com.au
Sales executives Tanisha Bolton, tanisha.bolton@wnews.com.au
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Grants of $10k set to give groups a 'leg-up'

NATASHA CLARK

Port Hedland community groups could receive $10,000 worth of funding thanks to Pilbara Minerals' Community Grants Program.

The initiative — established last October — successfully awarded more than $100,000 in funding across 12 organisations.

Pilbara Minerals founded the initiative with the intention of reinvesting in organisations pivotal to the region's social fabric.

Managing director and chief executive Dale Henderson said the company was delighted to continue the program.

"We invite applications for grants of up to $10,000 for community projects that align with our priority investment areas of education, community resilience and the energy transition," he said.

"No one knows what the community needs more than the people who live and work there, and we're looking forward to once again engaging with the people of Port Hedland and neighbouring communities to understand how Pilbara Minerals can help support the initiatives that matter most to them."

Last year, several community grants were allocated to bolster educational programs, including funding for soccer uniforms and upgrades for primary school systems.

"These grants are more than just money — they provide the leg-up that organisations need to build a stronger, more resilient and healthy community," Mr Henderson said.

Applications for the Community Grants Program are now open and will close on July 31. The program supports locally delivered projects and events in Port Hedland, Strelley, Yandeyarra and Pilbara-wide initiatives.

Application forms and guidelines are available at pilbaraminerals.com.au/communitygrants.



Melinda Hayes, from Pilbara Minerals, with the Youth Involvement Council team.

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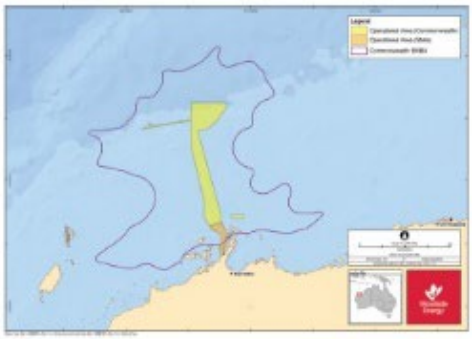
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6.5.1.6 Kimberley Echo – 11 July 2024

Thursday, July 11, 2024 kimberleyecho.com.au NEWS 5

Workshops focus on fishing

NATASHA CLARK

A series of workshops aimed at empowering native title holders across WA's Northern coastal regions began on Tuesday in Broome, with the Mayala Inninalang Aboriginal Corporation seminar.

The initiative, guided by Kimberley based not for profit group Morrgul, will facilitate nine additional workshops with Prescribed Bodies Corporate across the Kimberley coast.

Each session is tailored to enhance understanding and capacity in commercial fishing and aquaculture operations within regions managed by these bodies corporate.

A partnership of the Centre for Developing Northern Australia and WA's Department of Primary Industries and Regional Development have funded the workshops.

Melissa Hartmann, DPIRD's manager for Aboriginal Economic Development, outlined benefits the workshops will bring to Indigenous fishers in the Kimberley.

"There's high interest among native title holders in exploring commercial fishing opportunities," she said.

"These workshops will help mitigate risks and pave the way for successful Aboriginal led enterprises."

CRCNA's chief executive operations, Sarah Docherty, highlighted the transformative potential of fisheries research in creating sustainable economic industries.

"We aim to develop aquaculture products suited to tropical climates, reducing reliance on imports and fostering local industry capacity," Ms Docherty said.

The workshops will not only foster economic opportunities but also ensure these ventures are culturally appropriate and environmentally sustainable.

Discussions will focus on key species like mud crabs, sea cucumber, and black-lipped oysters, prevalent along WA's northern coast.

"This collaboration aims to empower Aboriginal corporations with the knowledge and resources to operate commercial fishing enterprises on native title lands," Ms Hartmann said.

"It's a crucial step towards economic self determination and sustainable development in our coastal communities," she said.

As the workshops commence, stakeholders anticipate a new era of economic resilience and cultural awareness in Northern WA's fisheries and aquaculture sectors.



Participants in one of the Aboriginal fishing workshops.

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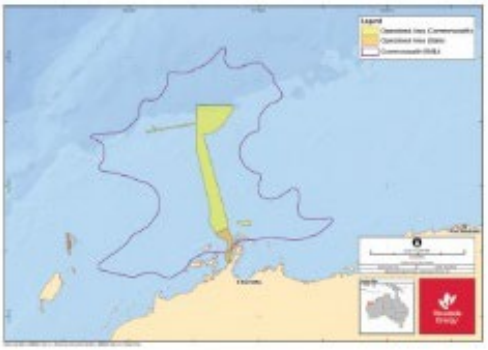
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6.5.1.7 National Indigenous Times – 30 July 2024

nit.com.au WORLD NT 17

Leaders head to turmoil

DECLAN BRENNAN

Pacific leaders will arrive in New Caledonia in the coming weeks as the Indigenous Kanak people dispute a contested referendum on voting rights, coming in the wake of prolonged unrest in the French-ruled Pacific territory.

The visiting Cook Islands Prime Minister and Pacific Islands Forum chair Mark Brown, along with Fiji Prime Minister Sitiveni Rabuka and Tonga Prime Minister Hu'akavameiliku Siaosi Sovaleni were described as a PIF "troika" by Mr Brown and comes as trouble continues to plague the island.

"I have also been asked by many Pacific leaders to lead a group to conduct a fact-finding mission in Noumea to understand the problems they are facing," Mr Rabuka said.

In May, 10 people were killed and much of the capital Noumea was damaged after riots, and the Melanesian Spearhead Group said this week they had strong objections to France's handling of the political situation in New Caledonia.

Mr Brown said the PIF understood those concerns.

"The third referendum was boycotted by the Kanak population because of the impacts of COVID-19 and the respect for the mourning period. Therefore, the outcome of that referendum is not valuable," he said, as reported by RNZ.

Mr Brown said there had been a request from the New Caledonian Government for a "high-level" Pacific delegation, and the Cook Islands PM said the next step would be writing a letter which would require French support.

"We will now go through the process of how we will put this into practice. Of course, it will require the support of the Government of France for the mission to proceed," he said.

Mr Brown said the PIF wanted a de-escalation in the violence, with AAP reporting he wanted "dialogue between all parties".

"Our objective is to help all parties resolve this situation as peacefully and expeditiously as possible," he said.

Despite arguments over the validity of the referendum, the top French diplomat in the region, Véronique Roger-Lacan, told Pacific leaders at the 10th Pacific Islands Leaders Meeting in Tokyo earlier this month that the referendum was fair and stated there was significant levels of disinformation being reported.

"For example, Mark Brown sent a letter to President (Louis) Mapou but he did not try and contact France, kind of ignoring that New Caledonia, until further notice, is France," she said, RNZ reports.

"We tried to call them, but Mark Brown would not be there to pick up the phone."

A spokesperson for Mr Mapou said the delegation would come to New Caledonia before the annual meeting of the PIF in Tonga in mid-August.

Air New Zealand on July 18 announced they were extending their suspension of flights to Noumea until December 14 due to ongoing safety concerns.



Demonstrators hold Kanak and Socialist National Liberation Front flags during a gathering in Paris on May 16. Picture: Thomas Padilla

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6.6 Ngaarda Radio advertisements

6.6.1 Summary table

Media	Coverage	Airing dates
Ngaarda Radio	National	26 August 2024 – 30 November 2024

6.6.1.1 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.

Station sponsor

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.

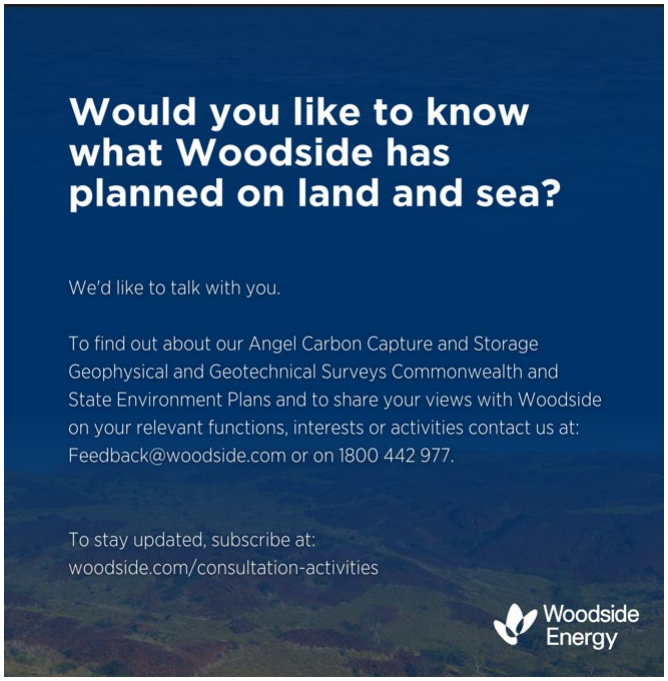
Let's talk about what we have planned on land and sea at our Roebourne office or email us at consultation@feedback.woodside.com

Station sponsor

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6.7 Social media

6.7.1 Social media targeted campaign for EP



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6.8 Community Information Sessions

The community information sessions that Woodside has conducted are captured below:

6.8.1 Pilbara Region

6.8.1.1 Community Pop-Up at Lo's Cafe – 26 July 2024

Location	Karratha
Activity	Community pop-up at Lo's Cafe
Date	26 July 2024
Description of the consultation	Woodside hosted a stand in the community to coincide with Woodside's 70th birthday and 40 years of safe operations in Karratha. (Record of Consultation, reference 6.5.1.1). Members of Woodside's Corporate Affairs team actively engaged with the community to discuss proposed EP activities and general community engagement discussion. Woodside displayed a QR code on the stand, linked to the Let's Talk EP newsletter on the Woodside consultation page of the website. A pull-up banner was on display focusing on engagement on our plans at land and sea with a QR code to the consultation page on the Woodside website. Woodside had printed consultation information sheets for Angel Carbon Capture and Storage Geophysical and Geotechnical EP on display.
Advertising and invitations	Woodside advertised this engagement on social media only. Social media post was advertised on Woodside North West Facebook page on 26 July 2024. 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 current EP factsheets.
Estimated number of individuals consulted	Over 60 community members attended the event. Woodside spoke to many community members, recording 10 meaningful conversations.
Summary of Feedback, Objection or Claim	
Approximately 10 conversations occurred around employment opportunities and pathways, social investment, the EP process and approvals in general. No feedback was received regarding Woodside's EPs.	
Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	
This session forms part of Woodside's broader consultation approach to enable self-identification and provide relevant persons with the opportunity to assess any impacts on their functions, interests or activities, and provide feedback on proposed activities, which is consistent with the intended outcome of consultation (see Section 5.2 of the EP).	

6.8.1.1.1 Facebook post – 26 July 2024

On 26 July 2024, Woodside posted a story on its Woodside North West Facebook account, sharing details of its stand to celebrate Woodside's 70th and 40 years of safe operations in Karratha. Consultation Information Sheets regarding is planned and proposed activities were available, including the activities proposed under this EP.

Platform/channel: Woodside North West (Facebook)

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Woodside North West is with **Woodside Energy**.
5 days ago ·

🎉 It's our birthday 🥳

Today we're celebrating 70 years of Woodside, and this year, four decades of safe and reliable operations in Karratha.

To thank the community for their support over this time, we've been providing free morning coffees across the City of Karratha this past month.

Join us at just one of the participating local providers, Lo's this morning! Grab a coffee on us and let's talk about upcoming projects, ongoing operations and our role in the community we've proudly called home for forty years.

As we celebrate this significant milestone, we look forward to continuing to support the local community through our ongoing operations and growth projects. This includes the Scarborough Energy Project and Pluto Train 2, which has engaged more than 75 Karratha businesses since construction began.



110 11 2

Like Comment

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6.8.1.1.2 Woodside marquee



6.8.1.1.3 Woodside Consultation Information Sheets





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6.8.1.2 FeNaCING Festival – 3 to 4 August 2024

Location	Karratha
Activity	FeNaCING Festival
Date	3-4 August 2024
Description of the consultation	Woodside hosted a stand at the FeNaCING Festival 2024 (Record of Consultation, reference 6.5.1.10). Members of Woodside's Corporate Affairs, Environment and Operations teams actively engaged with the community to discuss proposed EP activities. Woodside displayed a QR code on the stand, linked to the Let's Talk EP newsletter on the Woodside consultation page of the website. A pull-up banner was on display focusing on engagement on our plans at land and sea with a QR code to the consultation page on the Woodside website. Woodside had printed consultation materials for the Angel Carbon Capture and Storage Geophysical and Geotechnical EP on display and available.
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: • Social media post was advertised on the City of Karratha and FeNaCING Festival Facebook page on 18 July 2024 • Social media post was advertised on the Woodside North West Facebook page • FeNaCING Festival lift-out in the Pilbara News on 31 July 2024 • An EP consultation banner with QR code (linked to the Consultation Activities page on the Woodside website) was on display outside the Woodside marquee, and EP factsheets were displayed, and provided in the Woodside marquee.
Estimated number of individuals consulted	Over 10 000 community members (City of Karratha) attended the event. Woodside spoke to many community members, recording 30 meaningful conversations.
Summary of Feedback, Objection or Claim	
Approximately 10 conversations occurred around new energy opportunities and plans. Other conversations included local content, social investment, EMBAs (relating to EPs), approvals in general (Browse and Scarborough), Karratha Gas Plant assets future, tax and royalties and general production process. No feedback was received regarding Woodside's EPs.	
Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	
This session forms part of Woodside's broader consultation approach to enable self-identification and provide relevant persons with the opportunity to assess any impacts on their functions, interests or activities, and provide feedback on proposed activities, which is consistent with the intended outcome of consultation (see Section 5.2 of the EP).	

6.8.1.2.1 Social media – 18 July 2024

On 18 July 2024, the FeNaCING festival Woodside posted about the upcoming festival and Woodside as the major sponsor.

Platform/channel: City of Karratha and FeNaCING Festival Facebook

Date: 18 July 2024

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6.8.1.2.2 Newspaper advertisement – Pilbara News – FeNaCING Festival lift-out – 31 July 2024



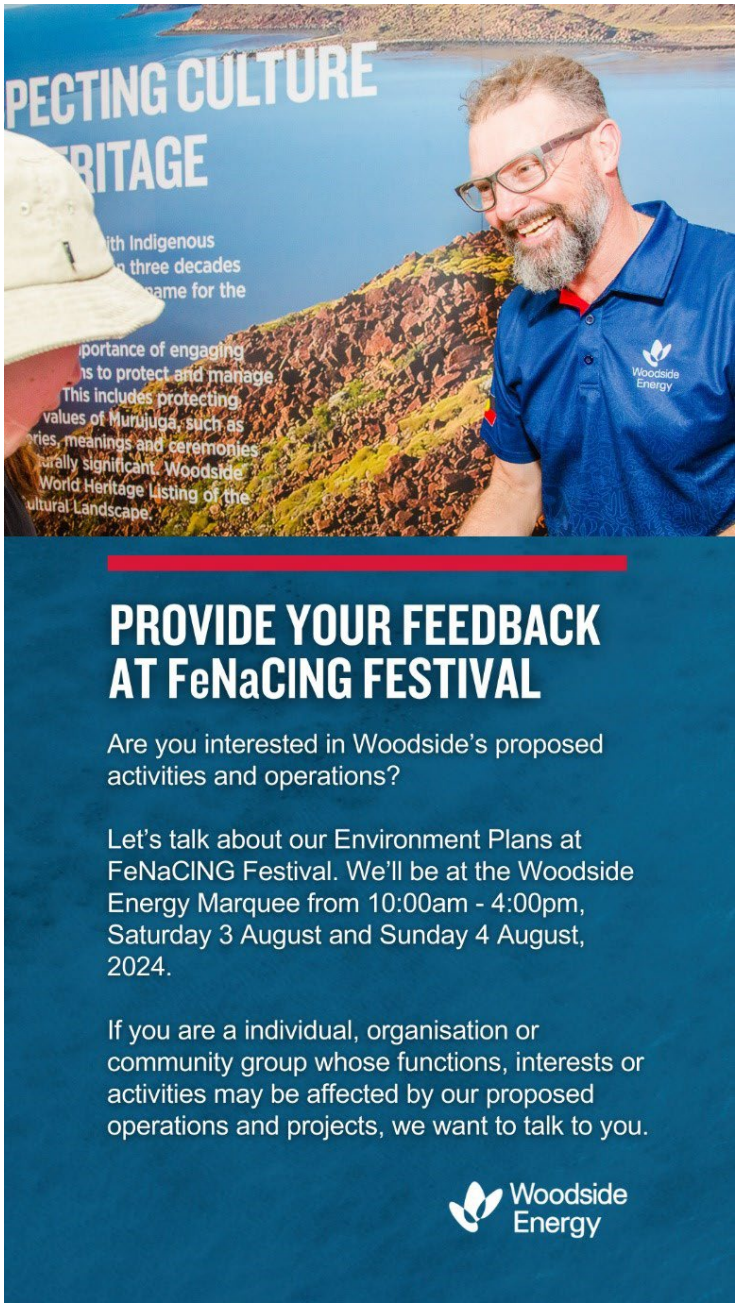
6.8.1.2.3 Facebook post – 2 August 2024

On 2 August 2024, Woodside posted a story on its Woodside North West Facebook account, highlighting its upcoming marquee at the FeNaCING Festival where Consultation Information Sheets regarding its planned and proposed activities were available, including the activities proposed under this EP.

Platform/channel: Woodside North West (Facebook)

Date: 2 August 2024

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6.8.1.2.4 Environment Plan banner

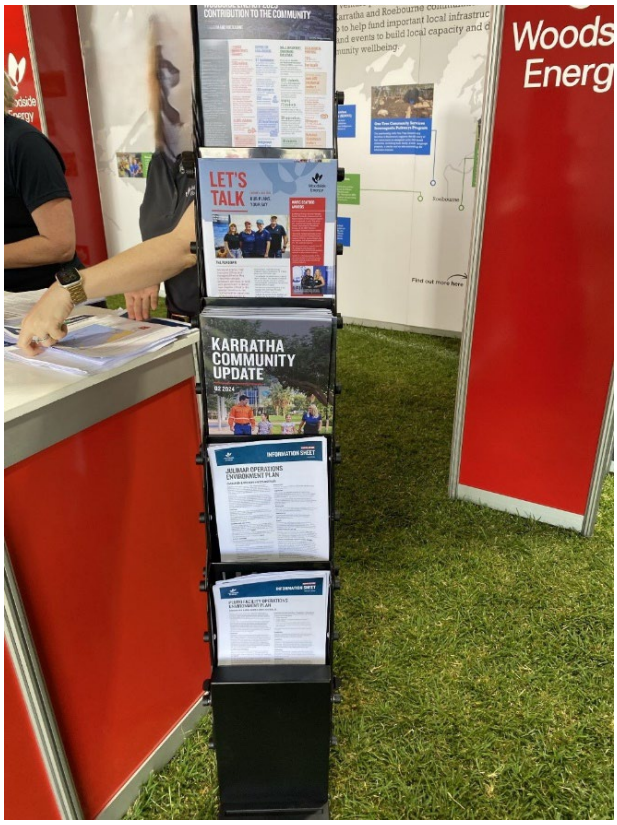


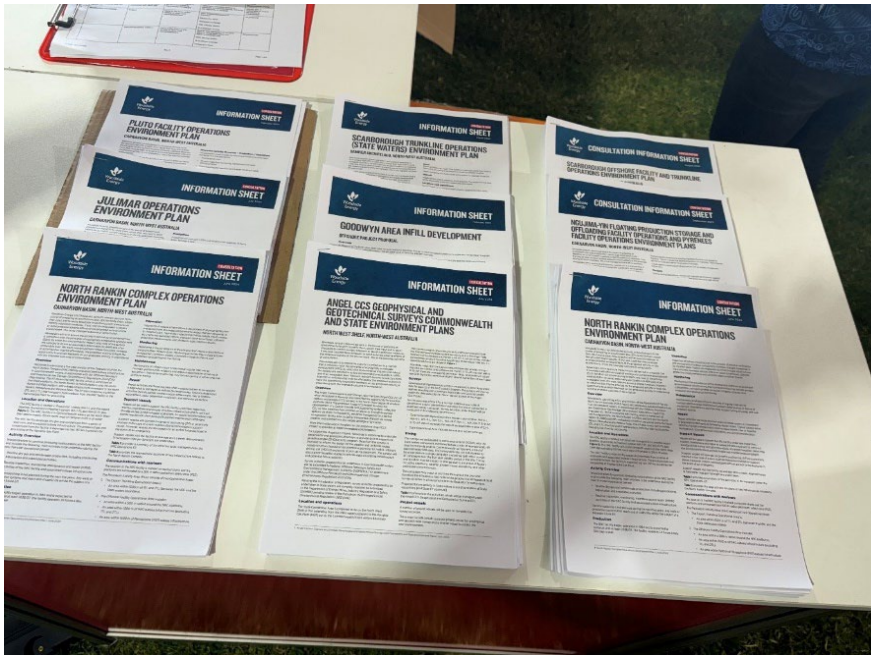
6.8.1.2.5 Woodside marquee



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6.8.1.2.6 Woodside Information Sheets





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6.8.1.3 Mack10 Fishing Competition – 23 to 25 August 2024

Location	Onslow
Activity	Mack10 Fishing Competition – organised by Ashburton Anglers fishing club
Date	23 – 25 August 2024
Description of the consultation	Woodside sponsorship of the Mack10 fishing competition enabled copies of the Let's Talk newsletter to be included in all competitor briefing packs. An EP consultation banner with QR code (linked to the Consultation Activities page on the Woodside website) was on display at the event.
Advertising and invitations	Woodside advertised participation at the event to assist individuals to self-identify, become aware of the community consultation, and enable individuals to provide feedback on EP activities.
Estimated number of individuals consulted	The competition had approximately 300 participants. Informal conversations were held with a number of competition participants and other attendees.
Summary of Feedback, Objection or Claim	
Community members were able to engage with Woodside representatives and discuss the Griffin Gas Export Pipeline.	
Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	
Whilst feedback was received, there were no objections or claims. Participation at the event 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 of the EP).	

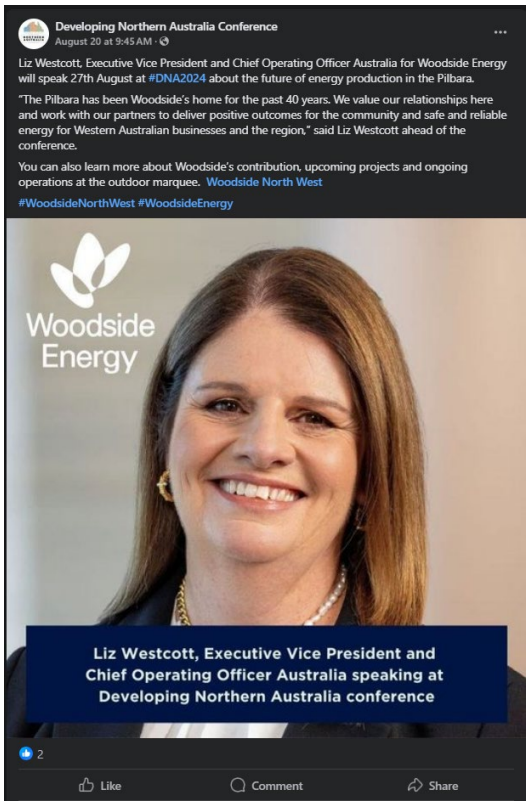
6.8.1.4 Developing Northern Australia (DNA Conference) – 26 to 28 August 2024

Location	Karratha
Activity	Developing Northern Australia (DNA) Conference
Date	26-28 August 2024
Description of the consultation	Woodside hosted an exhibition stand at the DNA Conference (Record of Consultation, reference 6.5.1.14**).** Members of Woodside's Corporate Affairs team actively engaged with 400+ individuals, policy makers and decision makers attending the conference to discuss, amongst other things, EP activities. Woodside displayed a QR code, linked to the Let's Talk EP newsletter on the Woodside consultation page of the website. An iPad was available encouraging audience to view and subscribe to the consultation page on the Woodside website. Woodside made available Consultation Information Sheets on the Angel Carbon Capture and Storage Geophysical and Geotechnical EP.
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: • Social media post was advertised on the Developing Northern Australia Facebook page on 20 August 2024. • EP consultation information sheets and copies of Let's Talk with QR codes linking to Consultation Activities - Woodside Energy were displayed and provided.
Estimated number of individuals /	Over 400 delegates attended the conference. Woodside spoke to many conference attendees, recording 20 meaningful conversations.

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organisations consulted	
Summary of Feedback, Objection or Claim	
• Approximately 10 conversations occurred around new energy opportunities and plans. • Other conversations included: - Local content - Social investment - General understanding of an EMBA - How oil and gas is produced and the organisations future in energy transition - Price of gas for international project forecasting - Ai and simulation technology - Carbon sequestration • No feedback was received regarding specific EPs.	
Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	
Woodside's participation at the DNA conference forms part of Woodside's broader consultation approach to enable self-identification and provide relevant persons with the opportunity to assess any impacts on their functions, interests or activities, and provide feedback on proposed activities, which is consistent with the intended outcome of consultation (see Section 5.2 of the EP).	

6.8.1.4.1 Social Media – 20 August 2024



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6.8.1.4.2 Woodside stall at DNA Conference



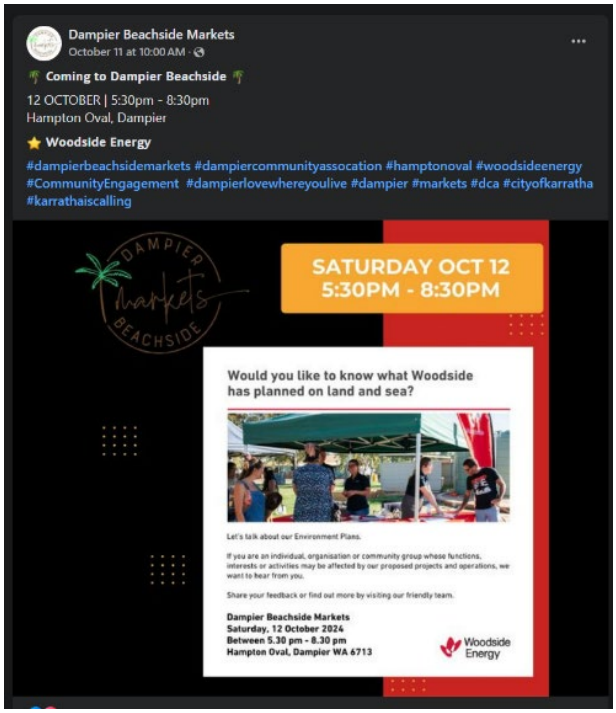
6.8.1.5 Dampier Beachside Markets – 12 October 2024

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 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 the Angel CCS GPGT Surveys EP.
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: • 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 event host, Dampier Community Association was published on October 11, 2024 inviting 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 /	Over 1000 community members attended the event. Woodside spoke to many community members, recording 6 meaningful conversations.

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organisations consulted	
Summary of Feedback, Objection or Claim	
General positive commentary from community members working at Woodside or on Woodside projects. General interest in CSS process Interest in community grant program EP approval process discussed and why we want to talk to 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. The community information sessions were part of Woodside's broader consultation approach to enable self-identification and provide relevant persons with the opportunity to assess any impacts on their functions, interests or activities, and provide feedback on proposed activities, which is consistent with the intended outcome of consultation (see Section 5.2 of the EP).	

6.8.1.5.1 Social Media – 11 October 2024



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6.8.1.5.2 Newspaper Advertisement – Pilbara News – 9 October 2024



4 NEWS

Minefield for ore big shots

ADRIAN RAUSO

'Tensions between a junior miner and an Aboriginal corporation at the iron-ore-rich fringes of Karijini National Park have spilled over onto Fortescue and Rio Tinto territory.

The State Government last month quietly registered areas of Pilbara land and waterways as two distinct sites of Aboriginal cultural heritage.

The ruling was based on information from a heritage study commissioned by Equinox Resources to progress the company's flagship project — Hamersley Equinox wants to mine a $\$3$-billion-tonne iron ore deposit adjacent to the north-western edge of Karijini's boundary but the Wunaamin Conmu Aboriginal Corporation has vehemently opposed the proposal.

WGSC argues the mine would tarnish Karijini.

One of the freshly registered sites — Ethirli Rungu — has been made public on a Department of Planning, Lands and Heritage online portal.

Ethirli predominantly spreads across Karijini, while also sneaking into the margins of both Equinox's Hamersley and a neighbouring resource package controlled by Fortescue.

It is the second site — Wuliapiarramurtha Warra — that has been causing some agitation behind closed doors, The West Australian understands, and its existence is yet to be made public.

Wuliapiarramurtha comprises a web of creeks and gullies that flow to the Fortescue River and extends all the way up to the doorstep of Fortescue's prized Solomon mining hub, according to documents sighted by The West.

Unlike Ethirli, Wuliapiarramurtha pierces deeper into a swag of Fortescue and Rio interests, as well as Hamersley, on the outer of Karijini's north-western boundary. Both Ethirli and Wuliapiarramurtha are classified as "dreaming narrative" sites.

Equinox and Rio declined to comment, while Fortescue did not comment directly on the two registered sites.

"We are committed to preserving First Nations Australian heritage and have dedicated heritage, native title and community teams that work hand in hand with First Nations people to ensure cultural heritage is managed sustainably and responsibly," a Fortescue spokeswoman said.

A State Government spokesman confirmed two sites "within the boundaries of Karijini" had been registered on September 19.

A sole being registered as an area of Aboriginal cultural heritage does not necessarily prevent mining, but it gives local Aboriginal groups greater influence in the approvals process. A Section 18 application, lodged by Equinox in February, seeks permission from Aboriginal Affairs Minister Tony Buti to disturb registered sites.

Pilbara News Wednesday, October 9, 2024 NEWS 5

Author's incredible tale hopes to inspire

MADELEIN HAYES

Growing up in Tom Price, Nyamal woman Dr Tracy Westerman had never met a psychologist. Yet she went on to become the first Aboriginal person in Australia to complete a PhD in clinical psychology, rising to become one of the country's leading practitioners.

With a host of impressive achievements, such as recently establishing her charity, Westerman Jilpa Institute for Indigenous Mental Health, which nurtures Indigenous people from high-risk communities to become psychologists, Dr Westerman visited Karratha for the launch of her memoir Jilpa, How one Indigenous woman from the remote Pilbara transformed psychology.

"I have spent my life challenging systems and that means the one-size-fits-all view of mental health that serves very few of those in mental health distress, and that's frightening because those in distress are usually from our most marginalised communities," Dr Westerman said.

"Those systems have been built by non-Aboriginal people to serve the needs of non-Aboriginal people."

"From child protection to justice to mental health, it is a system that is unwavering in its inability to understand and respond to different."

Dr Westerman said she hoped readers would be inspired by not only the story, but to also understand that with passion, energy and a sense of responsibility to our most vulnerable communities, great change can occur.

"This has all been done without a cent of Federal Government funding," she said. "I want non-Aboriginal people to understand that as Aboriginal people we are capable of getting this done and my story shows that, for Aboriginal people I want them to see something that they can be optimistic about.

"If you are frustrated with the pace of change; if you have lost belief that things can get better, this story shows that great change can occur without looking to governments to 'save' us.

"I also hope that those (who attended) the launch have a deeper understanding of the mental health drivers around the disadvantage we are seeing in Aboriginal communities and that it's vital that when Aboriginal people are in the driver's seat, that's our best opportunity to close the gap."

Dr Tracy Westerman travelled to Karratha for the launch of her book. Picture: Dr Tracy Westerman

The Dampier Community Association would like to thank our sponsors for their generous support of the 2024 Dampier Photography Awards

MAJOR SPONSOR City of Karratha
EVENT SPONSOR RioTinto
CATEGORY SPONSORS FYFE JNM MOUNTWAY

Woodside Community Grants

Applications open Tuesday, 1 October 2024

The Woodside Community Grants program is part of our commitment to help build local capacity and develop opportunities for community wellbeing.

If your club or organisation has a great idea or needs extra support, Woodside wants to hear from you. Grants of up to $5000 are available to support community initiatives in the City of Karratha and the Shire of Exmouth.

If you're interested in finding out more about our grants program and our role in community, including our Investment Plans, visit us at the Dampier Beachside Markets this Saturday, 12 October from 5.30pm - 8.30 pm.

Applications close Thursday, 31 October 2024.

For more information, please email northwestcommunities@woodside.com

woodside.com

Woodside Energy

6.8.1.5.3 Community noticeboards - Lo's Café, Karratha, and Roebourne Library





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6.8.1.5.4 Woodside Stall at Dampier Beachside Markets



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6.8.1.5.5 Woodside Information Sheets



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6.8.1.6 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 at the stand, linked to the 'Consultation activities' page of the Woodside website. Woodside made available printed consultation information sheets on the Angel CCS GPGT Surveys EP.
Advertising and invitations	Woodside advertised the event to enable individuals to self-identify, become aware of the community consultation, and to allow individuals to provide feedback on proposed activities, through the following: • An advertisement published in the Pilbara News on 30 October 2024 (see below) • Social media posts on the Woodside North West Facebook page inviting the public to attend (see below) • A social media post from event host, Dampier Community Association, published on 11 October 2024 inviting public to attend • An advertisement displayed on community noticeboards at Lo's Café in Karratha, and the Karratha and Roebourne libraries • 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 consultation information sheets (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 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 (CCS) process. • Discussions around the area's 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 markets 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 of the EP).	

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Evidence of promotion and event

Newspaper advertisement(s) Pilbara News 30 October 2024	Social Media campaign Woodside North West Facebook, 25 Oct 2024
	

6.8.1.7 Dampier Community Association, 'Who's Who in the Hood' – 18 March 2025

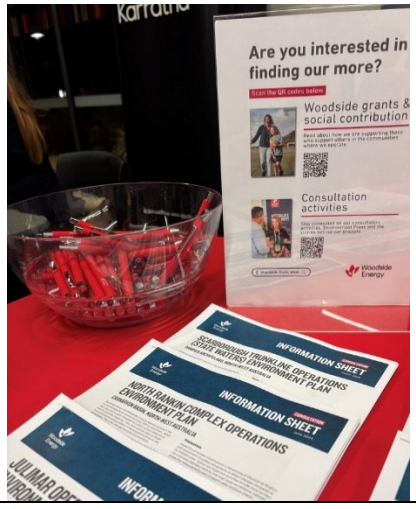
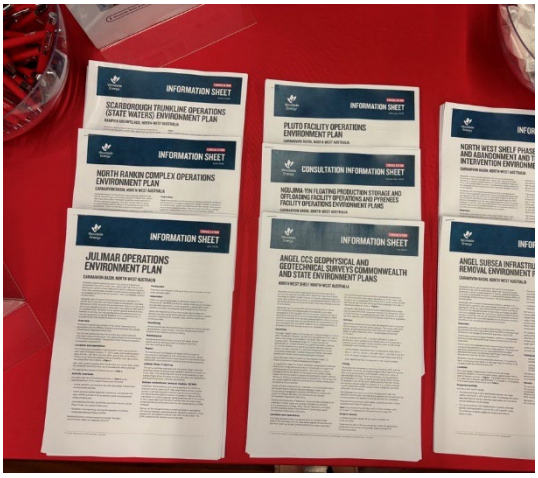
Location	Dampier
Activity	Dampier Community Association – Who's Who in the Hood
Date	18 March 2025
Description of the consultation	Woodside hosted a stand at the Dampier Community Hub available to community members, sporting groups and industry representatives who provide funding opportunities in Dampier. The stand was staffed by members from Woodside's Corporate Affairs teams. Woodside displayed a QR code at the stand, linked to the 'Consultation activities' page of the Woodside website and provided hard copy versions of the March 2025 'Let's Talk' newsletter. Woodside made available printed consultation information sheets on the Angel CCS GPGT Surveys EP.
Advertising and invitations	Woodside advertised the event to enable individuals to self-identify, become aware of the community consultation, and to allow individuals to provide feedback on proposed activities, through the following: • Social media posts on the Woodside North West Facebook page inviting the public to attend (see below)

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	• 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 consultation information sheets (see below).
Estimated number of individuals / organisations consulted	Over 50 community members (Dampier Community Association) attended the event. Woodside spoke to several community members, recording 2 conversations.
Summary of Feedback, Objection or Claim	
General queries around community grants and what is available from Woodside.	
Woodside's Assessment of Merits of Feedback, Objection or Claim and its Response	
There were no objections or claims raised about EPs. Woodside's participation at 'Who's Who in the Hood' 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 of the EP).	

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6.8.1.7.1 Evidence of promotion and event

Social media campaign, Woodside North West Facebook 18 March 2025	Photo of event
	
Photo of event showing QR code and information sheets	**Photo of information sheets**
	

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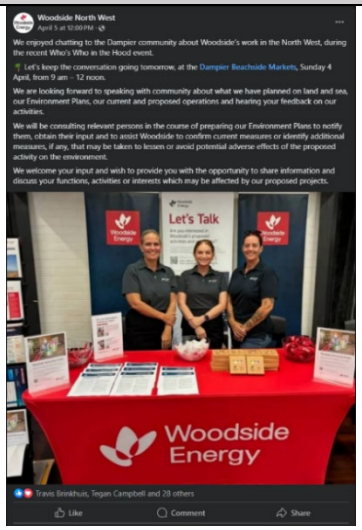
6.8.1.8 Dampier Beachside Markets − 6 April 2025

Location	Dampier
Activity	Dampier Beachside Markets
Date	6 April 2025
Description of the consultation	Woodside hosted a stand at the Dampier Beachside Markets, a community event bringing together local businesses selling local products, a variety of food vendors and community groups. The stand was staffed by members of Woodside's Corporate Affairs, Environment Plan and First Nations teams. Woodside displayed a QR code at the stand, linked to the 'Consultation activities' page on Woodside's website. Woodside displayed and made available printed consultation information sheets on the Angel CCS GPGT Surveys EP.
Advertising and invitations	Woodside advertised the event to enable individuals to self-identify, become aware of the community consultation, and to allow individuals to provide feedback on proposed activities, through the following: • An advertisement published in the Pilbara News on 26 March 2025 (see below) • Social media posts on the Woodside North West Facebook page inviting the public to attend (see below) • A social media post from event host, Dampier Community Association, published on 5 April 2025 inviting the public to attend • An advertisement displayed on community noticeboards at Lo's Café in Karratha, and the Karratha and Roebourne libraries • 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 consultation information sheets (see below).
Estimated number of individuals / organisations consulted	Over 1200 community members (Dampier Community Association) attended the event. Woodside spoke to several community members, recording 30 conversations.

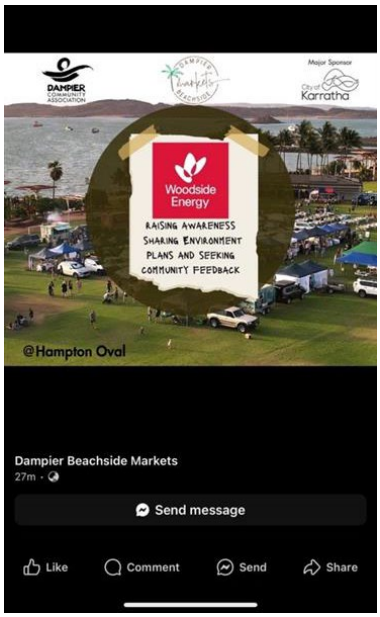
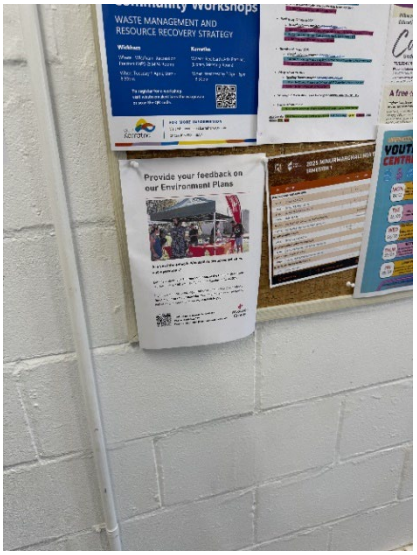
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Summary of Feedback, Objection or Claim
• Queries around employment opportunities, including apprenticeship and trainee opportunities. • Interest in local content opportunities. • General interest in the Scarborough Energy Project progress and Pluto Train 2 and Train 1 modifications projects. • Comments were made about the views of some issue motivated groups. Woodside expressed everyone had the right to share their views in a respectful and peaceful manner. • Conversations on the North West Shelf Project Extension including support for local community, timelines, investing partners, political views and the future of gas in the energy transition. • EP consultation and approval process discussed and why we want to talk to community. No concerns raised. • General interest in Woodsides commitment to emission reduction, positive feedback on meeting commitments. • Discussions around the area's housing market, residential and Fly In/Fly Out workforce. • Several discussions with children about what Woodside does and where gas comes from.
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 markets 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 of the EP).

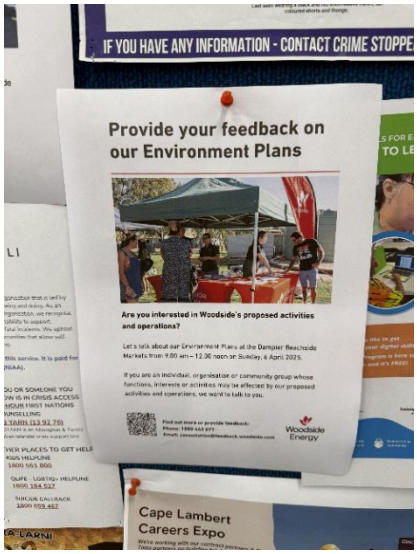
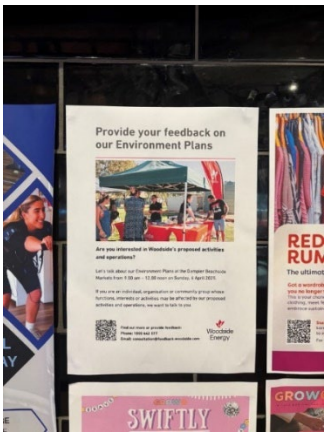
6.8.1.8.1 Evidence of promotion and event

Social Media promotion, Woodside North West Facebook page, 5 April 2025	Social Media promotion, Woodside North West Facebook story 4 April 2025, published for 24 hours (see stats below)
	

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	Newspaper advertisement, Pilbara News, 26 March 2025
	
BP Service Station, Roebourne, poster on display from 25 March 2025	**Ngarliyarndu Bindirri Aboriginal Corporation Office, Roebourne, poster on display from 25 March 2025**
	

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Ieramagadu Store community noticeboard, Roebourne, poster on display from 3 April 2025	Lo's Cafe community notice board, Karratha, poster on display from 25 March 2025
	
Karratha City Plaza Shopping Centre community notice board, Karratha, poster on display from 25 March 2025	**Good Grocer IGA community notice board, Karratha, poster on display from 25 March 2025**
	
Dampier Beachside Markets Consultation Information sheets at stand	
	

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Consultation Information sheets	Banner with QR code for Consultation Information sheets
	

6.8.1.8.2 Social media campaign results

Platform	Date	Description	Number of views	Reach	Interactions
Woodside North West Facebook page	4 April 2025		333 views over 24 hours	317	0

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6.8.1.9 Dampier Beachside Markets − 4 May 2025

	Location: Dampier
Activity	Dampier Beachside Markets
Date	Sunday, 4 May 2025
Description of the consultation	Woodside hosted a stand at the Dampier Beachside Markets, a community event bringing together local businesses selling local products, a variety of food vendors and community groups. The stand was staffed by members of Woodside's Corporate Affairs and First Nations teams. Woodside displayed a QR code at the stand, linked to the 'Consultation activities' page of the Woodside website. Woodside displayed and made available printed consultation information sheets on the Angel CCS GPGT Surveys EP.
Advertising and invitations	Woodside advertised the event to enable individuals to self-identify, become aware of the community consultation, and to allow individuals to provide feedback on proposed activities, through the following: • An advertisement published in the Pilbara News on 30 April 2025 (see below) • Social media post Dampier Community Association Facebook page advising that Woodside would be in attendance at the event • An advertisement displayed on community noticeboards at IGA Karratha, Karratha City Plaza Shopping Centre, in Karratha, and the Karratha and Roebourne libraries • 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 consultation information sheets (see below).
Estimated number of individuals / organisations consulted	Over 1200 community members attended the event. Woodside spoke to many community members, recording 20 conversations.

Summary of Feedback, Objection or Claim

- Queries around employment opportunities, including apprenticeship and trainee opportunities.
- Interest in local content opportunities.
- General interest in the Scarborough Energy Project progress and Pluto Train 2 and Train 1 modifications projects.
- Comments were made about the views of some issue motivated groups. Woodside expressed everyone has the right to share their views in a respectful and peaceful manner.
- Conversations on the North West Shelf Project Extension including support for local community, timelines, investing partners, political views and the future of gas in the energy transition.
- EP consultation and approval process discussed and why we want to talk to community. No concerns raised.
- General interest in Woodsides commitment to emission reduction, positive feedback on meeting commitments.
- Discussions around the area's housing market, residential and Fly In/Fly Out workforce.
- Several discussions with children about what Woodside does and where gas comes from.

Woodside's Assessment of Merits of Feedback, Objection or Claim and its Response

Whilst feedback was received, there were no objections or claims.

The community information sessions were part of Woodside's broader consultation approach to enable self-identification and provide relevant persons with the opportunity to assess any impacts on their functions, interests or activities, and provide feedback on proposed activities, which is consistent with the intended outcome of consultation (see Section 5.2 of the EP).

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6.8.1.9.1 Evidence of promotion and event

Advertisement Pilbara News − 30 April 2025	Social media Dampier Beachside Markets Facebook − 3 May 2025
	
Advertisement **Good Grocer Karratha IGA community notice board − 30 April 2025**	**Advertisement** **Karratha City Plaza community noticeboard − 30 April 2025**
	

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Banner at event	Consultation Information Sheets at event
	
Consultation Information sheets at event	
	

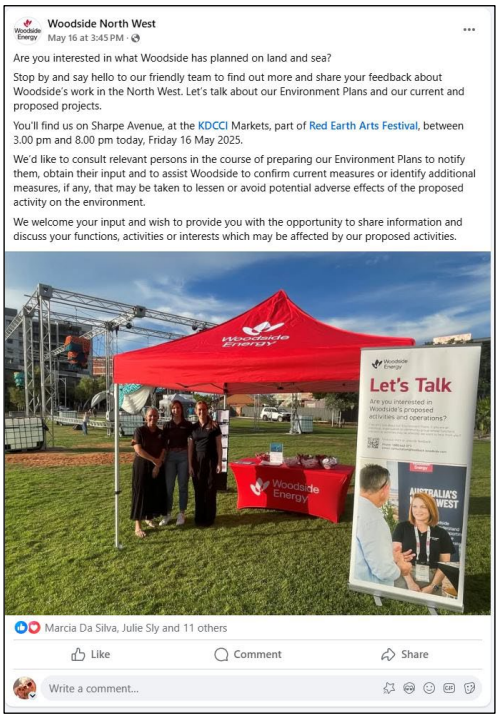
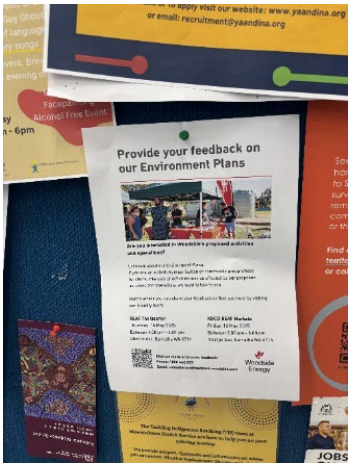
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6.8.1.10 Red Earth Arts Festival (REAF) @ The Quarter – 15 & 16 May 2025

	Location: Karratha
Activity	Red Earth Arts Festival (REAF) @ The Quarter
Date	Thursday 15 and Friday 16 May 2025
Description of the consultation	Woodside hosted a stand at the Red Earth Arts Festival, a community event bringing together markets, community members and an art installation as part of the festival. The stand was staffed by members of Woodside's Corporate Affairs, Environment and First Nations teams. Woodside displayed a QR code at the stand, linked to the 'Consultation activities' page of the Woodside website. Woodside displayed and made available printed consultation information sheets on the following Angel CCS GPGT Surveys EP.
Advertising and invitations	Woodside advertised the sessions to enable individuals to self-identify, promote awareness of the community consultation, and enable individuals to provide feedback on proposed activities, through the following: • Advertisement in Pilbara News on 14 May 2025 Day. • Posters displayed at notice boards across Karratha and Roebourne. • Social media posts published on the Woodside North West Facebook page inviting the public to attend (see table below). • EP consultation banner with QR code (linked to 'Consultation activities' page on Woodside website), displayed at Woodside's stand along with current EP consultation information sheets (see table below).
Estimated number of individuals / organisations consulted	Over the Red Earth Arts Festival 1000 community members attended the event. Woodside spoke to many community members, recording 20 conversations.
Summary of Feedback, Objection or Claim	
• Queries around employment opportunities, including apprenticeship, trainee and graduate opportunities. • General interest Woodside operated assets including King Bay Supply Base, Karratha Gas Plant, Scarborough Energy Project progress, Pluto Train 2 and Train 1 modifications projects. • Conversations on the North West Shelf Project Extension including support for local community, timelines, investing partners, political views and the future of gas in the energy transition. • Queries relating to whales, in particular pygmy blue whales and the research that Woodside has contributed to over 30 years. In addition, two community members wanted to know about Seismic activities and impacts to whales. • Queries relating to air emissions and flaring with several flaring fact sheets being given to members of the public. • Queries around bird migrations and impacts to birds as a result of Woodside's operations. Mitigations were discussed. • EP consultation and approval process discussed and why we want to talk to community. No concerns raised.	
Woodside's Assessment of Merits of Feedback, Objection or Claim and its Response	
Whilst feedback was received, there were no objections or claims. The community information sessions were part of Woodside's broader consultation approach to enable self-identification and provide relevant persons with the opportunity to assess any impacts on their functions, interests or activities, and provide feedback on proposed activities, which is consistent with the intended outcome of consultation (see Section 5.2 of the EP).	

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6.8.1.10.1 Evidence of promotion and event

Advertisement Pilbara News – 14 May 2025	Social media Woodside North West Facebook – 16 May 2025
	
Advertisement **Ieramugadu Store Community Notice Board, Roebourne – 7 May 2025**	**Advertisement** **Ngarliyarndu Bindirri Aboriginal Corporation Community Notice Board, Roebourne – 7 May 2025**
	

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Advertisement
Karratha City Shopping Centre
– 7 May 2025



IGA Shopping Centre, Nickol
– 7 May 2025



Banner at event



Consultation Information Sheets at event





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Marquee at event


6.8.1.11 FeNaCING Festival – 2 to 3 August 2025

	Location: Karratha
Activity	FeNaCING Festival
Date	2-3 August, 2025
Description of the consultation	Woodside hosted a stand at the FeNaCING Festival 2025**.** Members of Woodside's Corporate Affairs, Environment and Operations teams actively engaged with the community to discuss proposed EP activities. Woodside displayed a QR code on the stand linked to the 'Consultation activities' page of the Woodside website. A pull-up banner was on display regarding engaging on Woodside's 'Let's Talk', with a QR code linking to the 'Consultation activities' page of the Woodside website. Woodside made available printed Consultation Information Sheets on the Angel CCS GPGT EP.
Advertising and invitations	Woodside advertised the sessions to enable individuals to self-identify, promote awareness of the community consultation, and enable individuals to provide feedback on proposed activities, through the following: • Advertisement in Pilbara News on Wednesday, 30 July 2025 edition • Social media posts published on the Woodside North West Facebook page inviting the public to attend (see table below) • EP consultation banner with QR code (linked to 'Consultation activities' page on Woodside website), displayed at Woodside's stand along with current EP consultation information sheets (see table below).
Estimated number of individuals / organisations consulted	Over 5,000 community members attended the event. Woodside spoke to many community members, recording 50 conversations.
Summary of Feedback, Objection or Claim	
• General queries around employment opportunities, including apprenticeship and trainee opportunities. • Interest in local content and community contribution opportunities. • General interest in the Scarborough Energy Project progress and Pluto Train 2 and Train 1 modifications projects.	

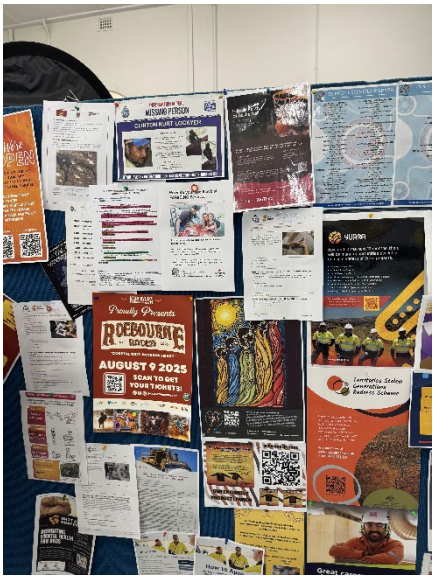
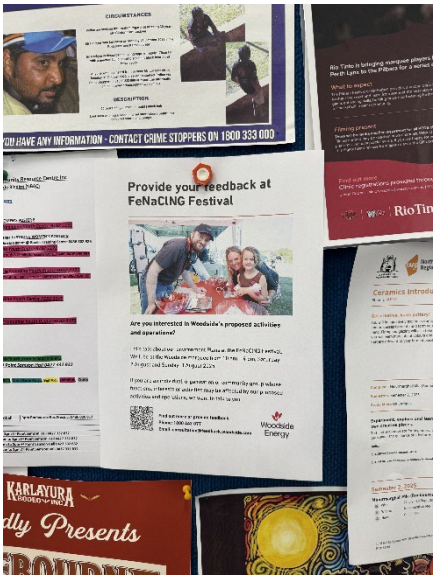
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• Conversations on the North West Shelf Project Extension including support for local community, timelines, investing partners, political views and the future of gas in the energy transition. Many pro approval. • Interest in Woodside's supply of DOMGAS to WA. • EP community consultation and approval process discussed and why we want to talk to community. No concerns raised. • Heritage BHP and Woodside merger, interest in the environmental approvals in the Bass Straight regarding decommissioning. • Murujuga World Heritage & MRAMP queries.
Woodside's Assessment of Merits of Feedback, Objection or Claim and its Response
Whilst feedback was received, there were no objections or claims. The community information sessions were part of Woodside's broader consultation approach to enable self-identification and provide relevant persons with the opportunity to assess any impacts on their functions, interests or activities, and provide feedback on proposed activities, which is consistent with the intended outcome of consultation (see Section 5.2 of the EP).

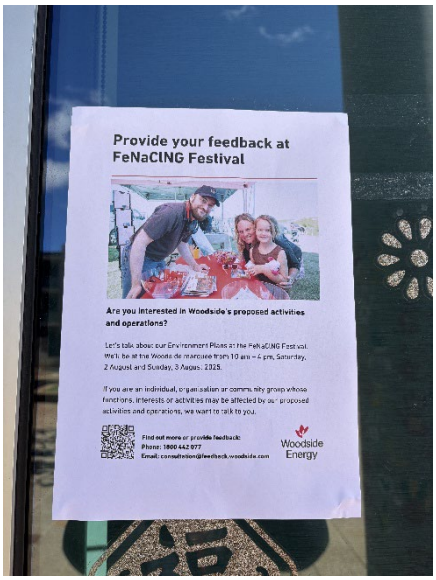
6.8.1.11.1 Evidence of promotion and event

Advertisement Pilbara News – 30 July 2025	Social media Woodside North West Facebook – Friday, 1 August
 Provide your feedback at FeNaCING Festival Are you interested in Woodside's proposed activities and operations? Let's talk about our Environment Plans at the FeNaCING Festival. We'll be at the Woodside marquee from 10 am – 4 pm, Saturday, 2 August and Sunday, 3 August 2025. If you are an individual, organisation or community group whose functions, interests or activities may be affected by our proposed activities and operations, we want to talk to you. Woodside Energy 12 NEWS Pilbara News Wednesday, July 30, 2025 Madden, 3, and Melanie Green at the 2019 FeNaCING Festival. Picture: Shannon Beattie Festival offers a feast of activities MADELIN HAYES Karratha is set to come alive as it hosts its biggest event of the year, bringing with it a jam-packed weekend of music and entertainment. The FeNaCING Festival runs from Saturday to Sunday, showcasing a dynamic line-up of musical acts, including crowd favourites The Potbellies, the high-energy performers Four on the Floor, multi-style mono Ross Vegas, soulful crooner Michael Ward and more. Held at Dalgarra Oval, the FeNaCING Festival transforms the space into a vibrant fairground filled with sideshow rides, delicious food stalls, community displays and entertainment. Festival goers can also catch the adrenaline-pumping Hardwired Harley stunt show or cheer on the annual tug-of-war competition. Capping off the weekend is a dazzling fireworks display on Sunday night. More information can be found at fenacing.com.au/festival-map/.	 Provide your feedback at FeNaCING Festival Are you interested in Woodside's proposed activities and operations? Let's talk about our Environment Plans at FeNaCING Festival. We'll be at the Woodside Energy Marquee from 10:00am - 4:00pm, Saturday, 2 August and Sunday, 3 August, 2025. If you are a individual, organisation or community group whose functions, interests or activities may be affected by our proposed operations and projects, we want to talk to you. Woodside Energy

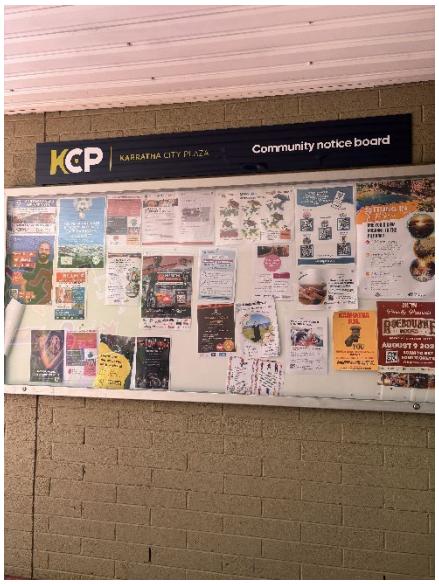
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Advertisement Ieramagadu Store, Roebourne community notice board − 24 July 2025	Advertisement Ieramagadu Store, Roebourne community notice board − 24 July 2025
	
Advertisement **Australia Post, Ngarliyarndu Bindirri Aboriginal Corporation / BRIDA, community noticeboard Roebourne − 24 July 2025**	**Advertisement** **Australia Post, Ngarliyarndu Bindirri Aboriginal Corporation / BRIDA, community noticeboard Roebourne − 24 July 2025**
	

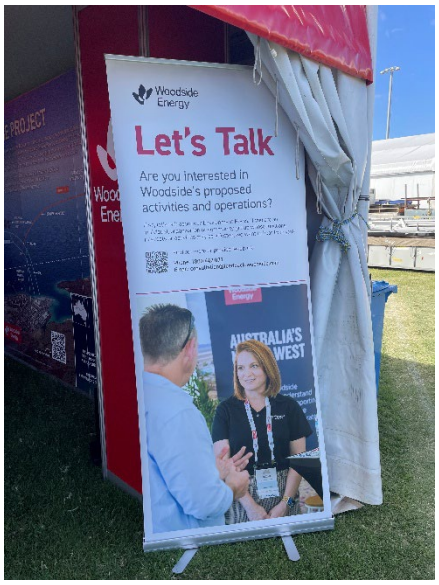
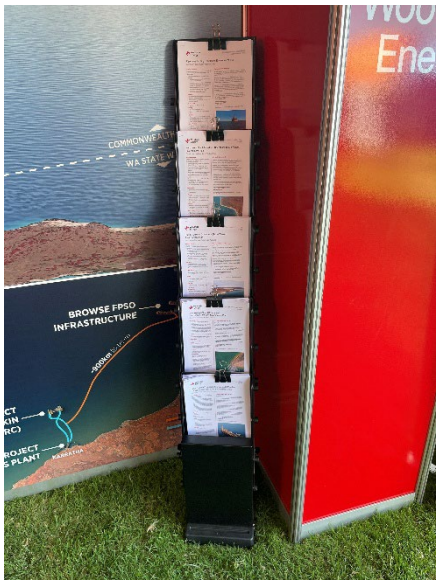
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Advertisement Lo's Cafe, Karratha community notice board – 24 July 2025	Advertisement Lo's Cafe, Karratha community notice board – 24 July 2025
	
Advertisement **Karratha City Plaza community notice board – 29 July 2025**	**Advertisement** **Karratha City Plaza community notice board – 29 July 2025**
	

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Advertisement Karratha City Plaza community notice board – 29 July 2025	Advertisement Karratha City Plaza community notice board – 29 July 2025
	
Advertisement **Good Grocer IGA Karratha, community notice board – 29 July 2025**	**Advertisement** **Good Grocer IGA Karratha, community notice board – 29 July 2025**
	

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Banner at event	Consultation Information Sheets at event
	
Consultation Information Sheets at event	**Image of internal panel with QR code to consultation information**
	 Wall B

6.8.1.11.2 Social media campaign results

Platform	Date	Description	Number of views	Reach	Interactions
Woodside North West Facebook page	1 July 2025	Below tile published via stories tool for 24 hours	272 views over 24 hours	258	0

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6.8.1.12 Dampier Beachside Markets − 18 October 2025

	Location: Dampier
Activity	Dampier Beachside Markets
Date	Saturday, 18 October 2025
Description of the consultation	Woodside hosted a stand at the Dampier Beachside Markets, a community event bringing together local businesses selling local products, a variety of food vendors and community groups. The stand was staffed by members of Woodside's Corporate Affairs team. Woodside displayed a QR code at the stand linking to the 'Consultation activities' page of the Woodside website. Woodside displayed and made available printed Consultation Information Sheets on the Angel CCS GPGT Surveys EP.
Advertising and invitations	Woodside advertised the event to enable individuals to self-identify, become aware of the community consultation, and to allow individuals to provide feedback on proposed activities, through the following: • An advertisement published in the Pilbara News on 15 October 2025 (see below) • A social media post Dampier Community Association Facebook page advising that Woodside would be in attendance at the event (see below) • A social media post via Woodside North West Facebook account advising that Woodside would be in attendance at the event (see below) • An advertisement displayed on community noticeboards at Lo's Karratha, and IGA Good Grocer Karratha • An EP consultation display with QR code (linked to the 'Consultation activities' page on Woodside's website) displayed at Woodside's stand • EP consultation banner with QR code (linked to 'Consultation activities' page on Woodside website), displayed at Woodside's stand along with current EP consultation information sheets (see table below).
Estimated number of individuals / organisations consulted	Over 500 community members attended the event. Woodside spoke to many community members, recording 5 conversations.

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Summary of Feedback, Objection or Claim
• Queries around employment opportunities. • General interest in the Scarborough Energy Project progress and Pluto Train 2 and Train 1 modifications projects. • Conversation on the North West Shelf Project Extension; pro approval. • Patrons shared their views on future of gas in the energy transition and how this compares to alternative power options; solar and nuclear. • Interest in Woodside's supply of DOMGAS to WA. • Environment Plan community consultation and approval process discussed and why we want to talk to community. No concerns raised. • Discussions with children about what Woodside does and where gas comes from. • Pleasant interactions with Woodside, Woodside contractor company and near neighbour employees.
Woodside's Assessment of Merits of Feedback, Objection or Claim and its Response
Whilst feedback was received, there were no objections or claims. The community information sessions were part of Woodside's broader consultation approach to enable self-identification and provide relevant persons with the opportunity to assess any impacts on their functions, interests or activities, and provide feedback on proposed activities, which is consistent with the intended outcome of consultation (see Section 5.2 of the EP).

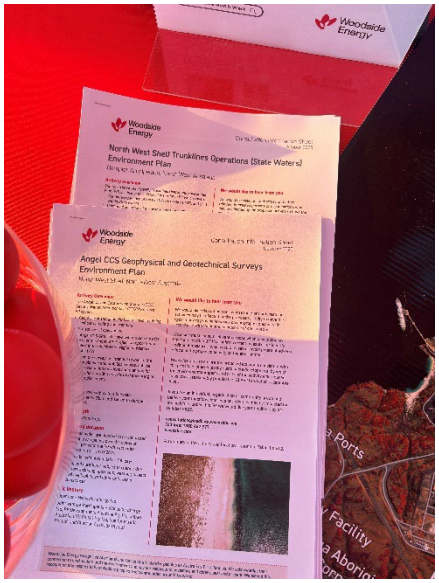
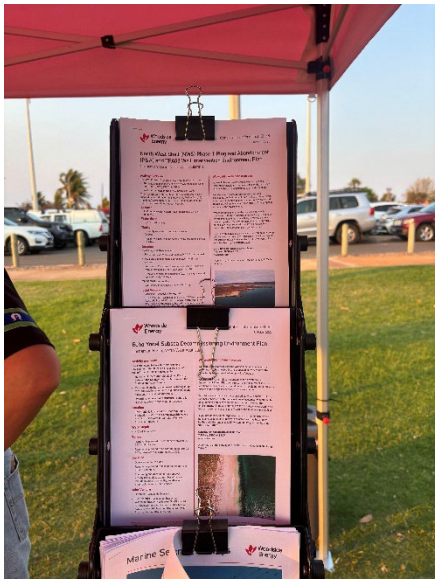
Evidence of promotion and event

Advertisement Pilbara News – 15 October 2025	Social media Dampier Beachside Markets Facebook post 17 October 2025
	

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Advertisement IGA Good Grocer notice board – 15 October 2025	Social Media – Woodside North West Facebook post – 18 October 2025
	
Advertisement - Lo's Cafe, Karratha community notice board – 15 October 2025	**Banner at event – 18 October 2025**
	

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Consultation Information Sheets at event	Consultation Information Sheets at event
	

Social media campaign results

Platform	Date	Description	Number of views	Reach	Interactions
Woodside North West Facebook page	October 18 6:13 PM	Post with text: Are you interested in Woodside's work in the North West? Let's Talk about our Community Grants Program, proposed activities and operations and Environment Plans at the Dampier Beachside Markets. We'll be here from 5:30pm - 8:30pm this evening. We welcome your input and wish to provide you with the opportunity to share information and discuss your functions, activities or interests which may be affected by our proposed Environment Plan activities. Can't make it? Visit https://bit.ly/3JeWnG9 to get in touch.			52 reactions

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6.9 Community newsletters

6.9.1 Let's Talk – Our Plans, Your Say

6.9.1.1 Edition 3 - July 2024

LET'S TALK

EDITION 3 | JULY 2024

OUR PLANS, YOUR SAY

Woodside Energy



WAFIC SEAFOOD AWARDS

Endeavour Foods General Manager Sophie Sharland's empowerment of future leaders in the seafood industry was recognised in early May when she received the Young Achievers Award, sponsored by Woodside Energy, at the 2024 Western Australian Seafood Industry Awards.

This event, hosted biennially by the Western Australian Fishing Industry Council (WAFIC), acknowledges the innovations and achievements within the WA seafood industry.

The Young Achiever Award is one of 14 categories and focuses on individuals who demonstrate positive impacts to the seafood industry.

Sophie is a shining example of the growing number of talented young women working in the commercial seafood industry.



Jo Ferrie, Head of Communities and Social Performance, Woodside Energy and Young Achievers Award recipient, Sophie Sharland.

THE RUNDOWN

Woodside Energy Chief Executive Officer and Managing Director Meg O'Neill has said gas producers are ready to work with government to deliver new supplies critical to the energy transition as she highlighted the importance of removing barriers to investment.

On 21 May 2024, welcoming the release in May of the Federal Government's Future Gas Strategy, Ms O'Neill said it provided a clear statement about the critical role gas plays in Australia's economy and will continue to play in the future.

A key point the Strategy makes is that new sources of gas will be needed to meet demand during the energy transition.

Addressing an Australian Energy Producers (AEP) Conference, Ms O'Neill, who is also AEP Chair, said:

"I am pleased the Government is talking about solutions. The industry is ready to roll up our sleeves and work with the Commonwealth to achieve a solution to a shortage which is supply.

"We welcome acknowledgment in the Strategy that we'll need the right regulatory settings to do so.

"Indeed, the success of the Strategy will be measured by whether it delivers policy reforms that address the barriers to new gas supply and investment."

She said the recent passage of Federal legislation relating to the Petroleum Resource Rent Tax (PRRT) had provided certainty.

The changes bring forward PRRT payments from LNG projects. However, in order to facilitate the PRRT payment amendments, the government held off passing other amendments designed to clarify ambiguity around consultation requirements for environmental approvals.

"This helps us make future investment decisions. But it has come at the expense of addressing the ambiguity in the consultation process for offshore approvals," Ms O'Neill said.

"Leaving this issue unresolved makes the timely development of new energy supply more difficult."

"The industry stands ready to work with the Government to progress these necessary reforms as soon as possible," she said.

To stay updated, subscribe for future editions at
woodside.com/what-we-do/consultation-activities

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COMMUNITY SPOTLIGHT

Karratha Signs

The Scarborough Energy Project will provide a boost to the WA economy and communities, growing jobs and bringing work through the supply chain.

Karratha Signs is one of more than 75 local Karratha businesess who have been working on our Scarborough Energy Project.

Started by Jed and Suzy Griffiths in 1999 in the third bedroom of their home, they have grown to be an award-winning enterprise that operates from premises in Karratha and Port Hedland.

Karratha Signs has designed and manufactured an array of site entry, safety and wayfinding signage for the Pluto Train 2 Project and has been vendors with Woodside since 2022.

Working with Karratha Signs provides Woodside with premium products suited to the Pilbara. The company invests in top-of-the-range equipment to ensure a professional, high-quality result every time.

Using local businesses which understand the areas in which Woodside operates ensures the best possible standards and expertise on the job.

Jed Griffiths said there was a sense of community among the employees on the Pluto Train 2 project.

"We work closely with many different people throughout the company to provide locally made signage that suits their individual requirements. Every member we've spoken to has been open-minded to new signage ideas and eager to assist in the process," Jed said.

"The Pluto Train 2 contract has enabled us to open our doors to more clients – both big and small. We've been able to demonstrate the depth of our professionalism to other high-end customers and ultimately expand our client base."



Click **here** to learn more about Karratha Signs and their work on the Scarborough Energy Project.



TALKING POINT

National Energy Technician Training Scheme

A talk at Exmouth High School on the National Energy Technician Training Scheme (NETTS) inspired Taj, an Exmouth local, to apply for an Electrical Instrumentation apprenticeship.

NETTS is a collaboration between Programmed and several energy organisations including Woodside, to develop skilled workers for the future. It's part of Woodside's commitment to local recruitment and providing opportunities to the communities in which we operate.

The first 12 months of the four-year apprenticeship is based in a structured learning environment to provide apprentices with the skills, knowledge and experience required to transition into an onshore or offshore role. Apprentices are taught a variety of life skills designed to prepare them for the transition from school to the workplace.

Taj spent 12 months training at the Australian Centre of Energy and Processing Training and is now offshore at the Woodside-operated Ngujima-Yin, Floating Production Storage and Offloading oil production facility, located 50 km northwest of Exmouth. Taj will work offshore swings and continue his TAFE courses in Perth.

Taj is one of twelve young people currently being hosted by the Woodside NETTS apprenticeship program which has a 98% apprentice retention rate, and in line with Woodside's commitment to inclusion and diversity, First Nations apprentices account for more than 25% of the intake and around 33% are female.

"I've started learning about basic electrical work and it's been interesting, I'm enjoying it. I'm keen to expand my knowledge and ultimately, finish this apprenticeship and hopefully work for Woodside for a decent amount of time and get back up North." Said Taj, NETTS apprentice.

This story demonstrates just one of the ways our operations and projects continue to enable us to make a difference, both in this community and across the state.

Read our 2023 North West Australia Community Development Report to learn more.



Billie the dog watching over Taj enjoying days off

Join the conversation at **woodside.com/what-we-do/consultation-activities**

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COMMUNITY CONVERSATIONS

Woodside consults with local communities at local events so you can easily come and chat to us about our operations, decommissioning activities, or proposed projects.

Recently our team talked with community members at the Pilbara Summit in Karratha, Dampier Beachside Markets, WA Day Festival in Dampier, Exmouth Community Markets and the Onslow community information night.

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 topics.

If you're interested in what Woodside has planned on land and sea, come and chat to our friendly team. Visit us at:

FeNaCing Festival 3rd and 4th of August, Bulgarra Oval, between 10 am and 4 pm.

You can also read our recent Karratha Community Update **here.**



STAY UP TO DATE ON OUR CONTINUED CONTRIBUTION TO THE COMMUNITY WE CALL HOME.

SEARCH ON FACEBOOK
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
North Rankin Complex Operations	Operations – 5 yearly review	~135km north-east from Dampier	19 June – 19 July 2024
Angel Carbon Capture and Storage Geophysical and Geotechnical Studies (Commonwealth and State EPs)	Surveys	~9 km north-east of Dampier (State EP) ~ 35 km (closest survey points) - ~140 km (furthest survey point) north of Dampier (Commonwealth EP)	8 July – 9 August 2024
Julimar Operations	Operations – 5 yearly review	~160km north-west of Dampier	15 July – 16 August 2024

You can access our consultation information, provide feedback and subscribe for updates by visiting: **www.woodside.com/what-we-do/consultation-activities**

PROGRESS SNAPSHOT

Environment Plan	Activity Type	Date Accepted	Status
NWS and Julimar Exploration Wellhead Decommissioning Environment Plan	Decommissioning	3 July 2024	Scheduled for August 2024
Angel Operations Environment Plan (Lambert West Drilling)	Operations / Project	25 June 2024	In scheduling
Julimar Development Phase 3 Drilling and Subsea Installation Environment Plan	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 Environment Plan	Project	30 May 2024	Scheduled for August 2024
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
WA-34-L Pyxis Drilling and Subsea Installation (Revision)	Project	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
TPA03 Well Intervention	Project	28 November 2023	In scheduling
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** or click **here.**

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LET'S TALK

INFRASTRUCTURE GETS SECOND LIFE

Woodside's largest ever decommissioning campaign to date is currently in full swing with a range of activities completed or planned across the Enfield, Echo Yodel, Stybarrow and Griffin fields off the coast of Western Australia and activities planned at the Minerva field in Victoria.

Involving the removal of an estimated 35,000 tonnes of infrastructure including more than 350 km of pipe, flowlines and umbilicals and a range of other equipment, approximately 95% is planned to be recycled or reused.

Woodside has engaged a range of contractors (including international contractors) that bring significant subsea experience, technical know-how, and that use specialist offshore vessels for safe and reliable execution of campaign activities. Specialist vessels include mobile offshore drilling units required for well plug and abandonment activities, light construction vessels for removal of subsea structures and pipe, and heavy lift vessels to remove large structures including riser turret moorings.

Woodside is working with a variety of Australian businesses, many with experience supporting defence, mining and refinery disposal, which are assisting the business to complete oil and gas decommissioning activities. Companies such as McMahon, RPA, C.D. Dodd and Birdon are playing leading roles in onshore disposal scopes, adapting established processes and pathways to support the unique requirements of the oil and gas industry.

Because of the specific needs of the campaign, new onshore facilities are being developed by sub-contractors to support and complement existing facilities.

Some large infrastructure, such as the Nganhurra Riser Turret Mooring removed in late 2023, is typically taken to the Australian Marine Complex at Henderson to be cleaned and deconstructed in preparation for recycling and reuse. Infrastructure such as pipe, flexibles and umbilicals are unloaded from offshore up to three times a week at facilities near Onslow including the Port of Ashburton.



The infrastructure is then taken to a facility established by sub-contractors C.D. Dodd and RPA at the nearby Pilbara Regional Waste Management Facility where it is decontaminated and cleaned before it's transported to another C.D. Dodd facility in Karratha for deconstruction and sorting into its constituent parts in preparation for recycling.

Woodside recently hosted Shire of Ashburton President Audra Smith, Cr Brie Healy, Cr Rosanne Kapor, Cr Linton Rumble, and Deputy CEO Jo Sangster at the decommissioning facility near Onslow. With many local businesses supporting decommissioning activities, the site visit was a great opportunity to inform stakeholders about the campaign's progress and the importance of working with the Shire to its success.

"I am immensely proud of the progress we have witnessed during our recent site visit. Woodside's decommissioning campaign, one of the largest in Australia, reinforces our commitment to responsible resource management and environmental stewardship in the Shire of Ashburton.

The efforts of the lead contractor, TechnipFMC, in removing over 35,000 tonnes of offshore infrastructure, and the work of RPA and C.D. Dodd in recycling these materials, highlight the impressive collaboration and innovation driving this project. This initiative not only supports our goal of sustainable development but also contributes significantly to the local economy. As we move towards completing this campaign by the end of 2025, I am confident that our continued dedication will produce outstanding results for both the industry and the community." – Shire of Ashburton President Audra Smith.



Shire of Ashburton President Audra Smith, Cr Brie Healy, Cr Rosanne Kapor, Cr Linton Rumble, and Deputy CEO Jo Sangster visiting the decommissioning facility near Onslow.

Join the conversation at **woodside.com/what-we-do/consultation-activities**

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6.9.1.2 Edition 4 – November 2024

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

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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.

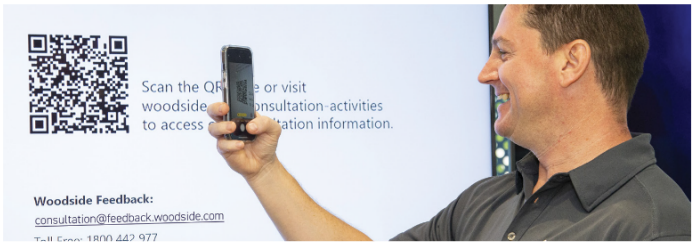


"We have been contracted to provide a range of the smaller cranes for the project. Mostly this consists of Franna pick and carry cranes, however we are also providing a 160 tonne all-terrain crane and a small three tonne Maeda spider crane, as well as the ongoing maintenance of these machines," said 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**

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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

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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

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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**

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6.9.1.3 Edition 5 – March 2025

Woodside Energy

Let's Talk

Our Plans, Your Say

Edition 5 | March 2025



Heritage auditors walking along eastern outside boundary of Pluto LNG Plant on Murujuga Country

The rundown

Cultural Connections: Woodside's Commitment to Heritage Management

Woodside has operated on the Burrup Peninsula (Murujuga) in the Pilbara region of Western Australia for more than 40 years. We've matured our approach to heritage management considerably over this time, and are proud of the relationships we have built with Traditional Owners and Custodians.

Every year, Woodside works with Traditional Custodians undertaking audits of heritage sites around the perimeter of the Karratha Gas Plant and Pluto LNG Parks. These audits arose from our long-standing consultation with Traditional Custodians regarding Cultural Heritage Management at our onshore facilities.

Both assets operate near National Heritage and Tentative World Heritage listed sites, including Murujuga's petroglyphs (rock art).

The primary purpose of the audits is to monitor the condition of culturally and spiritually significant sites and invite recommendations if the potential for impacts are detected.

"The audits are also an opportunity for Traditional Custodians to connect to areas of a cultural landscape that stretch back tens of thousands of years, and for the community's reassurance that cultural heritage is being managed appropriately on Woodside's leases," said Daniel Thomas, Manager Global Heritage and Human Rights.

The most recent heritage audits were carried out last year over a two week period.

"The feedback from Traditional Custodians was that the sites inspected remain in generally good condition," said Daniel.

"Traditional Custodians did identify some areas in need of additional vegetation management, and that vegetation management was supervised by elders and Indigenous community members in November last year. Another issue identified was rubbish washing up on shore which is also now managed."

Learn more about Woodside's cultural heritage management **here**

A soaring community experience

Western Australia's Pilbara shorebirds undertake a remarkable migration journey of over 10,000 kilometres to breed in the northern hemisphere, sustained by the region's marine cuisine.

Around 70 participants recently attended an annual community event at Hearson's Cove featuring shorebird watching and information sessions, and a tour of the incredible petroglyphs at Nganjarli (Deep George).

The event aims to raise awareness about the significance of the Pilbara coast for shorebirds and the rich cultural heritage of the area. Participants gain insights into the birds' behaviour and contribute to conservation efforts within the community.

Woodside Energy thanks the collective support from co-hosts, Pilbara Ports, Rio Tinto, Yara Pilbara and the DBCA Parks and Wildlife Service who partnered with the Murujuga Aboriginal Corporation Rangers and Birdlife Australia.



Image credit: Murujuga Aboriginal Corporation

To stay updated, subscribe for future editions at
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Community spotlight Impact felt locally in Karratha

Impact Digi is a Pilbara-based Indigenous owned and operated marketing agency with close to a decade of experience working with Woodside Energy.

A full-service marketing agency, Impact Digi has built relationships with government, industry, Indigenous organisations and businesses of all sizes helping them to build brands and reach stakeholders.

"The past couple of years have been extra rewarding as our reputation has grown within Woodside and we're getting to work with team members from other areas of their business," said Impact Digi Managing Director, Tamara Bin Amat.

Starting off by offering photography services when they first began, Impact Digi has transformed over time with a growing team, refined services and an expanded reach.

"Looking back, one of my favourite moments was when local Asset Manager for the Karratha Gas Plant, Breyden Lonnie presented our first ever award for Best Aboriginal Business at the 2015 Karratha and Districts Chamber of Commerce and Industry (KDCCI) Business Excellence Awards," said Tamara.

With Impact Digi recently winning the Business Excellence Award for Best Small Business at the 2024 Awards, among many other accolades, the recognition continues.

Tamara and her team understand the importance of supporting local and contributing to their community.

"Working with Woodside has not only boosted our business but also our reputation, opening doors to new opportunities across the state," said Tamara.

Continue reading about Impact Digi's experience working with Woodside **here**



Managing Director, Tamara Bin Amat left with her team.



Community partners playing a friendly game of lawn bowls during the sundowner event



Woodsiders ready to chat at Ross St Mall

Talking Point

Engaging Exmouth

Did you know that Woodside has been engaging with the Exmouth community for over 15 years? Woodside operates two Floating Production Storage and Offtake (FPSO) facilities around 50 kilometres off the coast of Exmouth, the Ngujima-Yin FPSO and the Pyrenees FPSO.

In November 2024, Woodside wrapped up the year with a series of engagements with stakeholders, community partners and the Exmouth community.

This included a Community Liaison Group meeting which is a forum co-hosted by Woodside and Santos. The joint approach stemmed from community feedback received around a decade ago, and the collaborative format has been retained to this day. The group meets three times a year and both Woodside and Santos provide updates on activities and community initiatives, inviting members to raise queries and provide feedback.

Woodside recently presented on our climate strategy and invited research partner, CSIRO to share updates on Ningaloo Outlook, a program furthering knowledge on the deep and shallow reefs of Ningaloo Coast World Heritage Area.

Woodside and Santos thanked community partners during a sundowner event at the Exmouth Bowling Club. This was a great opportunity to celebrate shared commitment to positive community outcomes over a friendly game of lawn bowls.

The following day, Woodside held a pop-up Environment Plan consultation stand at Ross Street Mall where locals (including the iconic Exmouth emus) and visitors dropped by to find out more about our activities and proposed plans.

Woodside's active engagement in community illustrates our commitment to open and transparent consultation.

Read about the Woodside supported programs focusing on the unique ecosystem along the Ningaloo Reef and Exmouth Gulf **here**

Join the conversation at **woodside.com/what-we-do/consultation-activities**

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Community conversations

Open and transparent consultation is important to Woodside. Consulting firm GHD was recently in Karratha to speak with community stakeholders as part of Woodside's socio-economic impact assessments for communities that host Woodside's workforce and assets.

These insights assist Woodside to identify, assess, and manage social impacts and benefits that may arise from different operational and project scenarios in Karratha and aims to uncover new ways for Woodside to partner with the community in the future.

This informs Woodside's future strategies for impact management, community engagement, local content and social investment.

Further consultation will be taking place in April 2025.

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.



Stay up to date on our continued contribution to the community we call home.

Search on Facebook or click **here**

Woodside North West

GHD conducting on the ground consultation with key stakeholder, Yurra

Consultation opportunities

Environment Plan	Activity Type	Location	Consultation Dates
Goodwyn-Alpha Geophysical and Geotechnical Revision	Survey	~140 km north-west of Dampier	April 2025
Okha Floating Production Storage and Offloading (FPSO) Facility Operations	Operations	~119 km north-west of Dampier	April 2025
NWS Trunkline State Operations	Operations	~11 km northeast of Dampier	June 2025
Pluto Trunkline State Operations	Operations	~8 km northeast of Dampier	June 2025
NWS Phase 1 P&A and TPA03 Well Intervention	Decommissioning and Project	~125 km north of Dampier and 138 km north-west of Dampier	Previous consultation in September – October 2024
Angel Subsea Infrastructure Removal	Decommissioning	~125km north of Dampier	Previous consultation in September – October 2024

Progress snapshot

Environment Plan	Activity Type	Date Accepted	Status
Minerva Plug and Abandonment	Decommissioning	9 January 2025	In scheduling
Macedon Operations	Operations	24 December 2024	In progress
Ngujima-Yin Floating Production Storage and Offtake (FPSO) Operations	Operations	19 December 2024	In progress
Minverva Decommissioning and Field Management (State)	Decommissioning	27 November 2024	In progress
Minerva Decommissioning and Field Management (Commonwealth)	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
Goodwyn Alpha Geophysical and Geotechnical Surveys Environment Plan	Project	30 May 2024	In progress
Stybarrow Decommissioning and Field Management / End State	Decommissioning	23 May 2024	In progress
Macedon Operations (State)	Operations	24 April 2024	In progress
Griffin Field Decommissioning (End State)	Decommissioning	1 March 2024	In progress
Stybarrow Decommissioning and Field Management	Decommissioning	8 January 2024	In progress

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Environment planning continues to move forward

To undertake offshore petroleum or greenhouse gas activities, a titleholder is required to have an accepted Environment Plan, also referred to as an EP, in place.

In accordance with the objectives of the government regulations, the main purpose of an EP is to demonstrate two things. The first is that potential environmental impacts and risks from activities are identified and appropriate management and mitigation controls are implemented to a level that is 'as low as reasonably practicable' (ALARP) and acceptable.

The second ensures activities are carried out in a manner consistent with the principles of ecologically sustainable development set out in the *Environment Protection and Biodiversity Conservation Act 1999*.

It takes extensive work and time to develop an EP. A staged approach includes early planning of the proposed activity, defining the existing environment, consideration of potential impacts and risks to the environment, and identifying appropriate mitigation and control measures to manage risks to ALARP and an acceptable level.

Woodside Environment Plan Delivery Team Lead, Tim Mander, came into his role in 2023 following a number of legal challenges on the consultation processes under the Offshore Environment Regulations.

"Coming into the role was an interesting and challenging time. We navigated our way through this and in 2024, 12 Environment Plans were accepted with activities spanning ongoing operations, decommissioning, drilling, surveys, and installation of subsea infrastructure on the seafloor," Tim said.

"This year again, we have a number of Environment Plans kicking off across a range of different activities. We'll continue to focus on how we improve what we do to ensure our processes and management measures are appropriate to the nature and scale of these activities."

Environment Plans are required for both State and Commonwealth waters, with the National Offshore Petroleum Safety and Environmental Management (NOPSEMA) assessing and accepting Commonwealth EPs and the Department of Energy, Mines, Industry Regulation and Safety assessing and approving State EPs.

Woodside's Commonwealth EPs, currently under assessment and EPs that have been accepted can be viewed on NOPSEMA's website.



Several of the Scarborough Energy Project EPs were accepted in late 2023, including trunkline installation, with the work completed in October 2024

Upcoming engagement opportunities

Roebourne

Monthly Community Luncheon
- 26 March 2025, 11.00 am – 2.00 pm

Woodside Office, 39 Roe Street, Roebourne, WA, 6718

Dampier

Dampier Beachside Markets
- 6 April 2025, 9.00 am – 12 noon
- 4 May 2025, 9.00 am – 12 noon

Hampton Oval, Dampier, WA, 6713

Have your say

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We welcome your input so please contact us if you'd like to discuss your functions, interests or activities which may be affected by our proposed activities.

You can access our consultation information, provide feedback and subscribe for updates by cicking **here**

Join the conversation at **woodside.com/what-we-do/consultation-activities**

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6.9.1.4 Edition 6 – October 2025

Woodside Energy

Let's Talk

Our Plans, Your Say

Edition 6 | October 2025



Goodwyn A Platform approximately 140 km north-west of Karratha.

The rundown

Goodwyn Area Infill Development Offshore Project Proposal gets the green light

Following NOPSEMA's acceptance of the Goodwyn Area Infill Development Offshore Project Proposal (GWA OPP), Woodside is planning to develop new gas wells about 140 km north-west of Karratha.

The development will make better use of space at the Goodwyn A platform by bringing in extra gas and condensate from up to 8 new wells.

This is a phased development expected to deliver first gas in 2027-2028.

Environment Plans (EPs) supporting the development include:

- Goodwyn Alpha Geophysical and Geotechnical Surveys (Rev 2)
- Greater Western Flank Phase 4 (GWF-4) Drilling and Subsea Installation – consultation closed 27 August 2025.

We currently anticipate consulting on a revision for the GWA Operations EP that will include the proposed new wells in the first half of 2026.

Upcoming engagement opportunities

Woodside is consulting with local community members at events, making it easy to speak to us about our operations, decommissioning activities and proposed projects.

If you're interested in what Woodside has planned on land and sea, come and chat to our friendly teams at the locations below, follow the Woodside North West Facebook page or email us at consultation@feedback.woodside.com

Dampier

- Dampier Beachside Markets Saturday, 18 October and 8 November 5:30pm to 8:30pm Hampton Oval, Dampier, WA, 6713

Exmouth

- Exmouth Community Markets Sunday, 5 October 8:00 am to 12:00 noon Federation Park, Exmouth, WA, 6707

Follow us on Facebook by **clicking here**



Come and speak to our friendly team.

To stay updated, subscribe for future editions at **woodside.com/what-we-do/consultation-activities**

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Community conversations

The way we engage is based on building trust and understanding to support long-term relationships.

We emphasise open and accessible communication and feedback on our activities. One way we do this is by inviting community to engage with Woodside at popular community events.

Woodside and our joint venture partners were pleased again to sponsor the City of Karratha's Red Earth Arts Festival (REAF) at The Quarter where we helped activate and transform the area into a hub of artistic and cultural activity.

This year's festival featured over 100 performances, workshops, and experiences. Over 9,200 people attended the four-day festival, with 90% of programming free to the community.

The main attraction was 'The Whale' installation, which invited viewers to operate the strings of a large whale puppet and its sea friends while listening to whale vocalisations – an immersive experience enjoyed by all ages.

Artists from Yinjaa-Barni Art Group painted and displayed art, welcoming the public to watch the creation of several pieces and engage in conversations.

A community concert featured roving entertainment, stage performances, music, food trucks and markets.

At our Woodside tent, we engaged with the Karratha community discussing Woodside's work in the North West, our EPs, current and proposed projects and we listened to community feedback.

Woodside, on behalf of the Scarborough Joint Venture, was also proud to support the new biennial Ningaloo Sky Festival in Exmouth recently. The three-day event showcased the region's vibrant culture, food and community.

A key event was a market day at Talanjee Oval featuring local artists and makers, roving entertainers, a kite show, animal petting farm and food trucks.

At our Woodside stand, we chatted with visitors about our EPs and Woodside's activities in the Exmouth region, and listened to people's feedback.



Ningaloo Sky Festival drone show.

A drone show highlighting stories of the region's Traditional Owners and a free community concert by iconic Aussie rock band Eskimo Joe capped off the day.

Other events included astronomy talks highlighting the star-filled Ningaloo night sky, unique dining experiences, sunrise yoga, cultural talks and a community movie night.

Woodsiders also met with the Exmouth Community Liaison Group to provide updates on relevant projects and activities.

Talking point

Pygmy blue whales: feeding discovery

In an Australian first, scientists have recorded where and when pygmy blue whales feed as they migrate along the WA coast, thanks to research co-funded by Woodside Energy.

Every year, many whale species and thousands of individual whales migrate through the offshore waters of WA's north-west.

Luke Smith, Woodside Head of Biodiversity and Science, says collaboration with researchers is helping us better understand these whale species and their annual migration.

"In recent years, we – together with our joint venture partners – have invested heavily in numerous whale research programs," Luke points out.

"We continue to deepen our understanding of these magnificent animals and their natural habitat."

One of our research programs focuses on pygmy blue whales, a species that belies its name and can measure up to 24 metres long and weigh 90 tonnes. They undertake an annual northern migration from south-east Australia up through offshore waters of WA to Indonesia before returning five to six months later.



Photo credit: Grace Russell, Centre for Whale Research.

The research led by the Australian Institute of Marine Science and the Centre for Whale Research, found the whales aren't just migrating but also feeding enroute to their Indonesian breeding grounds – something never previously recorded with telemetry in the north-west waters of WA.

Unlike humpback whales, commonly seen as they play and frolic near to shore on their annual migration along the WA coast, pygmy blues spend little time at the surface and migrate in deeper offshore waters. To understand this species we've turned to the latest technology.

Using satellite tags and dive loggers (think Fitbits for whales), scientists tracked nine pygmy blues as they searched for prey.

Previously, it was thought feeding only occurred at the Perth Canyon and Ningaloo but researchers documented them snacking on the go, too.

The whales were recorded performing deep dives with lunge feeding – a high-speed move where they engulf dense swarms of krill.

The findings are helping researchers deepen their understanding of the species' annual migration, while providing us with more knowledge to include in EPs, improving how we avoid or minimise potential impacts.

"As whale species continue to recover and whale numbers migrating through north-west Australia increase, we'll continue to develop technology and approaches to improve our management of whale interactions," reports Luke.

"It's crucial we further reduce potential impacts, support future project approvals and contribute to science along the way."

Luke believes we can continue to successfully co-exist in the marine environment while simultaneously contributing to the study of these complex, remarkable mammals.

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Consultation opportunities

Environment Plan	Activity Type	Location	Consultation Dates
Angel CCS Geophysical and Geotechnical Surveys - Update	Survey	~ 35 km from Dampier	October 2025
Echo Yodel Subsea Decommissioning	Decommissioning	~ 140 km north-west of Dampier	October 2025
NWS Phase 1 P&A and TPA03 Well Intervention EP - Update	Decommissioning	Closest well to shore is ~ 125 km north of Dampier	September to October 2025
Pluto 4D M3 Marine Seismic Survey	Survey	~ 28 km north-west of the Montebello Islands and 150 km north-west of Dampier	September to October 2025
Julimar & Brunello P&A	Decommissioning	~ 185 km west north-west of Karratha	August 2025
GWF-4 Drilling and Subsea Installation	Drilling and installation	~140 km north-west of Dampier	July to August 2025

Progress snapshot

Environment Plan	Activity Type	Date Accepted	Activity Status
Julimar Operations	Operations	7 July 2025	In progress
Pluto Operations	Operations	5 May 2025	In progress
Minerva Plug and Abandonment	Decommissioning	9 January 2025	In progress
Macedon Operations	Operations	24 December 2024	In progress
Ngujima-Yin Floating Production Storage and Offtake (FPSO) Operations	Operations	19 December 2024	In progress
Minerva Decommissioning and Field Management (State)	Decommissioning	27 November 2024	In progress
Minerva Decommissioning and Field Management (Commonwealth)	Decommissioning	14 October 2024	In progress
NWS and Julimar Exploration Wellhead Decommissioning	Decommissioning	3 July 2024	In progress
Goodwyn-Alpha Geophysical and Geotechnical (Rev 2)	Survey	30 May 2024	In progress

Have your say

Woodside consults relevant persons while preparing our Environment Plans to notify them, obtain their input and to assist Woodside to confirm current measures or identify additional measures, if any, that may be taken to lessen or avoid potential adverse impacts of the proposed activity on the environment.

We welcome your input so please contact us if you'd like to discuss your functions, interests or activities which may be affected by our proposed activities.

You can access our consultation information, provide feedback and subscribe for updates by **clicking here**



Right: Woodsiders keen to chat with community at the Ningaloo Sky Festival.

You can view Commonwealth Environment Plans for approved activities and operations by visiting:
info.nopsema.gov.au/home/approved_projects_and_activities

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Okha FPSO, approximately 115 kilometres north-west of Dampier.

Let's talk about... FPSOs

Woodside has been producing oil from its Australian assets through Floating Production Storage and Offloading (FPSO) facilities since 1995. Woodside currently has three FPSOs in operation in North West Western Australia.

An FPSO facility is a vessel used in offshore oil and gas production, processing hydrocarbons from subsea wells, storing the oil onboard, and offloading it to tankers for transport. During normal operations, an FPSO is operated by 50 to 100 personnel onboard at any given time. These roles include production operators, marine crew, engineers, safety officers, catering staff, and support personnel.

Moored approximately 115 kilometres north-west of Dampier, the Okha FPSO has been producing oil and gas from the Cossack, Wanaea, Lambert, and Hermes oil fields. Crude oil is offloaded to bulk tankers, and LPG-rich gas is exported to the North Rankin Complex before being processed at the Karratha Gas Plant.

Woodside operates two offshore assets off Exmouth: the Ngujima-Yin and Pyrenees FPSO facilities.

The Ngujima-Yin FPSO is located over the Vincent oil field, 50 kilometres north-west of Exmouth. Ngujima-Yin is a Thalanjyi word meaning "to dream". The Greater Enfield Project, completed in 2018, involved developing several oil accumulations through a subsea tie-back to Ngujima-Yin. This project included a major refit of the FPSO, installation of subsea infrastructure, and the drilling of 12 development wells.

The Pyrenees FPSO commenced operations in 2010 and consists of six conventional oil fields located 45 kilometres north-west of Exmouth.

The Ningaloo region is recognised for its high ecological importance, boasting unique environmental, social, and cultural values, extending across 280 kilometers of coastline between Exmouth and Carnarvon. It is a global biodiversity hotspot and was inscribed on the World Heritage List in 2011.

To better understand and manage the environmental features of the region, Woodside has supported a range of multi-year projects through its environmental partnerships program.

These projects focus on iconic species and habitats across different ecosystems along the Ningaloo Reef and Exmouth Gulf. Woodside's social investment and science-funded projects contribute to conservation efforts, biodiversity education, and community engagement at local and regional scales.

You can read more about this significant region by **clicking here**

Scarborough's subsea infrastructure now in place

The Scarborough Energy Project has reached another exciting milestone–this time beneath the waves. The team has successfully completed the penultimate subsea installation campaign, marking a significant step toward first LNG cargo in the second half of 2026.

Approximately 375 km off the Pilbara coast, over 400 pieces of subsea equipment have now been assembled and installed in the Scarborough field, including the impressive 305-tonne Riser Base Manifold. With all critical infrastructure in place and tested, the project is now more than 86% complete (excluding Pluto Train 1 modifications) and ready for the hook-up and commissioning of the floating production unit (FPU) upon its arrival.

The Scarborough Offshore Facility and Trunkline (Operations) Environment Plan (EP) is now approved, setting out how Woodside will manage environmental risks and impacts associated with offshore operations. The EP covers activities such as FPU installation, commissioning, and ongoing operations, as well as inspection, maintenance, and repair of subsea infrastructure.

Read more about the Scarborough Energy Project by **clicking here**



This is the 80m long, 32" diameter rigid pipe spool which weighs approximately 230 tonnes and was fabricated in Henderson, Western Australia.

Join the conversation at **woodside.com/what-we-do/consultation-activities**

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6.9.2 Karratha Community Update

6.9.2.1 Edition Q2 – April 2024



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Woodside Energy recognises Aboriginal and Torres Strait Islander peoples as Australia's first peoples.

We acknowledge the unique connection of the Traditional Custodians to land, waters and the environment where we operate in the City of Karratha. We extend this recognition and respect to First Nations peoples and communities around the world.



This year, Woodside celebrates its 70th anniversary and four decades of operations in Karratha.

Over this time, we have provided the reliable energy our state needs to power homes and industry.

2024 also marks 35 years since the North West Shelf Project loaded its first liquefied natural gas (LNG) cargo. After delivering more than 6,500 cargoes from the Karratha Gas Plant and Pluto LNG, we continue to supply the gas our international customers require to continue their decarbonisation journeys.

Since 1984, Woodside and its joint venture partners have made lasting contributions to the Karratha community through valued social contribution partnerships, employment and training pathways and opportunities for local businesses. These important and positive impacts were front of mind 40 years ago, and they will be as we embark on a period of change across our North West operations.

As the North West Shelf reserves gradually decline, we are assessing our future infrastructure requirements. We have previously said that we will be retiring one LNG processing train at the Karratha Gas Plant, which could happen as early as this year. We also continue to pursue opportunities to process other resource owners' gas and are focused on remaining a world-class tolling facility, albeit one that may become smaller over time.

At the same time, we are progressing our Scarborough Energy Project and building a second train at our Pluto LNG facility. We are pursuing local new energy opportunities, including the proposed Woodside Solar facility and we are investigating a potential carbon capture and storage project to help decarbonise industry in the Pilbara.

While the North West Shelf will operate differently over the next 40 years, our commitment to the Karratha community remains strong.

Just as the North West Shelf marked itself in Australia's history books in 1984, as we start to write a new chapter in the North West, we will do so together with the Karratha community.

Breyden Lonnie
Vice President North West Shelf



Volunteering WA Regional Community Engagement Coordinator Kelly Nunn (left) with Woodside volunteers at Gumala Early Learning Centre.

WOODSIDE VOLUNTEERS MAKE VALUED CONTRIBUTIONS

At Woodside, we take pride in giving back to the communities in which we operate. One of the ways we do this is through our corporate volunteering program.

Since the launch of the program with Volunteering WA in 2010, Woodsiders have been lending a helping hand with all kinds of community projects. Most recently, volunteers have participated in a range of activities from cooking meals for The Salvation Army to building a sandpit at Gumala Early Learning Centre and assembling furniture for the redevelopment of Roebourne District High School.

Our program partner, Volunteering WA, plays a crucial role in the success of Woodside's volunteering efforts by connecting us with local organisations in need of assistance and facilitating the opportunities to participate.

Volunteering WA's Regional Community Engagement Coordinator, Kelly Nunn said the partnership has delivered some important outcomes for the local community.

"Corporate volunteering offers fantastic opportunities for community organisations to complete ongoing maintenance or projects with the help of Woodside's employees, allowing them to focus on what they do best - providing programs and events for our community," she said.

STAY UP TO DATE ON OUR CONTINUED CONTRIBUTION TO THE COMMUNITY WE CALL HOME.

SEARCH ON FACEBOOK OR CLICK BELOW.

WOODSIDE NORTH WEST

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WORK READINESS PROGRAM CREATES CAREER PATHWAYS

A new Work Ready Program being run as part of the Pluto Train 2 Project is supporting skills development for local participants.

The latest round of the program commenced in February 2024, with participants offered the opportunity to build employable skills and industry experience. Participants complete Construction White Card, First Aid and site induction certifications. During the program, Bechtel offered job shadow placements of participants' choice which provided invaluable insights into the industry, helping them make informed decisions about their futures.

Gaining on the job experience with Bechtel also built work-life balance skills to prepare the graduates for full-time employment.

Sixteen individuals are now ready to commence full-time employment with Bechtel on the Pluto Train 2 site as Trade Assistants. The roles vary for these dedicated participants across various disciplines, including electrical, mechanical, warehousing and concreting.

A large part of the Work Ready Program's success is the camaraderie and culture that has been fostered within the group. As their skills have grown, so have integral and supportive relationships.

Woodside will continue to provide wrap-around support for these motivated participants, identifying long-term training and development opportunities such as apprenticeships, traineeships or roles within operations and projects.

Pluto Train 2 Project Manager, Tom Feutrill said the experience is creating pathways into fulfilling careers and building capability in the local community.

"Woodside's involvement in the program is aimed at establishing employment opportunities and providing successful and meaningful careers while developing critical life skills and confidence," he said.

Working with an experienced construction contractor such as Bechtel provides a unique opportunity to be involved in a program that supports meeting the growing demand for the low-cost, lower-carbon, reliable energy the world needs today and into the future.

The Work Ready Program is run by the Ngarliyarndu Bindirri Aboriginal Corporation (NBAC), supported by the Pluto Train 2 Project and the engineering, procurement and construction contractor, Bechtel.



NBAC team members with Work Ready Program graduates.

KARRATHA CENTRAL HEALTHCARE SOLAR POWER SYSTEM INSTALL A SUCCESS

Social contribution plays an important role in building the capacity and capability of community partners to deliver positive impacts in the regions where we live and work. Together with our joint venture partners, Woodside is proud to support those who support others in the City of Karratha.

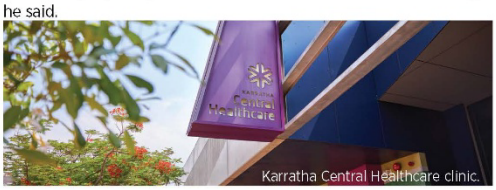
Allied health services provider, Karratha Central Healthcare is one of the valued organisations Woodside has proudly partnered with. In 2023, the Scarborough Energy Project assisted Karratha Central Healthcare to review its operations and strategies developed to support the not-for-profit's long-term sustainability. The review identified a reduction in operating costs as a key opportunity, with a particular focus on power expenditure.

The Pluto Train 2 Project was pleased to provide funding alongside the City of Karratha for the installation of a solar power system at Karratha Central Healthcare's premises. The system, which was installed by local business Coastal Electrical and Data, will go a long way in helping Karratha Central Healthcare to reduce its power costs.

Karratha Central Healthcare's Operations Manager, Kingsley Murray said the solar power system would help the organisation allocate resources into programs for the local community.

"The solar system has already made a notable difference to our operating costs; on a good day the system is supplying up to 95% of our power needs, and in overcast and lowlight conditions about 35-40%.

"These savings can then be used for our not-for-profit and charitable programs, it's a win for us and a win for our community," he said.



Karratha Central Healthcare clinic.

ACCOMMODATION INITIATIVE ACKNOWLEDGED AT EXCELLENCE AWARDS

In May 2024, the City of Karratha Service Worker Accommodation Initiative was recognised as a finalist in the Community Development category of the Australian Energy Producers' Excellence Awards.

The Service Worker Accommodation Initiative is a partnership between the City of Karratha, Woodside and industry that aims to provide additional affordable rental options for people working in critical service worker sectors in Karratha, like childcare and allied health.

Launched in 2021, the initiative established a pool of housing managed by the City of Karratha and Woodside, offering affordable rental options for service workers. Woodside and joint venture partners at Pluto LNG and the North West Shelf Project are pleased to now contribute 30 houses to the accommodation pool.

If you would like to find out more about the Service Worker Accommodation Initiative, visit the City of Karratha website.

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GBSC Yurra team member working on one of the 20 new builds.

BUILDING MOMENTUM WITH LOCAL HOUSING CONTRACT

We understand that housing is an important issue for the Karratha community. And that's why Woodside is working closely with the City of Karratha and other stakeholders to help overcome this challenge.

Some initiatives established to support housing in Karratha include contributing 30 properties to the City of Karratha's Service Worker Accommodation Initiative, the incremental divestment of older housing stock as well as making a small number of properties available for lease on the open market.

Late last year, the Pluto LNG Project also entered into a long-term agreement with Traditional Owner business Karratha Housing Pty Ltd (a subsidiary of Yurra Pty Ltd) for the build and lease back of 20 houses in Karratha.

Under the agreement, 10 homes are being built by GBSC Yurra and another 10 will be constructed by Ngarluma Yindjibarndi Foundation Limited (NYFL) in partnership with Thomas Building.

Work is now well underway on the construction of these new homes, which will be leased back to Woodside for a period of 15 years and are targeted to be completed by the end of 2025.

All of the houses will be maintained by Karratha Housing Pty Ltd as part of the lease agreement that will provide long-term revenue and capital assets to support the Yurra business into the future.

Michael Woodley, Chief Executive Officer at Yindjibarndi Aboriginal Corporation and Yurra Founder said he is very proud of the Yurra team and the partnership that has been established with Woodside over recent years.

"Having long-term contracts such as this enables us to work collaboratively with Woodside Energy on mutually beneficial plans that will create real legacy for our community," he said.

Woodside is also investigating potential options to build up to 60 additional new homes in Karratha to address its future workforce needs.



Our partnership with the City of Karratha helps to support much-loved community events.

WOODSIDE JOINS THE FUN AT RED EARTH ARTS FESTIVAL

Woodside and some of our joint venture partners were pleased to support the City of Karratha's Red Earth Arts Festival (REAF) which featured over 70 performances, workshops, and experiences over four days in May 2024.

This year saw the introduction of REAF at The Quarter which offered a suite of free, family-friendly activities, activating and transforming the area into a hub of artistic and cultural activity.

The Plants of the Pilbara installation was a highlight, a pop-up flower dome sculpture invited viewers to experience the magic of Western Australia's native flora on a larger-than-life scale. Artists from Yinjaa-Barni Art Group painted and displayed art on site, welcoming the public to engage.

Locals were spoilt for dinner choices as part of Karratha City Eats, picnicking on the Quarter grass while enjoying an open-air performance featuring captivating handpan artist Sam Maher and Indigenous songwriter Frank Yamma, crossing cultural and musical boundaries.

The Community Development partnership between the City of Karratha and Woodside and our joint venture partners was extended last year, with support from the Scarborough Energy Project. This supports the continued provision of important and much-loved community events like REAFas well as liveability initiatives and significant City projects.

City of Karratha Mayor Daniel Scott said working together was an integral part of delivering high quality community programs and well-attended community events.

"This support is incredibly important, assisting City operations in the delivery of exceptional events, programming and projects for our residents to enjoy," he said.

LET'S TALK

OUR PLANS, YOUR SAY

Head to woodside.com/consultation-activities to read the latest edition of Let's Talk and our Environment Plan consultation information.

We welcome feedback on your relevant functions, activities or interests. Alternatively, you can contact us at feedback@woodside.com or on 1800 442 977.

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6.9.2.2 Edition Q3 – July 2024

Woodside Energy

Karratha Community Update

Edition 3 | 2024



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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

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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

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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.

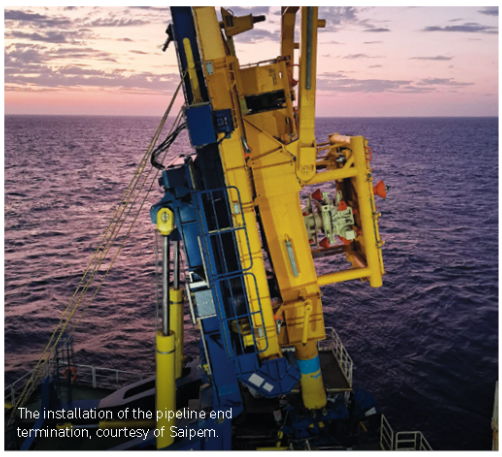
"With the last components of the trunkline in place, the focus will be maintained on safely executing the remaining project scopes to support the targeted first Scarborough LNG cargo in 2026," she said.

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.

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Our plans, Your say

Head to woodside.com/consultation-activities to read our latest edition and Environment Plan consultation information.

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6.9.2.3 Edition Q1 – April 2025

Karratha Community Update

Woodside Energy

April 2025



Liz Westcott Executive Vice President and Chief Operating Officer Australia.

Woodside hopes to keep on contributing

As seen in the Pilbara News - Wednesday, 12 March 2025.

Last year, Woodside celebrated 70 years as a proud Australian company, and the North West Shelf Project marked 40 years of operations from right here in Karratha.

We are proud to be a part of this community. It's where our story started.

But there is currently a debate playing out that could determine the future of the North West Shelf Project and the ongoing operation of its Karratha Gas Plant.

The North West Shelf Project Extension approval is required to enable operations beyond 2030.

Let's be clear — this approval does not involve expanding our onshore infrastructure or footprint on Murujuga.

It allows us to continue our existing operations across the North West Shelf Project.

In December last year, six years after we applied, the State Government approved the North West Shelf Project Extension proposal, with conditions including cultural heritage, emissions and air quality. We take our responsibility to manage cultural heritage seriously, guided by Traditional Owners, heritage experts and credible science.

Following the robust assessment from the State, a final decision now rests with the Federal Government, and the stakes are high.

The North West Shelf Project supplies 14 per cent of WA's domestic gas — gas that not only powers homes, but also the mining operations and industries that provide many local jobs and underpin the economic strength of the Pilbara and Australia.

The North West Shelf Project alone employs about 900 people, and some 1300 contractors.

Almost 300 Woodsiders and their families live locally and work at the Karratha Gas Plant.

This year they were joined by 22 new apprentices and trainees who were welcomed into the Woodside Training Academy.

In 2024, the North West Shelf Project invested $5.1 million in the Karratha community on initiatives including education, health and liveability. Annually we spend around $1 billion with WA businesses, including contractors and service providers based in Karratha, and in 2024 about 700 WA businesses were engaged by the North West Shelf.

Last year I was pleased to be able to join some of our longstanding partners in Karratha as we celebrated our 40-year milestone.

I spoke with representatives from local schools, businesses and not-for-profit community organisations. I was humbled by what Woodside and the community here in Karratha have built together over the four decades of North West Shelf operations.

And it can continue to contribute, supporting our State's gas supply, the economy and the Karratha community for decades to come.

Extending the life of the North West Shelf Project will enable the future of our world-class operations, using existing infrastructure to produce the gas that local industry needs and our regional partners rely upon.

It enables us to leverage our decades of experience while unlocking long-term value through the development of the remaining North West Shelf reserves and processing of third-party gas.

Importantly, it allows us to make the business decisions today that will help maximise the use of processing capacity at the Karratha Gas Plant into the future.

With the Australian Energy Market Operator forecasting gas shortfalls in WA from 2028, extending the life of the North West Shelf Project makes sense.

But to be in a position to do this, we need a pragmatic approach from our nation's decision-makers. We need timely decisions to provide operational certainty and confidence to support the ongoing development of gas reserves that will keep the Karratha Gas Plant running.

We can all be proud of what the North West Shelf Project has contributed to Karratha over the last 40 years – and we're working to secure its ongoing contribution to the community we call home.

Stay up to date on our continued contribution to the local community Woodside North West

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Woodside Energy recognises Aboriginal and Torres Strait Islander peoples as Australia's first peoples.

We acknowledge the unique connection of the Traditional Custodians to land, waters and the environment where we operate in the City of Karratha. We extend this recognition and respect to First Nations peoples and communities around the world.



L-R: Roebourne District High School Chaplain Beth Smith, Roebourne District High School Principal Liz Ritchie, Woodside CEO Meg O'Neill, WA Premier Roger Cook and Kevin Michel MLA.

Investment continues to reach students in Roebourne

Woodside welcomed the new year with an exciting announcement.

In January, our CEO Meg O'Neill joined us at Roebourne District High School to share details of our significant contribution to the school's redevelopment.

Alongside WA Premier Roger Cook, Meg announced a contribution of $20 million over five years to the upgrades. Woodside's contribution will come from our A$50 million commitment to the Western Australian Government's Resources Community Investment Initiative.

Meg said funding was directed towards programs that deliver tangible benefits for the sustainability and liveability of our host communities.

"Our investment in the Roebourne District High School upgrades builds on our long-term commitment to positive regional education outcomes through the Karratha and Roebourne Education Initiative," said Meg.

For more than 16 years, we have proudly contributed to the Karratha and Roebourne Education Initiative (KREI) together with our joint venture participants. The partnership with local schools invests in opportunities to support the academic achievements of students and the development of their dedicated teachers.

Roebourne District High School is one of the long-standing participants of the KREI.

In 2024, the school developed a program to support students sitting the Western Australian Department of Education's Online Literacy and Numeracy Assessment (OLNA). Designed for secondary students to demonstrate they successfully meet the minimum standard of literacy and numeracy, the OLNA is an important step in supporting students on their path to further study and training.

Several students at the school were identified as requiring additional assistance and intervention to reach an OLNA pass level in one or more of the assessment areas.

Through the support of the KREI, individual learning and social needs of each student preparing to sit the OLNA were assessed so educational support could be tailored. Resources such as one-to-one and small group tutoring opportunities, and online training tools were provided focusing on building the skills required to improve students' OLNA results.

Roebourne District High School Principal Elizabeth Ritchie said the students who participated demonstrated greater levels of confidence when sitting the OLNA, resulting in one of the highest recorded sittings for the test at our school.

"The OLNA achievements of participating students have not only enhanced their own education experience but is positively impacting peers, because our students are actively supporting their classmates to improve their own reading, writing, and numeracy skills," said Elizabeth.

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Woodside helps connect Cherratta to Country

Woodside was proud to award a $35 million contract to Cherratta Lodge earlier this year. The agreement marks the first time Woodside has awarded a village accommodation contract to a business owned by a Traditional Owner.

Under the agreement, Cherratta will accommodate the Pluto Train 1 modifications construction workforce, part of the Scarborough Energy Project.

Woodside initiated discussions last year with long-standing partner Cherratta Lodge, based in Karratha's Industrial Estate.

It was then that Cherratta owner Malcolm Wylie raised the prospect of a new partnership that could transition the site into a village owned and operated by a Traditional Owner – someone with traditional connections to the area.

Malcolm's vision was twofold: to give back to the community in which the business operates and for the site to become a leading facility providing career opportunities for Indigenous people.

"Not everyone wants to or can work on a mine site or a gas plant. A place like Cherratta not only provides jobs like gardening, cleaning, catering, access to trades and apprenticeships, it will deliver mentorship and empowerment programs for fledgling Indigenous businesses," said Malcolm.

Together with his business partner Aaron Polini, Malcolm invited Traditional Owner and Ngarluma Elder Harry Mowarin to join them in the ownership of Cherratta, after building a trusting friendship and agreeing on solutions to challenges together.

"As part of Cherratta's new energy projects, the company awarded a $1 million contract to Harry's contracting business," said Malcolm.

"Harry is a Ngarluma Elder who is well respected in the community and during the successful execution of this contract we realised Harry was the perfect fit for Cherratta. Through our programs he could help guide Indigenous people to learn, grow, develop skills and increase their confidence in an environment that is culturally safe, and on their own country."



L-R: Harry Mowarin Traditional Owner and Ngarluma Elder, Malcolm Wylie Cherratta Lodge business partner, Julie Attwood Local Content Manager and Rebekka Scroop Villages Coordinator.

Rebekka Scroop, our Villages Coordinator and Woodside's Local Content Manager, Julie Attwood both realised the potential significance of the agreement and the value it could provide to the local Indigenous community where we operate.

"It made sense. Woodside's contract would provide Cherratta with the confidence and security to support their transition to become a Traditional Owner village by securing a fixed number of rooms over three years, for the Pluto Train 1 modifications workforce," said Rebekka.

"By coming together to work towards a common goal, we had the opportunity to create a significant impact that will leave a lasting legacy for generations to come," said Rebekka.

Harry is overwhelmed by the opportunities this landmark agreement can create for both his family and his people. "This connection with Cherratta is life changing for me and my family."

"It's something that I never thought would be possible in my lifetime. For me, it's generational healing. I want to leave something behind for the emerging generation, for them to set themselves up and have a chance at a decent life," said Harry



Woodside Training Academy graduates and mentor award winners.

Woodside's own Academy Awards

Eighteen apprentices and trainees have joined the ranks of Woodside Training Academy participants who have been welcomed into roles across our operations.

The Woodside Training Academy Graduation and Awards held at Red Earth Arts Precinct saw the cohort celebrated for their achievements in completing their training.

Reflecting on the event, Academy Team Lead Jacqui Meeson said it provided a special opportunity to recognise the entire graduating group and the outstanding performance of individuals throughout their training.

"The award recipients were not only selected for their excellence during their training but also for their dedication, commitment and consistent demonstration of Woodside's values," said Jacqui.

"We are incredibly proud of what all of the apprentices and trainees have accomplished across their learning journey and we look forward to seeing their continued success throughout their careers with Woodside."

Several Woodsiders were acknowledged alongside the graduates for the support they provided the trainees and apprentices during their time at the Academy.

In his opening address, NWS Onshore Asset Manager Derek Paulgaard expressed his thanks for those across the business who played an essential role in contributing to the growth and development of the cohort.

"When the graduates faced challenges throughout their training, they had a network of family and friends to provide support and guide them. They also had a group of trainers, mentors, supervisors and peers who they could rely on," said Derek.

This year, 22 Karratha-based apprentices and trainees have been recruited by our partner Programmed Training Services and will be hosted at the Woodside Training Academy.

The 2025 intake includes seven operator trainees, 10 apprentices, three pre-pathway trainees and two school-based trainees – one trainee from Karratha Senior High School and one from Roebourne District High School.

Thirteen of the training participants are female and 14 are Indigenous. They are now part of the more than 80 apprentices and trainees building their skills and experience across our Western Australian operations.

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Dampier Playgroup was previously awarded a Woodside Community Grant to help purchase new play equipment.

Giving back through community grants

Last year, we extended our grant offerings in the City of Karratha in celebration of our 70 years as a proud Australian company and four decades of safe and reliable operations in the place we call home.

Ten community and not-for-profit organisations were awarded Woodside Anniversary Grants of up to $100,000 for programs and activities that deliver positive local outcomes.

This March, we ran our first of two community grants rounds for 2025. If you missed out, don't worry, applications will be open again in October.

We have been running the program for seven years, awarding grants of up to $5,000 to support community initiatives in the City of Karratha and Shire of Exmouth.

It's part of our commitment to building local capacity and supporting opportunities that strengthen wellbeing in the community.

We were excited to announce the recipients of our Woodside Anniversary Grants in January.

Woodside Executive Vice President and Chief Operating Officer Australia Liz Westcott said Woodside and its joint venture participants in the North West Shelf Project and Scarborough Energy Project's Pluto Train 2 were pleased to support these valuable initiatives.

"Karratha is where our Western Australia story began and we understand that being a part of the community is centred on developing strong relationships and making meaningful contributions," said Liz.

"We have done this for 40 years and look forward to continue supporting projects and programs that provide local solutions to local challenges."

Grant recipients included:

- St John Ambulance to help purchase new ambulances and lifesaving equipment across its Karratha, Roebourne and Wickham operations.
- Yaandina Community Services for the installation of air-conditioning in its Roebourne residential detoxification facility.
- Yinjaa-Barni Art to support upgrades at its Roebourne art studio.
- The WA Centre for Rural Health to deliver a business case to support the development of a Centre for Applied Research and Education (CARE) hub in Karratha.
- Reach Us Pilbara for the purchase of equipment for its Karratha cancer support services centre.
- Juluwarlu Group for the delivery of the Yindjibarndi Wellness pilot program for Jadas and Gurri.
- Karratha RSL for the installation of solar panels, battery storage and new air-conditioners in its facility.
- Pilbara for Purpose to support the delivery of cultural competency training for community service providers.
- Karratha Volunteer Fire and Rescue Services to support the upgrade of storage facilities to support year-round storage of firefighting equipment.
- Dampier Community Association for the purchase of kitchen equipment to support activation of the Dampier foreshore kiosk.

If you would like more information about our next round of grants, you can contact us at northwestcommunities@woodside.com.

Listening to our local community

Our approach to social performance at Woodside begins with understanding the potential impacts and opportunities associated with our activities.

Consultants from GHD recently visited Karratha and met with a range of stakeholders to inform Woodside's socio-economic impact assessment. Participants included Woodside's Karratha Community Liaison Group, local businesses, state and local government bodies, social contribution partners and healthcare providers.

During the engagements, participants were presented with a series of scenarios for our ongoing operations and proposed projects in the City of Karratha. Their valuable reflections and insights in response to the scenarios will assist in the identification and management of social impacts and benefits, including opportunities to contribute to the local community.

Woodside's Senior Social Performance Adviser David Collins is leading the assessment scope and said it is important to have the local community be a part of the journey.

"Over the past 40 years of operations, we have built strong relationships in community to enable ongoing engagement across all phases of our activities," said David.

"This is an important piece of work to understand sentiment towards Woodside by listening to concerns and asking how we can best manage impacts on a local level."

The socio-economic impact assessment will continue throughout 2025 as GHD visits community stakeholders in Roebourne.

To find out more about Woodside's approach to social performance please visit our website.

GHD consulting with local business Yurra.



Let's Talk

Our plans, Your say

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6.9.2.4 Edition Q2 – July 2025

Woodside Energy

Karratha Community Update

July 2025



Woodside and its joint venture partners were proud to support the Red Earth Arts Festival, as The Quarter Sponsor.

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Meet the people of the North West Shelf Project (L-R): Haylee, Aaron and Narelle

Woodside welcomes proposed North West Shelf Project extension

The North West Shelf (NWS) Project has supplied energy to Australian and international customers since the 1980s, investing hundreds of millions of dollars into the local economy and community. It has pioneered the LNG industry in Australia and is a nationally significant asset.

The NWS Project is a major employer in and around Karratha, supporting the development of a local workforce through training and employment pathways and contracting opportunities throughout Western Australia.

After decades of processing only the NWS resources, the Karratha Gas Plant (KGP) now also processes gas for other resource owners, who pay a toll to use the facility. A transformation that enables this landmark facility to continue to supply energy to Western Australia and international markets for decades to come.

State Government approval for North West Shelf Project Extension was received in December 2024 after six years of assessment and appeals.

The Federal Government provided its proposed environmental approval for the North West Shelf Project Extension in May 2025 with proposed conditions. Consultation is now occurring with Government on the proposed conditions.

As part of the State Government approval in December 2024, the North West Shelf committed to a range of environmental management measures, including a significant reduction in air emissions and measures to manage greenhouse gas emissions and to reduce them over time.

In addition, meaningful consultation with Traditional Owners is occurring as part of these conditions, including complying with all air quality objectives and standards arising from the Murujuga Rock Art Monitoring Program.

We remain committed to protecting the Murujuga Cultural Landscape and support its World Heritage nomination. We believe long-term co-existence between cultural heritage and industry is possible when guided by credible science, Traditional Custodian leadership, and genuine collaboration.

Discover the ways the North West Shelf Project holds a special place for our people, the businesses we work with and the Pilbara community by scanning the QR code.

New members join Karratha Community Liaison Group

Woodside is committed to building strong relationships with the community. One way we do this is through our quarterly Community Liaison Group (CLG) meetings.

This month we were excited to welcome new members to the meetings following a review of the group's membership and call for public nominations to fill new community member positions on the CLG.

Meeting quarterly, the CLG is an important platform for Woodside to share information about our operations, gather feedback on current and future activities, and facilitate discussions on issues of importance to the community.

Our meetings cover a range of topics, including operational and project updates, social impacts, local content, environment plans and social investment.

If you're interested in finding out more about the CLG, contact us by email: northwestcommunities@woodside.com or keep an eye on our social media channels for updates.



Woodside's CLG meet quarterly to share information, gather feedback and facilitate discussions.

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Impact felt locally in Karratha

Impact Digi is a Pilbara-based Indigenous owned and operated marketing agency with close to a decade of experience working with Woodside Energy.

A full-service marketing agency, Impact Digi has built relationships with government, industry, Indigenous organisations and businesses of all sizes helping them to build brands and reach stakeholders.

"The past couple of years have been extra rewarding as our reputation has grown within Woodside and we're getting to work with team members from other areas of their business," said Impact Digi Managing Director, Tamara Bin Amat

Starting off by offering photography services when they first began, Impact Digi has transformed over time with a growing team, refined services and an expanded reach.

"Looking back, one of my favourite moments was when local Asset Manager for the Karratha Gas Plant, Breyden Lonnie presented our first ever award for Best Aboriginal Business at the 2015 Karratha and Districts Chamber of Commerce and Industry (KDCCI) Business Excellence Awards," said Tamara.

That recognition is continuing with Impact Digi recently winning the Best Small Business Award at the 2024 KDCCI Business Excellence Awards.



Tamara Bin Amat and Jason Miltrup with the Woodside team at EXA 2025 in Perth

Tamara and her team understand the importance of supporting local and contributing to their community.

"Working with Woodside has not only boosted our business but also our reputation, opening doors to new opportunities across the state," said Tamara.





Celebrating 20 Years of Corporate Volunteering at Woodside

This year marks another significant milestone for Woodside: 20 years of corporate volunteering.

We take pride in our long-standing commitment to investing in the communities where we operate, and where our employees live and work. In fact, 20 years ago, Woodside was one of the first companies in Australia to offer volunteering leave to our employees.

Woodside employees are entitled to 12 hours of volunteering leave each year, empowering them to make a meaningful difference in their communities and engage in a variety of activities. In Karratha this includes volunteering at local food banks, participating in beach clean-ups and mentoring young people in educational programs.

Introducing Danielle East. If you've been involved in Woodside volunteering in WA's Pilbara region, chances are you've met Dan.

Since joining Woodside in 2011, Dan has worked across many roles, but none showcase her passion better than coordinating volunteering opportunities for our teams in Karratha.

Dan's commitment to volunteering extends beyond coordination; she actively contributes her time and effort to help those in need. As a long-serving member of the Karratha State Emergency Service, Dan has been instrumental in responding to crises. Earlier this year, following the impact of Category 4 Tropical Cyclone Zelia, she was one of a team of volunteers that assisted a remote Aboriginal community by clearing fallen trees and addressing other emergency response requirements.

"Giving back to the community is in my DNA," Dan shares. "Being able to support my neighbours in need at a time of crisis is essential for me. And I'm grateful Woodside has volunteering programs in place, where I can put my hand up and jump in as and where I'm needed."

Last year alone, Woodside employees dedicated over 650 volunteer hours to community groups and not-for-profit organisations within the City of Karratha. As we celebrate two decades of corporate volunteering, we look forward to continuing our community engagement and making a positive impact, one volunteer hour at a time.

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L-R: Russell Waterman - The Salvation Army Relationship Manager - Corporate Partnerships, Danielle East - Woodside Energy Communities Adviser, Holly Thomas - Woodside Energy Manager NWS Production Planning and Warren Palmer - The Salvation Army State External Communications Manager.

North West Shelf Project supports community housing needs

The North West Shelf Project recently gifted two houses to vital local not-for-profit organisations in the Pilbara region.

This initiative underscores the Project's commitment to fostering community wellbeing and providing essential support to those in need.

One of the houses has been donated to Reach Us Pilbara, an organisation dedicated to providing cancer support services.

This new facility will enable Reach Us Pilbara to expand their services, offering a comforting space for individuals and families navigating the challenges of a cancer diagnosis. The house will serve as a sanctuary where patients can access support, counselling, and respite.

The second house has been gifted to the Salvation Army Karratha Women's and Children's Centre. This centre plays a crucial role in offering refuge and support to women and children escaping domestic violence situations. The additional space will allow the centre to accommodate more families, providing them with a safe and nurturing environment as they rebuild their lives.

By supporting these organisations, the North West Shelf Project aims to help address immediate community needs while contributing to the long-term resilience and wellbeing of the Pilbara community.

One hull of a milestone for Scarborough's FPU

The Scarborough Energy Project has achieved a major engineering milestone with the joining together of the topsides and hull for the Floating Production Unit (FPU).

Constructed separately at two different fabrication yards in China, the joining of the two mega-structures is a significant step forward for the Scarborough Energy Project as it progresses towards first LNG cargo, targeted for the second half of 2026.

The floatover required precise planning and extensive collaboration by all stakeholders. Teams from Woodside, McDermott, QMW and COSCO worked closely on the fabrication of the structures and on safely and successfully bringing them together.

Woodside Executive Vice President & Chief Operating Officer Australia Liz Westcott highlighted what it meant for Woodside and the Scarborough Energy Project, which is now over 82% complete.

"The floatover of the FPU is an engineering marvel and builds on the safe and successful fabrication of the topsides and hull.

"Manoeuvring two structures that each weigh more than 30,000 tonnes at sea is an exceptionally complex operation.



"I am proud of the Woodside and McDermott teams for the safe delivery of the FPU to the integration yard and the completion of this chapter of work. The FPU is a critical piece of infrastructure for this world-class project which continues to be delivered to the highest standard."

The remaining integration work for the FPU will continue at the fabrication yard in Yantai before sailaway to Australia.

Once complete the FPU will be moored 375km off the coast of Karratha. The Scarborough Energy Project is set to produce up to 8 million tonnes of LNG per year and contribute up to 225 terajoules a day of domestic gas supply into the Western Australian market.

Let's Talk

Our plans, Your say

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6.9.2.5 Edition Q3 – October 2025

Karratha Community Update

Woodside Energy

October 2025

Woodside welcomes approval of North West Shelf Project Extension

The Australian Government's final decision to grant environmental approval for the North West Shelf Project Extension is positive news for Woodside Energy and Karratha as our host community.

The decision provides certainty for the ongoing operation of the North West Shelf Project.

For Karratha and surrounds, this has meant sustained employment, meaningful social contributions, a legacy built on responsible energy development and a deep-rooted connection with the local community.

Over its lifetime, the North West Shelf Project has paid more than A$40 billion in royalties and excise, supported thousands of Australian jobs and contributed over A$300 million to social investment initiatives and infrastructure support in the City of Karratha.

Importantly, the approval follows an extensive environmental assessment and appeal process and includes rigorous conditions to manage the protection of cultural heritage.

This includes conditions that require additional monitoring and management of air emissions to protect the Dampier Archipelago (including Burrup Peninsula or Murujuga).

Woodside is committed to protecting the Murujuga Cultural Landscape and we were a proud supporter of the World Heritage nomination and assessment process, led by Ngarda Ngarli, the Traditional Custodians of Murujuga, on the World Heritage listing.

The internationally peer-reviewed, best-practice science conducted by the Murujuga Rock Art Monitoring Program, led by Murujuga Aboriginal Corporation and Western Australian Department of Water and Environmental Regulation, confirms that with the right controls and collaboration, co-existence of industry and cultural heritage is not only possible, but already happening.



"Over its lifetime, the North West Shelf Project has paid more than A$40 billion in royalties and excise, supported thousands of Australian jobs and contributed over A$300 million to social investment initiatives and infrastructure support in the City of Karratha."

As we shape the future of the North West Shelf alongside our Pluto LNG operations and the development of the Scarborough Energy Project, our commitment to collaboration and consultation remains strong.

We will continue to work closely with our colleagues, partners, and neighbours.

I'm looking forward to supporting Woodside's future in Karratha, reflecting the values and aspirations of the place we have proudly called home for over four decades.

Derek Paulgaard
Asset Manager North West Shelf Onshore



Inspiring futures through work experience

We recently had the pleasure of hosting Programmed work experience students from Karratha Senior High School, Roebourne District High School and St Luke's College Karratha at Pluto LNG and Karratha Gas Plant.

The students had the opportunity to shadow our teams, gaining insights into day-to-day operations and exploring the diverse career pathways available right here in the Pilbara.

Thank you all participating students, we hope the experience sparked some new ideas for your future pathways.

Stay up to date on our continued contribution to the local community Woodside North West

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Woodside Energy recognises Aboriginal and Torres Strait Islander peoples as Australia's first peoples.

We acknowledge the unique connection of the Traditional Custodians to land, waters and the environment where we operate in the City of Karratha. We extend this recognition and respect to First Nations peoples and communities around the world.

Community partnerships valued

On the evening of 13 August 2025, we had the privilege of celebrating the incredible contributions of our community partners at our annual Community Partner Sundowner, held at The Shelf, Red Earth Arts Precinct.

Our sundowner event was a heartfelt tribute to the people and organisations making a real difference across the Pilbara.

Hosted by Derek Paulgaard, Asset Manager – North West Shelf Onshore, the event featured inspiring reflections from Sophie Martin, One Tree Community Services Inc. sharing information about our award-winning Roebourne Pathways Program partnership and its impact on local youth and Stacey Giles, Reach Us Pilbara, highlighting vital cancer support services available to families in the region.

Thank you to everyone who joined us to recognise the incredible work happening across the City of Karratha.

The Woodside Community Grant Program opens in October, providing funding of up to $5,000 to community groups and not-for-profit organisations in the City of Karratha to support health, liveability, sustainability and environmental outcomes.













Building community connections: repurposing for a brighter future

Yurra and Woodside Energy made a collaborative contribution to the Roebourne Work Camp by donating 34 tonnes of scaffold boards.

During supplier visits, Local Content Manager, Julie Attwood, realised there was an opportunity to re-purpose redundant scaffold materials, no longer being used at Karratha Gas Plant.

The materials were welcomed by the men at the Department of Justice Roebourne Work Camp. They were used to make furniture for not-for-profit organisations and local community groups, helping participants develop employable skills, as well as providing benefits to Pilbara regional communities.

Some of the projects completed using these repurposed materials include; timber picnic benches for the Roebourne District Hospital, outdoor seating and cubby houses for local schools and daycares, and tables to display the work of local Aboriginal artists. These projects improve community spaces and connectivity, while providing a platform for artists to gain recognition and income.

Read more about the collaboration between Yurra, Woodside, and the Department of Justice and the positive impact on community by scanning the QR code.

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L-R: Woodside Manager Property and Services Tanya Vautier, Yurra Building Manager Tim Clune, Kevin Michel MLA, Thomas Building Regional Operations Manager Jason Strange, Woodside Senior Corporate Affairs Adviser Camille Vissouarn.

Woodside is building for the future: 30 new homes in Karratha

Woodside Energy (Karratha Services) Pty Ltd, has awarded contracts for the construction of an additional 30 new homes in Karratha for Woodside's residential employees. Under the award, 20 new homes will be built by Thomas Building and 10 by Traditional Owner business, Yurra Building, both locally based contractors.

Expected to be completed from mid-2026, the new houses will be owned by Woodside and are additional to the recent construction of 20 new homes under a 15-year build-to-lease agreement with Karratha Housing, a subsidiary of Yurra Building.

Awarding the construction contracts to Thomas Building and Yurra Building is part of Woodside's ongoing commitment to delivering business opportunities that boost jobs and support the local economy. The contracts include provisions for the employment of local apprentices and trainees.

Woodside Pluto Asset Manager Kate Bardill said the new contracts were part of the company's Karratha housing approach, which aimed to providing quality housing options for employees while balancing the needs of the local housing market.

"Woodside's approach to housing includes investment in new builds, the sale of older housing stock on the open market and support for local housing affordability initiatives such as the City of Karratha's Service Worker Accommodation program," said Kate.

Under Woodside's predominantly residential frontline workforce policy, approximately 75% of the company's employees working at its Karratha operations live locally.

Scarborough's subsea infrastructure now in place

The Scarborough Energy Project has reached another exciting milestone–this time beneath the waves. The team has successfully completed the penultimate subsea installation campaign, marking a significant step toward first LNG cargo in the second half of 2026.

Approximately 375 km off the Pilbara coast, over 400 pieces of subsea equipment have now been assembled and installed in the Scarborough field, including the impressive 305-tonne Riser Base Manifold. With all critical infrastructure in place and tested, the project is now more than 86% complete (excluding Pluto Train 1 modifications) and ready for the hook-up and commissioning of the floating production unit (FPU) upon its arrival.

The Scarborough Offshore Facility and Trunkline (Operations) Environment Plan (EP) is now approved, setting out how Woodside will manage environmental risks and impacts associated with offshore operations. The EP covers activities such as FPU installation, commissioning, and ongoing operations, as well as inspection, maintenance, and repair of subsea infrastructure.

Scan the QR code to read more about the Scarborough Energy Project.



This is the 80 m long, 32" diameter rigid pipe spool which weighs approximately 230 tonnes and was fabricated in Henderson, Western Australia.

Stay up to date on our continued contribution to the local community **Woodside North West**

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REAF reflections

This year saw the continuation of Woodside's support for the City of Karratha's Red Earth Arts Festival (REAF). We were proud to once again sponsor 'REAF at The Quarter,' offering a suite of free, family-friendly activities, activating and transforming the area into a hub of artistic and cultural activity.

The main attraction of REAF at The Quarter was 'The Whale' installation; inviting viewers to interact with a large whale puppet and its sea friends while listening to whale vocalisations – an immersive experience enjoyed by all ages.

REAF is moving towards becoming a destination festival for the region, and Woodside and its joint venture partners are proud to support the continued provision of important and much-loved community events, livability initiatives and significant local government projects.

Artists from Yinjaa-Barni Art Group painted and displayed art on site, welcoming the public to watch the creation of several pieces and engage in conversations.

A community concert featured roving entertainment, stage performances, music, food trucks and the Karratha District Chamber of Commerce and Industry markets.

Attendees were treated to Maori cultural displays, Brazilian samba and Chinese dance while enjoying face painting, elaborately costumed stilt artists, Dr Hubble's bubble display, jazz music from the Perth Symphony Orchestra and a calming space at The Inclusive Movement's sensory tent.

Woodsiders enjoyed engaging with the diverse Karratha community discussing Woodside's work in the North West and listening to community feedback on our activities.

The festival finale featured First Lights - Bunggaliyarra Munggu, presented by Fremantle Biennale in collaboration with Juluwarlu Art Group and supported by Woodside and its Pluto Train 2 Joint Venture partners. Woodside is proud to support events like REAF, bringing the community together, strengthening local connections, and fostering a sense of collective pride.







Karratha Volunteer Fire & Rescue Service were Woodside Community Grant recipients, 2024

Woodside Community Grants

Applications open Wednesday, 1 October 2025

The Woodside Community Grants program is part of our commitment to help build local capacity and develop opportunities for community wellbeing.

If your club or organisation has a great idea or needs extra support, Woodside wants to hear from you. Grants of up to $5,000 are available to support community initiatives in the City of Karratha and the Shire of Exmouth.

Applications close Friday, 31 October 2025 and can be completed online at woodside.com/social-contribution

For more information, please email northwestcommunities@woodside.com

woodside.com

Woodside Energy

Let's Talk

Our plans, Your say

Scan the QR code or 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.

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APPENDIX G OIL SPILL PREPAREDNESS AND RESPONSE MITIGATION ASSESSMENT

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Woodside Energy

Oil Spill Preparedness and Response Mitigation Assessment for Angel Carbon Capture and Storage Geophysical and Geotechnical Surveys Environmental Plan

Corporate HSE

Hydrocarbon Spill Preparedness

January 2026
Revision 0

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EXECUTIVE SUMMARY

The Angel Carbon Capture and Storage Joint Venture (Angel CCS JV), of which Woodside is the Operator, has developed its oil spill preparedness and response position for the Angel Carbon Capture and Storage Geophysical and Geotechnical (GPGT) Surveys, hereafter known as the GPGT Surveys Program.

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 activity described in the Environment Plan (EP). This document then outlines Woodside's decisions and techniques for responding to a hydrocarbon release event and the process for determining its level of hydrocarbon spill preparedness.

A summary of the key facts and references to additional detail within this document are presented below.

Table 0-1: Summary of the key details for assessment

<table>
<tr><th>Key details of assessment</th><th colspan="3">Summary</th><th>Reference to additional detail</th></tr>
<tr><td>Worst Case Credible Scenario</td><td colspan="3">Credible Scenario-08 (CS-08): Instantaneous surface release of 150 m^3 of Marine Gas Oil (MGO) following a loss of vessel containment at the State Waters boundary.
20° 19' 34.0" S 116° 45' 50.2" E
Instantaneous release of 150 m^3 of MGO.
5% residual component of 7.5 m^3</td><td rowspan="2">Section 2.2</td></tr>
<tr><td colspan="3">Credible Scenario-05 (CS-05): Instantaneous surface release of 150 m^3 of MGO following a loss of vessel containment at an offshore location.
19° 34' 19.6" S 116° 32' 56.0" E
Instantaneous release of 150 m^3 of MGO.
5% residual component of 7.5 m^3</td></tr>
<tr><td>Hydrocarbon Properties</td><td colspan="3">Marine Gas Oil (MGO)
MGO 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 6.7.1 of the EP
Appendix A of the First Strike Plan</td></tr>
<tr><td rowspan="3">Modelling Results</td><td colspan="3">Stochastic modelling
A quantitative, stochastic assessment has been undertaken for credible spill scenarios to help assess the environmental risk of a hydrocarbon spill.
A total of 200 replicate simulations were completed for the scenarios to test for trends and variations in the trajectory and weathering of the spilled oil, with an even number of replicates completed using samples of metocean data that commenced within each calendar quarter (50 simulations per quarter).</td><td rowspan="3">Section 2.3</td></tr>
<tr><td></td><td>CS-08: Instantaneous surface release of 150 m^3 of MGO at the State Waters boundary</td><td>CS-05: Instantaneous surface release of 150 m^3 of MGO at offshore location</td></tr>
<tr><td>Minimum time to floating hydrocarbon contact with the offshore edge(s) of any shoreline</td><td>Dampier Archipelago – 3 hours (0.13 days)</td><td>No contact at threshold</td></tr>
</table>

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	receptor polygon (at a concentration of 10 g/m^2)			
	Minimum time to shoreline contact (above 100 g/m^2)	Dampier Archipelago at Legendre Island – 8 hours (0.33 days), 69 m^3	No contact at threshold	
	Largest volume ashore at any single Response Protection Area (RPA) (above 100 g/m^2)	Dampier Archipelago at Legendre Island – 69 m^3 (8 hours/ 0.33 days)	No contact at threshold	
	Largest total shoreline accumulation (above 100 g/m^2) all shorelines	Dampier Archipelago at Legendre Island – 69 m^3 (8 hours/ 0.33 days)	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)	Dampier Archipelago and Madeleine Shoals – 3 hours (0.13 days)	No contact at threshold	
Net Environmental Benefit Analysis	Monitor and evaluate, source control (vessel), shoreline protection and deflection, shoreline clean-up, oiled wildlife response, are all identified as potentially having a net environmental benefit (dependent on the actual spill scenario) and carried forward for further assessment.			Section 4
ALARP evaluation of selected response techniques	The evaluation of the selected response techniques shows the proposed controls reduced the risk to an ALARP and acceptable level for the risk presented in Section 2, without the implementation of considered additional, alternative or improved control measures.			Section 6

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1 INTRODUCTION

1.1 Overview

The Angel Carbon Capture and Storage Joint Venture (Angel CCS JV), of which Woodside is the Operator, has developed its oil spill preparedness and response position for the Angel Carbon Capture and Storage Geophysical and Geotechnical (GPGT) Surveys, hereafter known as the GPGT Surveys Program.

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 (Cth)* (Environment Regulations) relating to hydrocarbon spill response arrangements.

- The Angel Carbon Capture and Storage Geophysical and Geotechnical Surveys Environment Plan (EP)
- Hydrocarbon Spill Australia Regulatory Framework
- The Angel Carbon Capture and Storage Geophysical and Geotechnical Surveys Oil Pollution Emergency Plan (OPEP) including:
  - Oil Pollution First Strike Plan (FSP)
  - Operational and Scientific Monitoring Bridging Implementation Plan (OSM BIP)[1]
  - Relevant Operations Plans
  - Relevant Tactical Response Plans (TRPs)
  - Relevant Supporting Plans.

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 activities 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 activity is shown in Figure 3.1 of the EP.

1.4 Oil spill response document overview

The documents outlined in Table 1-1 and Figure 1-1 are collectively used to manage the preparedness and response for a hydrocarbon release.

The Oil Pollution First Strike Plan (FSP) contains a pre-operational Net Environmental Benefit Analysis (NEBA) summary, outlining the selected response techniques for this activity. Relevant Operational Plans to be initiated for associated response techniques are identified in the FSP and relevant forms to initiate a response are appended to the FSP.

The process to develop an Incident Action Plan (IAP) begins once the oil pollution FSP is underway. The IAP includes inputs from 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.

[1] In accordance with Regulation 56 of the Environmental Regulations, references to the Operational and Scientific Monitoring Bridging Implementation Plan (OSM-BIP) within this document refer to the OSM-BIP submitted with accepted North West Shelf Phase 1 Plug and Abandonment and TPA03 Well Intervention Environment Plan, which is available on NOPSEMA's website using the following link: https://docs.nopsema.gov.au/A1282743

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During each operational period, field reports are continually reviewed to evaluate the effectiveness of response operations. In addition, the operational NEBA is continually reviewed and updated to confirm the response techniques implemented continue to result in a net environmental benefit (Section 4).

The response will continue as described in Section 5 until the response termination criteria have been met.

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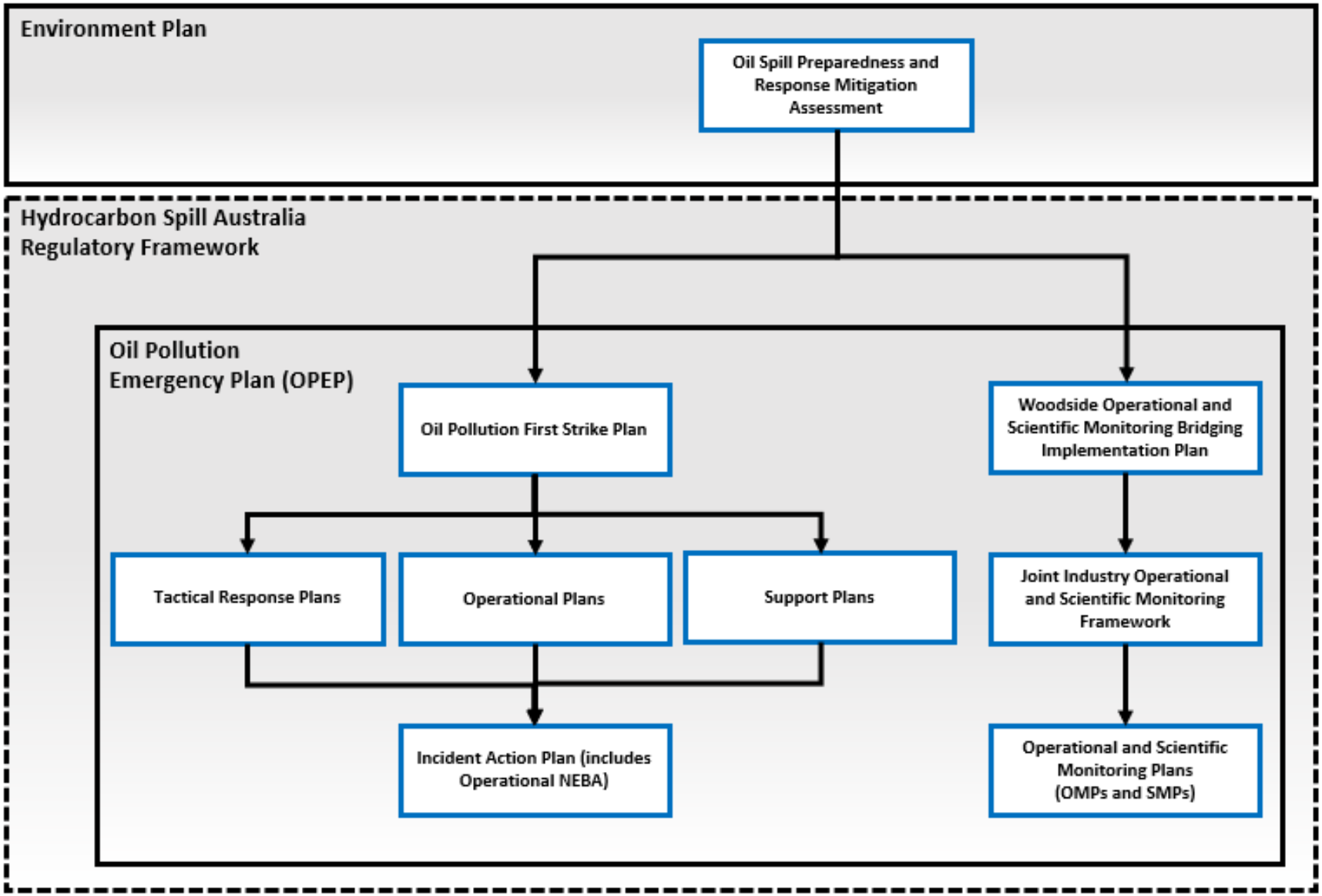


Figure 1-1: Woodside hydrocarbon spill document structure

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Table 1-1: Hydrocarbon Spill preparedness and response – document references

Document	Document overview	Stakeholders	Relevant information	Document subsections (if applicable)
Angel Carbon Capture and Storage Geophysical and Geotechnical Surveys Environment Plan (EP)	Demonstrates that potential adverse impacts on the environment associated with the Angel Carbon Capture and Storage Geophysical and Geotechnical Surveys (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).	
Hydrocarbon Spill Australia Regulatory Framework	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 Angel Carbon Capture and Storage Geophysical and Geotechnical Surveys (this document)	Evaluates response options to address the potential environmental impacts resulting from an unplanned loss of hydrocarbon containment associated with the activities 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.	
Angel Carbon Capture and Storage Geophysical and Geotechnical Surveys 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	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.	

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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).	activity-specific response information.	Details and forms for use in immediate response. Activation 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 Vessel Shipboard Oil Pollution Emergency Plan (SOPEP) Shoreline Protection and Deflection Operational Plan Shoreline Clean-Up Operational Plan Oiled Wildlife Response Operational Plan
Operational and Scientific Monitoring (OSM) Bridging Implementation Plan[1]	Describes a program of monitoring oil pollution that will be adopted in the event of a hydrocarbon spill incident (Level 2–3) to marine waters. It is aligned to the Joint Industry Operational and Scientific Monitoring Framework (APPEA, 2021) and describes how this Framework applies to Woodside's activities and spill risks in Australian waters.	Site-based IMT for initial activation and notification. OSM Service Providers Regulatory agencies	Mobilisation and notification process for OSM, including activation of OSM Service Providers Information on scientific monitoring priorities OSM arrangements and capability Permitting and access requirements for OSM	

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Document	Document overview	Stakeholders	Relevant information	Document subsections (if applicable)
Tactical Response Plans	Provides options for response techniques in selected RPAs. Provides site, access and deployment information to support a response at the location.	CIMT: Planning Section to help develop IAPs, and Logistics Section to assist with determining resources required.	Indicative response techniques. Access requirements and/or permissions. Relevant information for undertaking a response at that site. Where applicable, may include equipment deployment locations and site layouts.	For full list of relevant Tactical Plans for the Angel Carbon Capture and Storage Geophysical and Geotechnical Surveys oil spill response, refer to **ANNEX D: Tactical Response Plans** (TRP).
Support Plans	Support Plans detail Woodside's approach to resourcing and the provision of services during a hydrocarbon spill response.	CIMT: Operations, Logistics and Planning Sections.	Technique for mobilising and managing additional resources outside of Woodside's immediate preparedness arrangements.	Logistics Support Plan Aviation Support Plan Marine Support Plan Waste Management Plan – Australia Health and Safety Support Plan Hydrocarbon Spill Responder Health Monitoring Guidelines People and Global Capability (Surge Labour Requirements) Support Plan Stakeholder Engagement Support Plan Guidance for Hydrocarbon Spill Claims Management

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2 RESPONSE PLANNING PROCESS

This document details Woodside's process for identifying potential response options for the hydrocarbon release scenarios, identified in the EP. Figure 2-1 outlines the interaction between Woodside's response, planning, preparedness and selection process.

This structure has been used because it shows how the planning and preparedness activities inform a response and provides indicative guidance on what activities would be undertaken, in sequential order, if a real event were to occur. The process also evaluates alternative, additional and/or improved control measures specific to the activity.

The Angel Carbon Capture and Storage Geophysical and Geotechnical Surveys Oil Pollution First Strike Plan (FSP) then summarises the outcome of the response planning process and provides initial response guidance and a summary of ongoing response activities if an incident were to occur.

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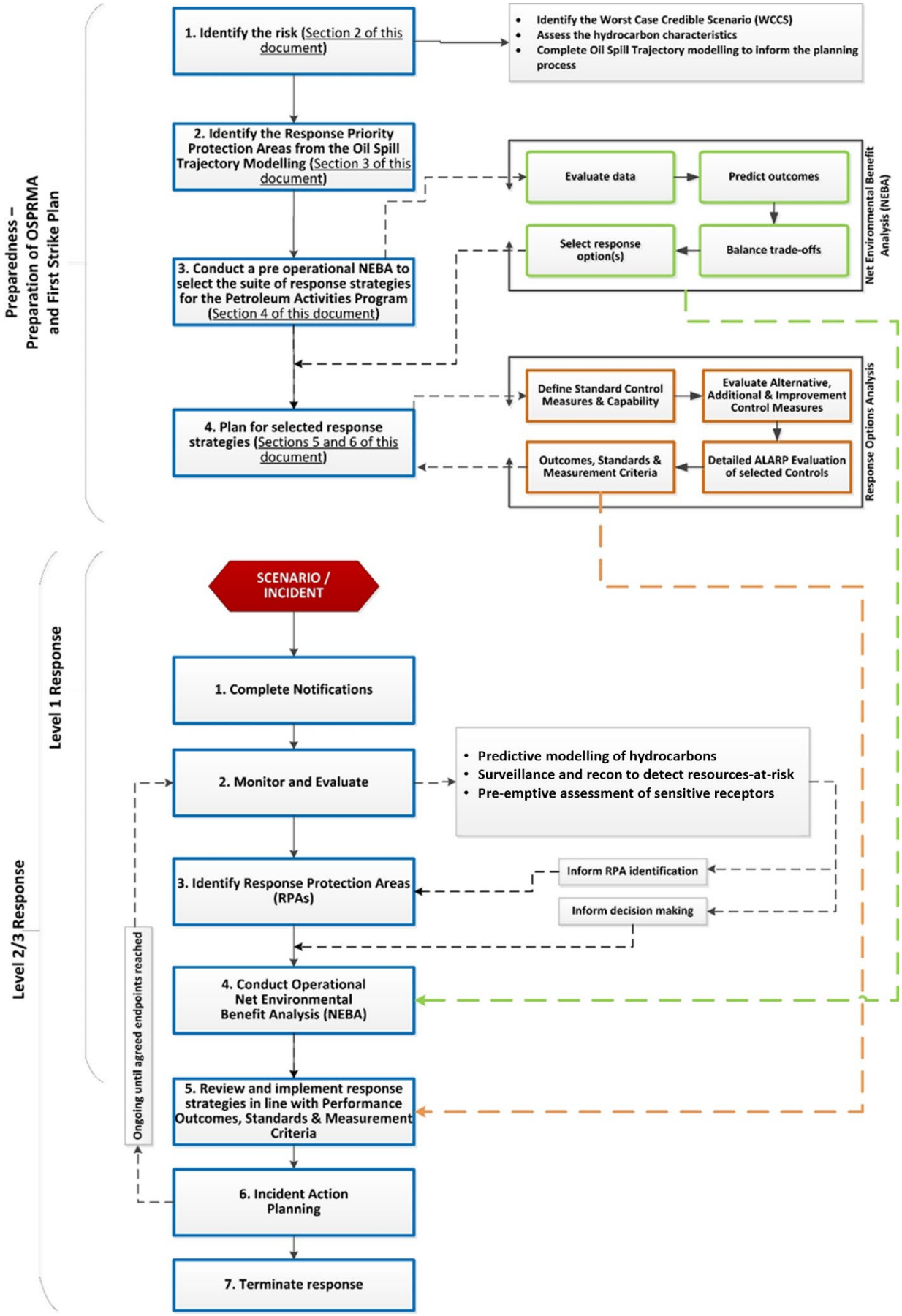


Figure 2-1: Response planning and selection process

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2.1 Response planning process outline

This document is expanded below to provide additional context on the key steps in determining capability, evaluating ALARP and hydrocarbon spill response requirements.

Section 1. INTRODUCTION

Section 2. RESPONSE PLANNING PROCESS

- identification of worst-case credible scenario(s) (WCCS)
- spill modelling for WCCS.

Section 3. IDENTIFY RESPONSE PROTECTION AREAS (RPAs)

- areas predicted to be contacted at concentration >100 g/m^2.

Section 4. NET ENVIRONMENTAL BENEFIT ANALYSIS (NEBA)

- pre-operational NEBA (during planning/ALARP evaluation): this must be reviewed during the initial response to an incident to confirm its accuracy.
- selected response techniques prioritised and carried forward for ALARP assessment.

Section 5. HYDROCARBON SPILL ALARP PROCESS

- determines the response need based on predicted consequence parameters.
- details the environmental performance of the selected response options based on need.
- sets the environmental performance outcomes, environmental performance standards and measurement criteria.

Section 6. ALARP EVALUATION

- evaluates alternative, additional, and improved options for each response technique to demonstrate the risk has been reduced to ALARP.
- provides a detailed ALARP assessment of selected control measure options against:
  - predicted cost associated with implementing the option
  - predicted change to environmental benefit
  - predicted effectiveness / feasibility of the control measure.

Section 7. ENVIRONMENTAL RISK ASSESSMENT OF SELECTED RESPONSE TECHNIQUES

- evaluation of impacts and risks from implementing selected response options.

Section 8. ALARP CONCLUSION

Section 9. ACCEPTABILITY CONCLUSION

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2.1.1 Response Planning Assumptions

Figure 2-2 illustrates the initial steps of a response to an oil spill event and, where available, the indicative timing. For the latter stages, the timing will be specific to the selective response option.

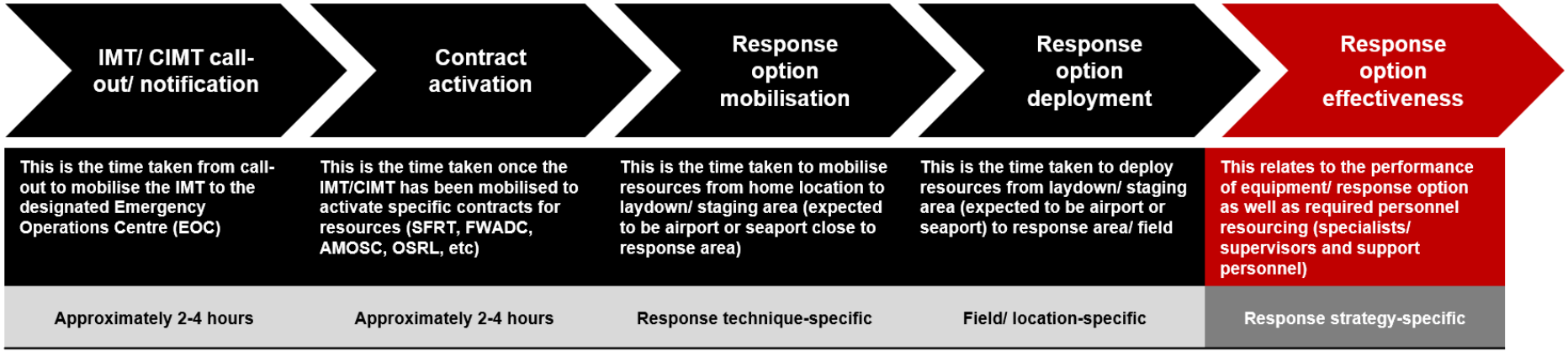


Figure 2-2: Response planning assumption – timing, resourcing and effectiveness

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2.2 Environment plan risk assessment (credible spill scenarios)

Potential hydrocarbon release scenarios from the activities 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. Two unplanned events or credible spill scenarios for the activities 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 activities. 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.

Stochastic modelling has been completed for worst-case spill scenarios of an instantaneous surface release of MGO, representing loss of vessel fuel tank integrity after a collision, at two locations:

- 150 m^3 of MGO at the State Waters boundary (CS-08; Figure 2-3); and
- 150 m^3 of MGO at an offshore location (CS-05; Figure 2-4).

The instantaneous surface release of 150 m^3 of MGO at the State Waters boundary scenario (CS-08) is considered to determine the WCCS for response planning purposes as it is the only scenario with hydrocarbons contacting shoreline receptors above response thresholds (>100 g/m^2). CS-05 does not make contact with shorelines above response thresholds or any offshore receptors at or above floating oil thresholds (>50 g/m^2). It does intercept receptors at or above minimum thresholds for operational and scientific monitoring (OSM) purposes, and has therefore been assessed for OSM planning .

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Table 2-1: Petroleum Activities Program credible spill scenarios

Credible Spill Scenarios	Scenario selected for response planning purposes	Scenario description	Maximum credible volume released (liquid m^3)[1]	Incident level	Hydrocarbon type	Residual proportion	Residual volume (m^3)
Instantaneous Release of 150 m^3 of MGO at the State Waters boundary-08 (CS-08)	Yes	Instantaneous release of 150 m^3 of MGO at the State Waters boundary	150	2	MGO	5.0 %	7.5
Instantaneous Release of 150 m^3 of MGO at offshore location-05 (CS-05)	No[2]	Instantaneous release of 150 m^3 of MGO at offshore location	150	2	MGO	5.0 %	7.5

[2] Scenario not considered for spill response (clean-up) planning but has been included in OSM planning

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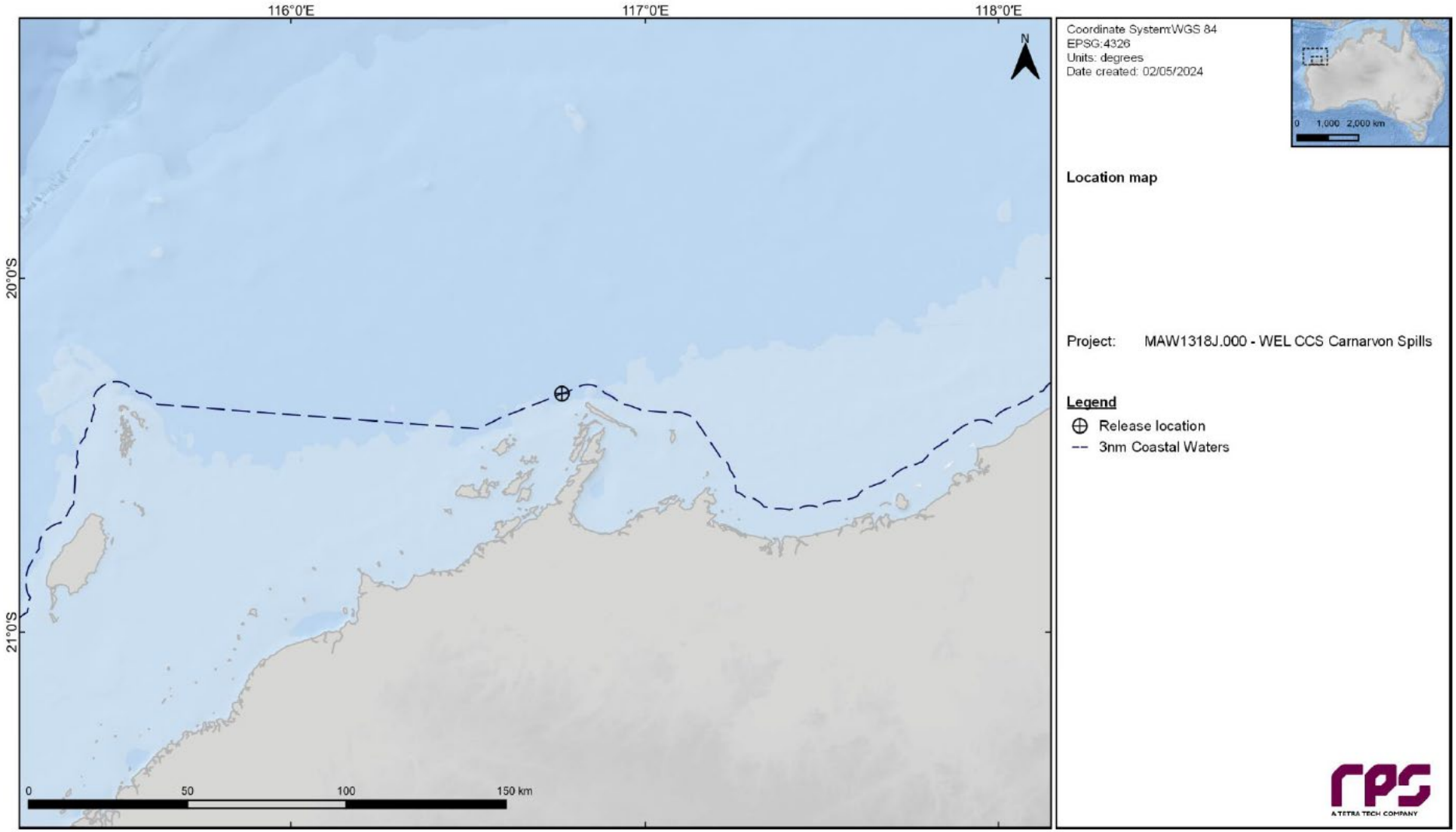


Figure 2-3: Location of CS-08

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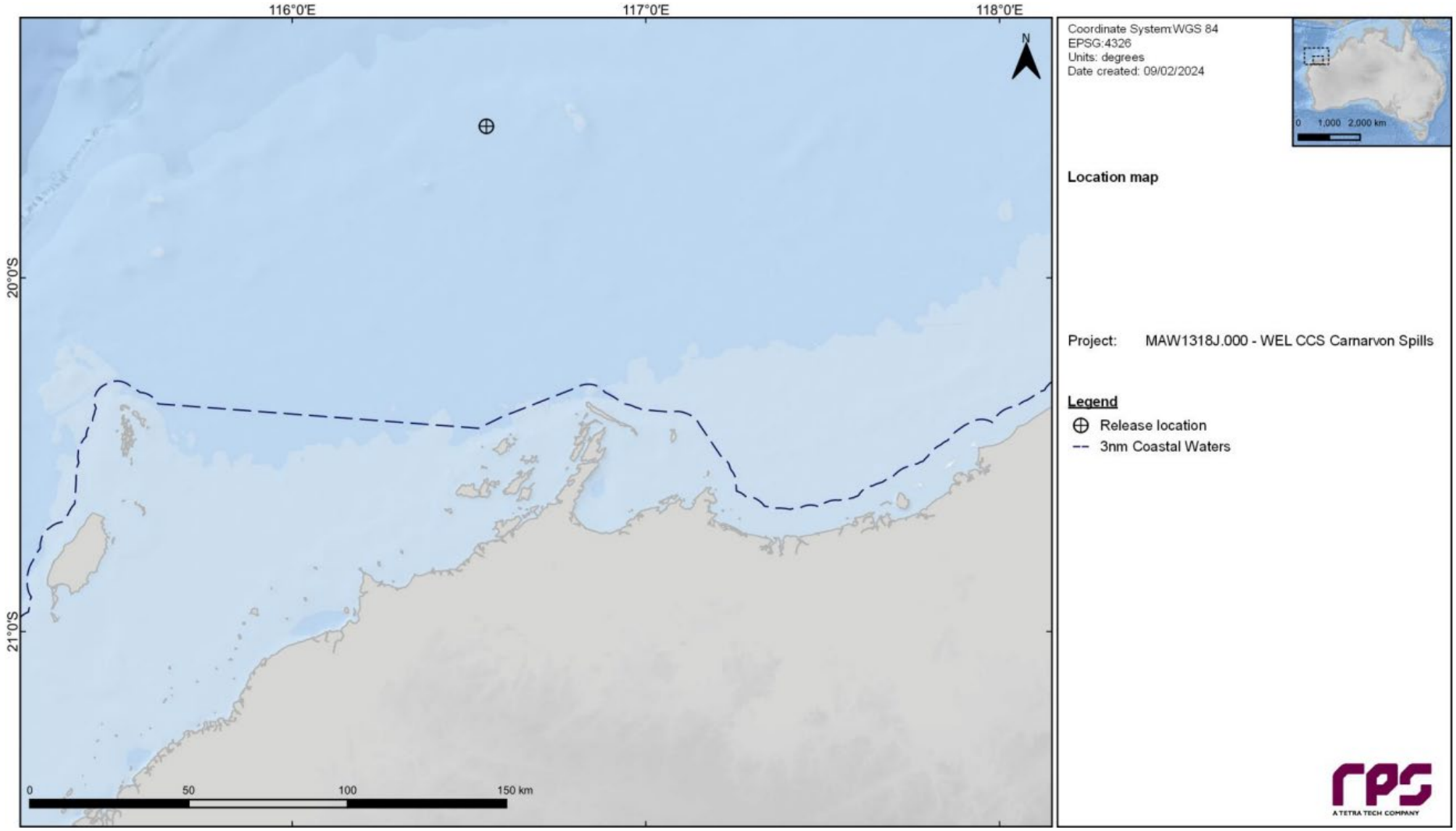


Figure 2-4: Location of CS-05

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2.2.1 Hydrocarbon characteristics

Hydrocarbon characteristics, including modelled weathering data and ecotoxicity, are included in Section 6.7.1 of the EP.

Marine Gas Oil (CS-08, CS-05)

MGO typically classed as an International Tanker Owners Federation (ITOPF) Group I oil. Group I oils are non-persistent and tend to dissipate completely through evaporation within a few hours and do not normally form emulsions.

MGO is a mixture of volatile and persistent hydrocarbons with low proportions of highly volatile and residual components. In general, about 6% of the oil mass should evaporate within the first 12 hours (boiling point < 180°C); a further 35% should evaporate within the first 24 hours (180°C < boiling point < 265°C); and a further 54% should evaporate over several days (265°C < boiling point < 380°C). About 5% of the oil is shown to be persistent. The aromatic content of the oil is about 3%.

The mass balance forecast for the constant-wind case for MGO shows that about 40% of the oil is predicted to evaporate within 24 hours. Under these calm conditions the majority of the remaining oil on the water surface weathers at a slower rate due to comprising the longer-chain compounds with higher boiling points. Evaporation of the residual compounds slows significantly and is then subject to more gradual decay through biological and photochemical processes.

Under the variable-wind case, where the winds are of greater strength, entrainment of MGO into the water column is indicated to be significant. Approximately 24 hours after the spill, around 74% of the oil mass is forecast to have entrained and a further 26% is forecast to have evaporated, leaving only a small proportion of the oil floating on the water surface (<1%). The entrained component remained subsurface under the conditions imposed.

The increased level of entrainment in the variable-wind case results in a higher dissolution of the soluble compounds, with dissolved hydrocarbons forecasted at ~0.5% of the original mass after 12 hours in comparison to < 0.01% 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.

2.3 Hydrocarbon spill modelling

Oil spill trajectory modelling (OSTM) tools are used for environmental impact assessment and during response planning to understand spatial scale and timeframes for response operations. Woodside recognises there is a degree of uncertainty related to the use of modelling data and has subsequently utilised conservative approaches to volumes, weathering, spatial areas, timing and response effectiveness to scale capability to need.

The Oil Spill Model and Response System (OILMAP) and Integrated Oil Spill Impact Model System (SIMAP) models are both used for stochastic and deterministic trajectory modelling. They have been developed over three decades of planning, exercises, actual responses, several peer reviews, and validation studies. OILMAP was originally derived from the United States Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Type A model (French et al. 1996), for assessing marine transport, biological impact and economic damage that was also used under the United States Oil Pollution Act 1990 Natural Resource Damage Assessment (NRDA) regulations. Notable spills where the model has been used and validated against actual field observations include, Exxon Valdez (French McCay 2004), North Cape Oil Spill (French McCay 2003), along with an assessment of 20 other spills (French McCay and Rowe, 2004). In addition, test spills designed to verify fate, weathering and movement algorithms have been conducted regularly and in a range of climate conditions (French and Rines 1997; French et al. 1997; Payne et al. 2007; French McCay et al. 2007).

Further to this, the algorithms have been updated using the latest findings from the Macondo/Deepwater Horizon well blowout in the Gulf of Mexico and validated according to the Deepwater Horizon (DWH) oil spill in support of the NRDA (Spaulding et al. 2015; French McCay et al. 2015, 2016). Finally, the OILMAP and SIMAP models have been used extensively in Australia to prosecute pollution offences, predict discharge locations and likely spill volumes based on weathering and surveillance observations, and has been used as expert witness evidence in Australian court proceedings, aiding the prosecution to determine spill quantum estimates.

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2.3.1 Stochastic modelling

Quantitative, stochastic assessments have been undertaken for the credible spill scenarios (refer to Table 2-1) to help assess the environmental consequences of a hydrocarbon spill.

A total of 200 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 (50 simulations per quarter). Further details relating to the assessments for the scenarios can be found in Section 6 of the EP.

2.3.1.1 Environmental impact thresholds – Environment that May Be Affected (EMBA) and hydrocarbon exposure

The outputs of the stochastic spill modelling are used to assess the potential environmental impact from the credible scenarios. The stochastic modelling results are used to delineate areas of the marine and shoreline environment that could be exposed to hydrocarbon levels exceeding environmental impact threshold 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)
Diesel	10	50	100	100

2.3.2 Deterministic modelling

Deterministic modelling is undertaken where initial stochastic modelling has indicated that floating oil is present at a response threshold of 50 g/m^2 and/or where there are shoreline accumulations at a response threshold of 100 g/m^2. The deterministic modelling outputs are then used to scale the required capability for the offshore (surface dispersant and containment and recovery) and/or shoreline responses.

Whilst the modelling undertaken for CS-08 does predict some shoreline contact at the 100 g/m^2 response threshold and floating hydrocarbon at the 50 g/m^2 threshold in open ocean, this is limited in nature. Additionally, the use of surface dispersant and containment and recovery are not deemed feasible for MDO spills due to rapid spreading and weathering as a result of the local metocean conditions, together with its highly volatile nature. Deterministic modelling was, therefore, not required and thus stochastic modelling has been used to scale the response in this assessment.

2.3.3 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) program, 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.

In the event of an actual response, existing modelling would be reviewed for suitability and additional modelling would be conducted using real-time data and field information to inform CIMT decisions.

The 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.

2.3.3.1 Surface hydrocarbon concentrations

Table 2-3: Surface hydrocarbon thresholds for response planning

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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 activities and operational monitoring[3]	Code 3 – Dull metallic colours	5 to 50
50	Predicted minimum floating oil threshold for containment and recovery and surface dispersant application [4]	Code 4 – Discontinuous true oil colour	50 to 200
100	Predicted optimum floating oil threshold for containment and recovery and surface dispersant application	Code 5 – Continuous true oil colour	>200
Shoreline hydrocarbon threshold (g/m^2)	**Description**	**National Plan Guidance on Oil Contaminated Foreshores**	**Mass per area (m^3/km^2)**
100	Predicted minimum shoreline accumulation threshold for shoreline assessment operations	Stain	>100
250	Predicted minimum threshold for commencing shoreline clean-up operations	Level 3 – Thin Coating	200 to 1000

The surface thickness of oil at which dispersants are typically effective is approximately 100 g/m^2. However, substantial variations occur in the thickness of the oil within the slick, and most fresh crude oils spread within a few hours, so overall the average thickness is 0.1 mm (or approx. 100 g/m^2 ITOPF 2011). Additionally, the recommended rate of application for surface dispersant is typically one part dispersant to 20 or 25 parts of spilled oil. These figures assume a 0.1 mm slick thickness, averaged over the thickest part of the spill, to calculate a litres/hectare application rate from vessels and aircraft. In practice this can be difficult to achieve as it is not possible to accurately assess the thickness of the floating oil.

Some degree of localised over-dosage and under-dosage is inevitable in dispersant response. An average oil layer thickness of 0.1 mm is often assumed, although the actual thickness can vary over a wide range (from less than 0.0001 mm to more than 1 mm) over short distances (International Petroleum Industry Environment Conservation Association [IPIECA] 2015).

Guidance from the Australian Maritime Safety Authority (AMSA, 2020) indicates spreading of spills of Group II or III products will rapidly decrease slick thickness over the first 24 hours of a spill resulting in the potential requirement of up to a ten (10) fold increase in capability on day 2 to achieve the same level of performance.

Further guidance from the European Maritime Safety Authority (EMSA) states spraying the 'metallic' looking area of an oil slick (Bonn Agreement Oil Appearance Code [BAOAC] 3, approx. 5 – 50 µm) with dispersant from spraying gear designed to treat an oil layer 0.1 mm (100 µm) thick, will inevitably cause dispersant over-treatment by a factor of 2 to 20 times (EMSA 2012).

Therefore, dispersant application should be concentrated on the thickest areas of an oil slick and Woodside intends on applying surface dispersants to only BAOAC 4 and 5. Spraying areas of oil designated as BAOAC Code 4 (Discontinuous true oil colour) with dispersant will, on average, deliver approximately the recommended treatment rate of dispersant.

Spraying areas of oil designated as BAOAC Code 5 with dispersant (Continuous true oil colour and more than 0.2 mm thick) will, on average, deliver approximately half the recommended treatment rate of dispersant. 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).

[3] Monitor and evaluate activities will be undertaken from the outset of a spill whether or not this threshold has been reached. Monitoring is needed throughout the response to assess the nature of the spill, track its location and inform the need for any additional monitoring and/or response techniques. It also informs when the spill has entered State Waters and control of the incident passes to statutory authorities e.g. Western Australia Department of Transport and Major Infrastructure (WA DTMI) or AMSA.

[4] At 50 g/m^2, containment and recovery and surface dispersant application operations are not expected to be particularly effective. This threshold represents a conservative approach to planning response capability and containing the spread of surface oil.

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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 2-5 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).

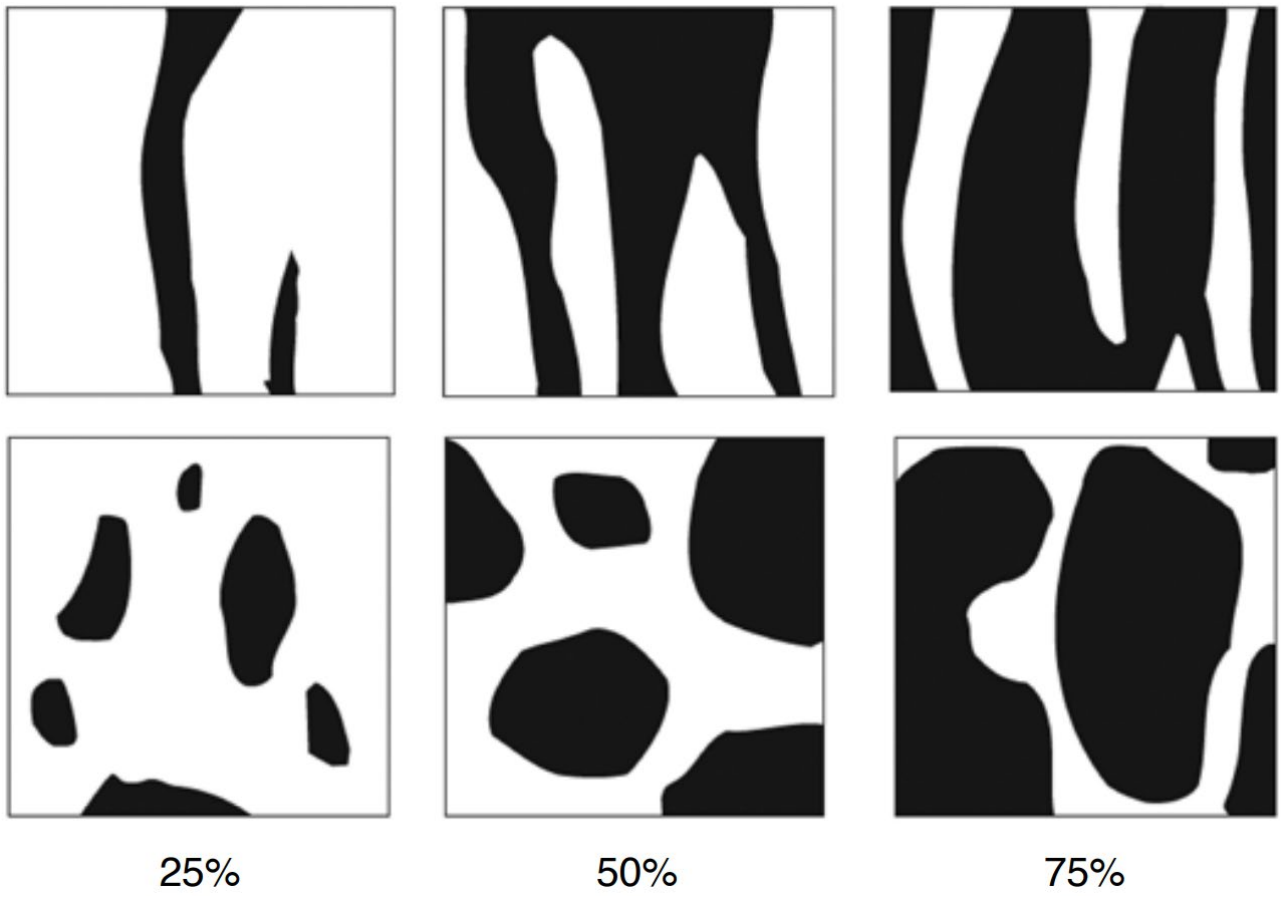


Figure 2-5: Proportion of total area coverage (AMSA, 2014)

Figure 2-6 illustrates the general relationships between on-water response techniques and slick thickness. Wind-rows, heavy oil patches and tar balls, for example, must be considered, as they influence oil encounter rates, chemical dosages and ignition potential. Each method has different thickness thresholds for effective response.

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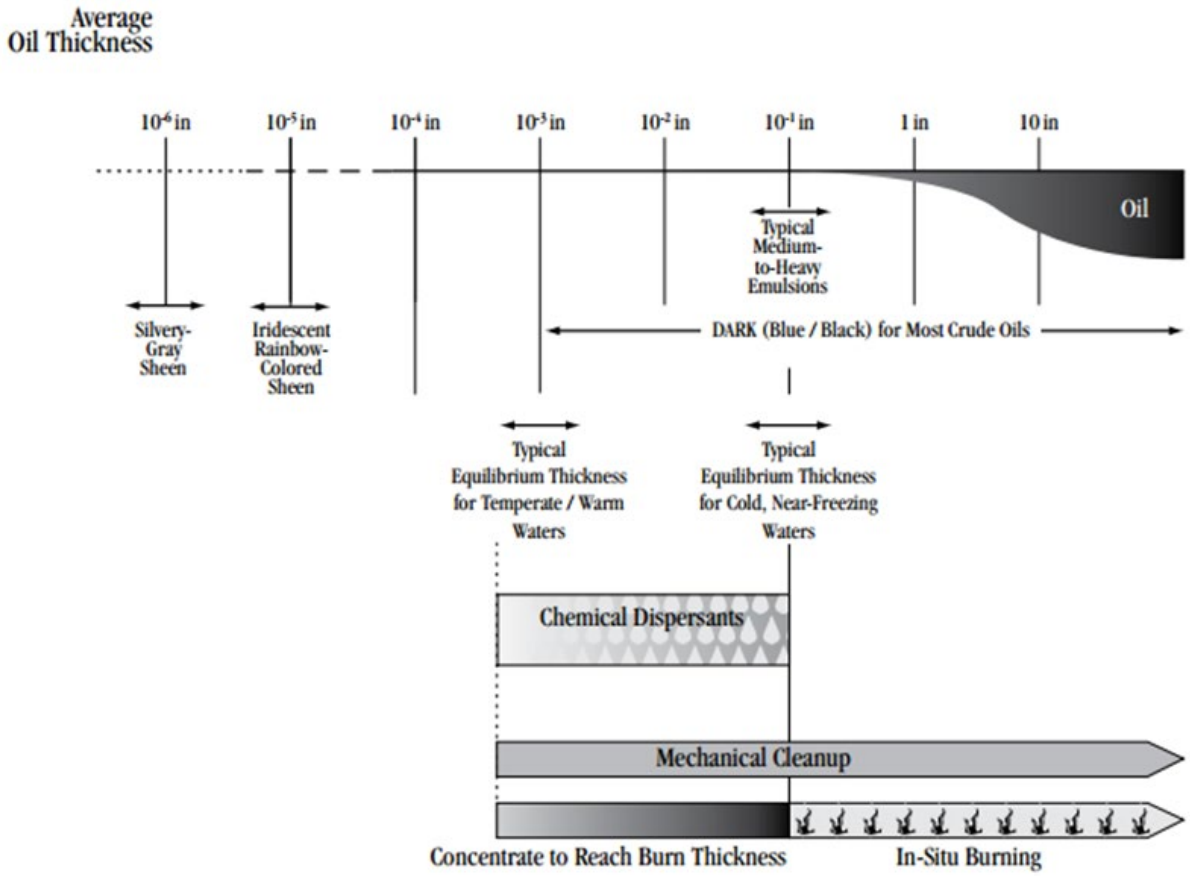


Figure 2-6: Oil thickness versus potential response options (from Allen & Dale 1996)

Wind and waves influence the feasibility of mechanical clean-up operations, dropping the effectiveness significantly because of entrainment and/or splash-over as short period waves develop beyond two to three feet (0.6 to 0.9 m) in height. Waves and wind can also be limiting factors for the safe operation of vessels and aircraft.

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2.3.3.2 Surface hydrocarbon viscosity

Table 2-4: 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 2-5).

2.3.4 Spill modelling results

Details of the scenario and modelling inputs are included along with stochastic results in Table 2-5.

The selected stochastic 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).

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Table 2-5: Worst case credible scenario modelling results

Scenario description	Results	
	CS-08	**CS-05**
WCCS – total volume released Refer to Section 2.1.1 for detailed hydrocarbon characteristics	**Instantaneous release of 150 m^3 of MGO at the State Waters boundary.** Hydrocarbon release resulting from a loss of containment from a vessel collision. Instantaneous release of 150 m^3 of MGO.	**Instantaneous release of 150 m^3 of MGO at offshore location.** Hydrocarbon release resulting from a loss of containment from a vessel collision. Instantaneous release of 150 m^3 of MGO.
WCCS – residual volume remaining post-weathering	5% residual component or 7.5 m^3	5% residual component or 7.5 m^3
Location	20° 19' 34.0" S 116° 45' 50.2" E	19° 34' 19.6" S 116° 32' 56.0" E
Modelling results		
Surface area of hydrocarbons (>50 g/m^2)	N/A	N/A
Surface area of hydrocarbons (>50 g/m^2 and <10,000 cSt)	N/A	N/A
Minimum time to floating hydrocarbon contact with the offshore edge(s) of any shoreline receptor polygon (at a concentration of 10 g/m^2)	Dampier Archipelago – 3 hours (0.13 days).	No contact at threshold.
Minimum time to commencement of hydrocarbon accumulation at any shoreline receptor (at a concentration of 100 g/m^2)	Dampier Archipelago at Legendre Island – 8 hours/ 0.33 days (69 m^3).	No contact at any of the assessed thresholds.
Maximum cumulative hydrocarbon volume accumulated at any individual shoreline receptor (at a concentration of 100 g/m^2).	Dampier Archipelago at Legendre Island – 69 m^3 (8 hours/ 0.33 days).	No contact at any of the assessed thresholds.
Maximum cumulative hydrocarbon volume accumulated across all shoreline receptors contacted by accumulated hydrocarbons (at a concentration of 100 g/m^2)	Dampier Archipelago at Legendre Island (69 m^3) and Keast Island (20 m^3) on day 1.	No contact at any of the assessed thresholds.
Minimum time to entrained/dissolved hydrocarbon contact with the offshore edges of any receptor polygon (at a threshold of 100 ppb)	Dampier Archipelago and Madeleine Shoals – 3 hours (0.13 days).	No contact at threshold.
The full list of response protection areas (RPAs) predicted from modelling is available in Table 3-1.		

From the above modelling results, the shoreline volumes and timeframes predicted for CS-08 are deemed to be the worst-case and have been used as the basis for response planning for the GPGT Surveys Program. CS-05 modelling did not predict contact at any RPAs at any of the assessed floating or shoreline response thresholds for the duration of the spill.

Spreading and weathering of the surface oil occurs rapidly due to the loss of light, volatile components. Dispersant application and containment and recovery are not appropriate for use on spills of MDO due to these weathering characteristics.

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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.

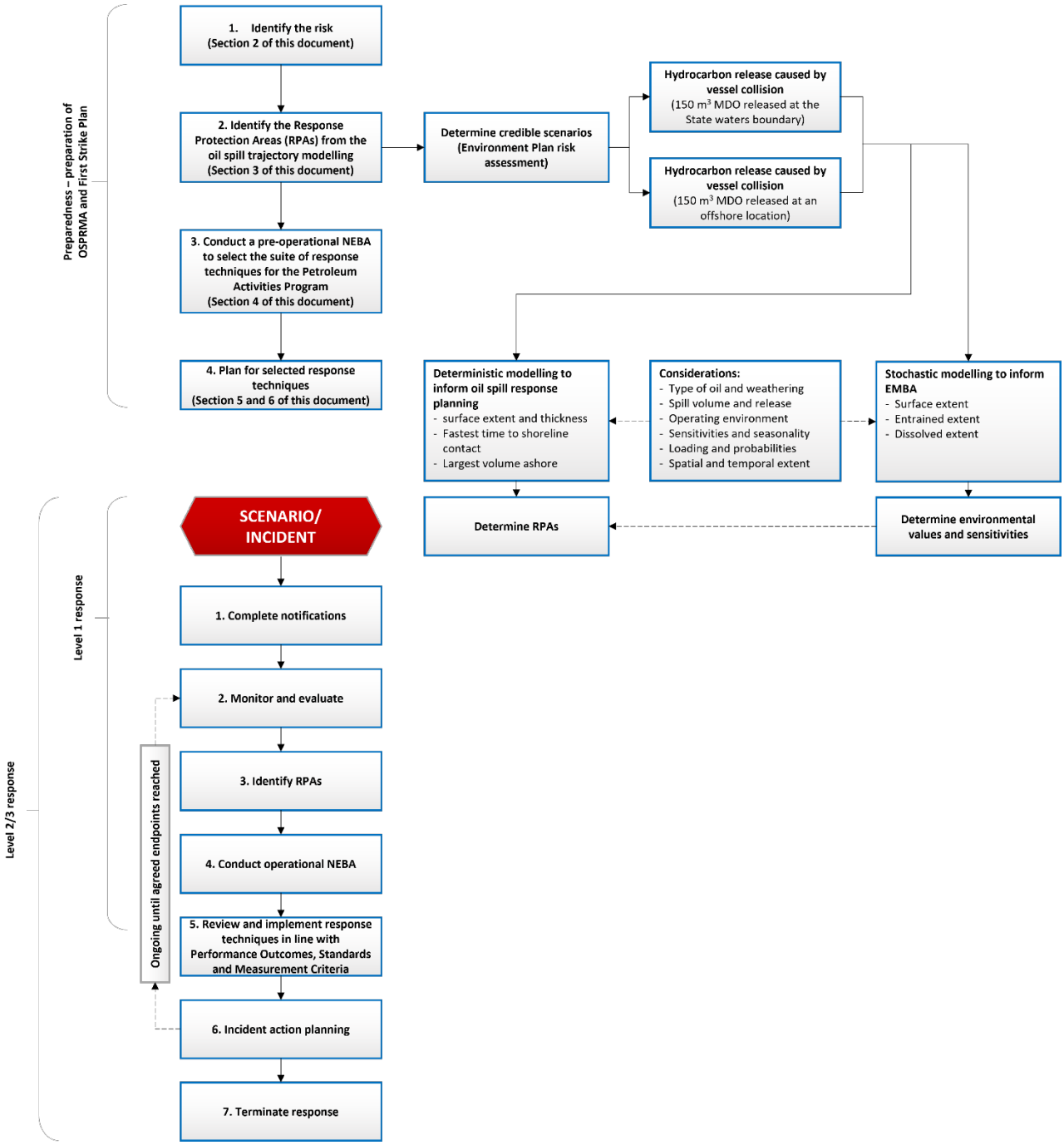


Figure 3-1: Identify Response Protection Areas (RPAs) flowchart

3.1 Identified sensitive receptor locations

Section 6 of the EP includes the list of sensitive receptor locations that have been identified by stochastic modelling as meeting the requirements outlined below:

- receptors with the potential to incur surface, entrained or shoreline accumulation contact above environmental impact thresholds

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- receptors within the EMBA which meet the following:
  - a number of priority protection criteria/categories
  - International Union of Conservation of Nature (IUCN) marine protected area categories
  - high conservation value habitat and species
  - important socio-economic/heritage value.

3.2 Identify Response Protection Areas (RPAs)

RPAs have been selected on the basis of their environmental ecological, social, economic, cultural and heritage values and sensitivities and the ability to conduct a response based on the minimum response thresholds (Section 2.3.3). It is important to note that the figures outlined in Table 3-1 are the combined results of the individual worst-case runs and do not indicate a single worst case credible scenario (where the timings and volumes are all expected from one release).

From the identified sensitive receptors described in Section 6 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 activities and operational monitoring) 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 stochastic modelling

Response protection area	Conservation status	IUCN protection category	CS-08	
			Minimum time to shoreline contact (above 100 g/m^2) in days [5]	Maximum shoreline accumulation (above 100 g/m^2) in m^3 [6]
Dampier Archipelago at Legendre Island	National Heritage Property	N/A	0.33 days	69 m^3
Keast Island	National Heritage Property	N/A	0.71 days	20 m^3
Cape Bruguieres	National Heritage Property	N/A	2.04 days	5 m^3

[5] This volume and time represent the first time to contact on defined shoreline polygon and the maximum volume ashore for that 24 hour period.
[6] This volume and time represent the maximum volume ashore on defined shoreline polygon for any 24 hour time period

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4 NET ENVIRONMENTAL BENEFIT ANALYSIS (NEBA)

A Net Environmental Benefit Analysis (NEBA) is a structured process to consider which response techniques are likely to provide the greatest net environmental benefit.

The NEBA process 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.

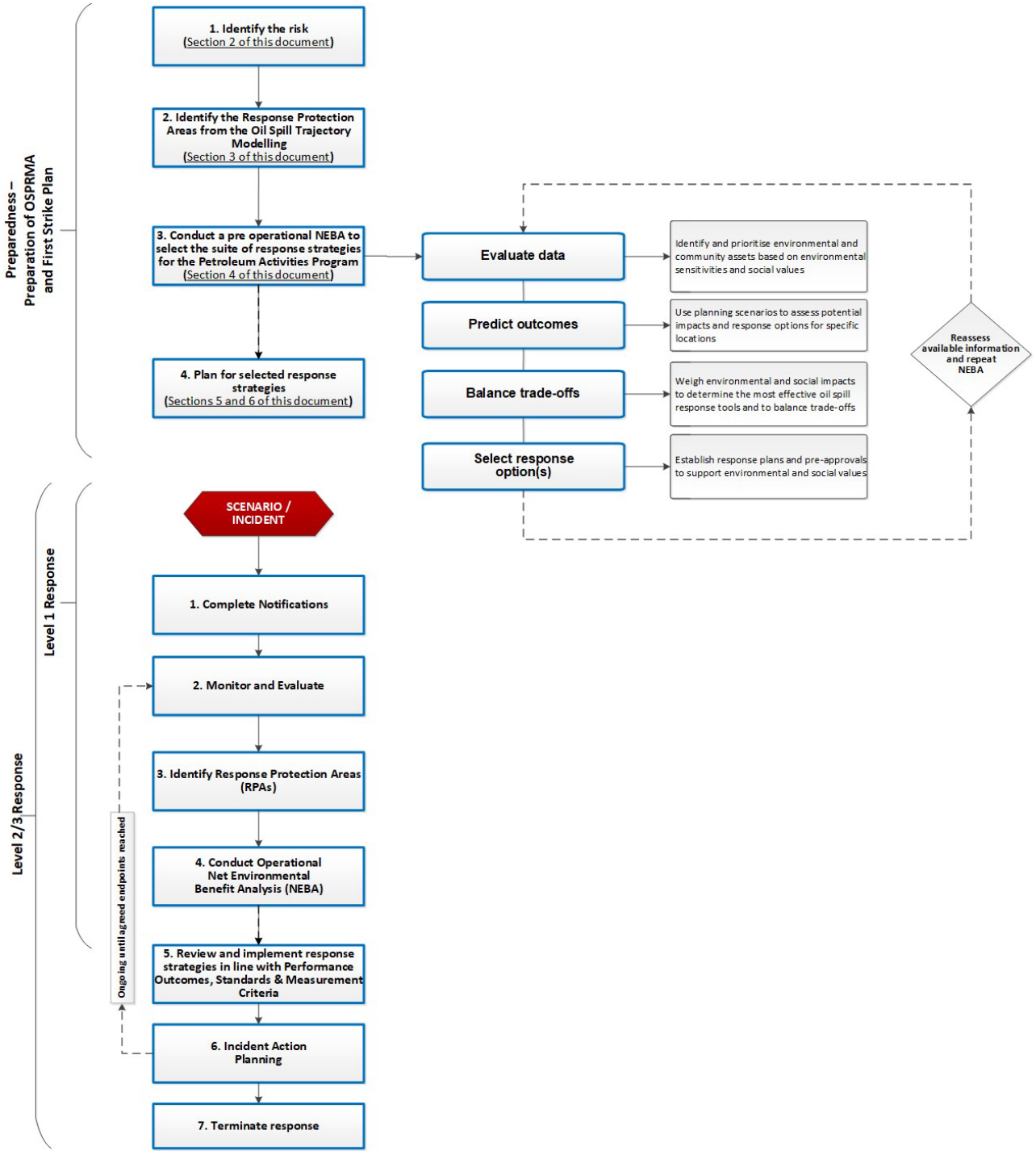


Figure 4-1: Net Environmental Benefit Analysis (NEBA) flowchart

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4.1 Pre-operational / Strategic NEBA

The pre-operational NEBA identifies positive and negative impacts to sensitive receptors from implementing the response techniques. Feasibility is considered by assessing the receptors potentially impacted above response thresholds (Section 2.3.3) and the surface concentrations (Section 2.3.3.1) from the stochastic 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 these activities 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 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

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 via vessel SOPEP

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- 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 (routinely implemented for spills if the OMP and SMP initiation criteria are met).

Table 4-1 include scenario-specific assessments of feasible response options and justification for the exclusion of inappropriate options. These options are evaluated against the scenario parameters including oil type, volume, characteristics, prevailing weather conditions, logistical support, and resource availability to determine deployment feasibility.

A shortlist of the feasible response options is then carried forward for the ALARP assessment. This assessment will typically result in a range of available options, that are deployed at different areas (at-source, offshore, nearshore and onshore) and different times during the response. The NEBA process assists in prioritising which options to use where and when, and timings throughout the response.

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Table 4-1: Response technique evaluation – Instantaneous Release of MGO (CS-08, CS-05)

Response Technique	Effectiveness	Feasibility	Decision	Rationale for the decision
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 MGO spill is a feasible response technique and an essential element of all spill response incidents. Outputs will be used to guide decision making on the use of other monitoring/response techniques and providing required information to regulatory agencies including AMSA and Western Australia Department of Transport and Major Infrastructure (WA DTMI).	Yes	Monitoring the spill will be necessary to: • validate trajectory and weathering models • determine the location and state of the slick • provide forecasts of spill trajectory • determine appropriate response techniques • determine effectiveness of response techniques • confirm impact pathways to receptors • provide regulatory agencies with required information.
Source control via vessel SOPEP	Controlling the spill of MGO at source would be the most effective way to limit the quantity of hydrocarbon entering the marine environment.	A spill of MGO from a vessel collision (CS-08 and CS-05) will be instantaneous and source control will be limited to what the vessel can safely achieve whilst responding to the incident.	Yes	Ability to stop the spill at source will be dependent upon the specific spill circumstances and whether or not it is safe for response personnel to access/isolate the source of the spill.
Surface dispersant application	Application of surface dispersant would likely reduce the volumes of hydrocarbons contacting sensitive surface receptors. Dispersant can also enhance biodegradation and may reduce volatile organic compounds (VOCs) in some circumstances therefore reducing potential health and safety risk to responders. Dispersant can increase dispersed/entrained hydrocarbons which can potentially have higher toxicity to biota in shallow water than naturally dispersed hydrocarbons. Subsurface oil plume likely to increase in size resulting in greater spatial extent of entrained oil. Entrained oil could potentially impact on sensitive shallow-water receptors e.g. corals, which otherwise may have been unaffected.	Whilst modelling for CS-08 predicts that floating oil will reach the minimum feasible threshold at which to commence surface dispersant application (>50 g/m^2) at the Dampier Archipelago, this technique is not suitable for MGO spills as this hydrocarbon is prone to rapid spreading and evaporation and are not considered effective when applied on thin surface films such as MGO 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 MGO 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 MGO is unnecessary as the hydrocarbon 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 in the sensitive nearshore habitats around the Dampier Archipelago.
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.	Whilst modelling predicts that floating oil will reach the minimum feasible threshold at which to commence containment and recovery (50 g/m^2) at the Dampier Archipelago, this technique is not suitable for MDO spills as it is prone to rapid spreading and evaporation and is deemed unsuitable for effective containment and recovery operations. The volatile nature of MGO is also likely to lead to unsafe conditions in the vicinity of the hydrocarbon thus this response technique is deemed inappropriate.	No	Containment and recovery would be an inappropriate response technique for a spill of MGO. Corralling a volatile hydrocarbon such as MDO is deemed unsafe for response personnel thus this response strategy is not considered feasible. In addition to the safety issues, most of the spilled diesel would have been subject to rapid evaporation prior to the commencement of containment and recovery operations.
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 real-time Monitor and Evaluate and Operational Monitoring activities indicate hydrocarbons are moving towards shorelines, pre-emptive assessments of sensitive receptors at risk and existing TRPs will be utilised to guide shoreline	Yes	The modelling undertaken for CS-08 predicts that shoreline receptors would be contacted by floating oil concentrations above 100 g/m^2.

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Response Technique	Effectiveness	Feasibility	Decision	Rationale for the decision
		protection and deflection operations, in agreement with WA DTMI (for Level 2/3 spills). For CS-08, first shoreline accumulation (>100 g/m^2) is predicted on day 0.33 at Dampier Archipelago at Legendre Island (69 m^3) and Keast Island (20 m^3). Feasibility of deploying this technique prior to shoreline contact will be assessed based on real-time monitoring. For scenarios CS-05, no shoreline receptors will be contacted at any threshold. Protection strategies can be used for targeted protection of sensitive resources. Access to sensitive areas may cause more negative impact than benefit.		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 a net environmental benefit.
Shoreline clean-up	Shoreline clean-up is an effective means of hydrocarbon removal from contaminated shorelines where coverage is at an optimum level of 250 g/m^2.	If real-time Monitor and Evaluate and Operational Monitoring activities indicate hydrocarbons will contact shorelines, pre-emptive assessments of sensitive receptors at risk, shoreline assessments and existing TRPs will be utilised to guide shoreline clean-up operations, in agreement with WA DTMI (for Level 2/3 spills). For CS-08, first shoreline accumulation (>100 g/m^2) is predicted on day 0.33 at Dampier Archipelago at Legendre Island (69 m^3) and Keast Island (20 m^3). For scenarios CS-05, no shoreline receptors will be contacted at any threshold. 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	The modelling undertaken for CS-08 predicts that shoreline receptors would be contacted by floating oil concentrations above 100 g/m^2. RPAs predicted to be contacted are based on modelling outputs and thus may differ under the prevailing conditions of a real event. If RPAs are at risk, based on real-time 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.	Due to the likely volatile atmospheric conditions surrounding a MGO spill, response options may be limited to hazing for the safety of response personnel. The modelling undertaken for CS-08 predicts floating oil above 10 g/m^2 for Dampier MP, Dampier Archipelago, Keast Island, Legendre Island and Madeleine Shoals receptors. It also predicts shoreline oil concentrations at or above the 100 g/m^2 threshold for Dampier Archipelago at Legendre Island, Cape Bruguieres and Keast Island. 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	This technique may prevent impact to and/or treat oiled wildlife providing net environmental benefit.

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5 HYDROCARBON SPILL ALARP PROCESS

Woodside's hydrocarbon spill ALARP process is aligned with guidance provided by NOPSEMA in *ALARP Guidance Note N-04300-GN0166* (2022) and *Oil Spill Risk Management Guidance Note N-04750-GN1488 A382148* (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

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- where the predicted change to environmental impact is compared against standard environmental values and sensitivities impacts using positive or negative criteria from the NEBA Impact Ranking Classification Guidance in Annex A.

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5.1 Monitor and evaluate

Monitor and evaluate includes the gathering and evaluation of data to inform the oil spill response planning and operations. It includes fate and trajectory modelling, spill tracking, weather updates and field observations. This response option is deployed in some capacity for every event.

Techniques may include:

- Predictive modelling of hydrocarbons to assess resources at risk
- Surveillance and reconnaissance to detect hydrocarbons and resources at risk
- Pre-emptive assessment of sensitive receptors at risk

Woodside maintains an *Operational Monitoring Operational Plan*. If shoreline contact is predicted, Response Protection Areas (RPAs) will be identified and assessed before contact. The Operational 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 Onslow.

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:

- First contact for floating surface oil in sufficient concentrations for effective monitor and evaluate techniques is expected:
  - for CS-08 with surface concentrations of 10 g/m^2 at Dampier Archipelago (3 hours)
  - no floating oil is predicted for CS-05 at 10 g/m2 for the duration of the spill. .
- The shortest timeframe that shoreline contact from floating oil is predicted is 0.13 days (Dampier Archipelago at Legendre Island) for CS-08.
- The shortest time to contact for entrained hydrocarbons greater than 100 ppb at shoreline receptors is 3 hours at Dampier Archipelago for CS-08 and 57 hours at Glomar Shoal for CS-05.
- 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.
- Response operations may take up to 3-4 days based on the predicted time to complete shoreline clean-up operations.

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5.1.2 Environmental performance based on need

Table 5-1: Environmental Performance – Monitor and evaluate

Environmental Performance Outcome		To gather information from multiple sources to establish an accurate common operating picture as soon as possible and predict the fate and behaviour of the spill to validate planning assumptions and adjust response plans as appropriate to the scenario.		
Control measure		**Performance Standard**		**Measurement Criteria (Section 5.9)**
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 Monitor and Evaluate 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 x trained aerial observers available to be deployed by day 1 from resource pool.	1, 2, 3B, 3C, 4
		4.2	1 x 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	Within 24 hours, in liaison with WA DTMI (for Level 2/3 incidents), deployment of 1 x specialists from resource pool in establishing the status of sensitive receptors.	1, 2, 3B, 3C, 4

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Environmental Performance Outcome		To gather information from multiple sources to establish an accurate common operating picture as soon as possible and predict the fate and behaviour of the spill to validate planning assumptions and adjust response plans as appropriate to the scenario.		
Control measure		**Performance Standard**		**Measurement Criteria (Section 5.9)**
	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 techniques 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 techniques including internal trajectory modelling capabilities, tracking buoys located offshore and contracted aerial observation platforms with access to trained observers.
- Woodside and its third-party service providers seek to maintain sufficient capability for the duration of the response.
- Woodside has assessed the existing capability available and considered potential alternative, additional and improved control measures. Where control measures have been selected and implemented, they are included in Section 6.1.

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5.2 Source Control 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 activity vessels.

The SOPEP provides guidance to the Master and Officers on board the vessel with respect to the extra steps to be taken when an unexpected pollution incident has occurred or is likely to occur. The SOPEP contains all information and operational instructions required by 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 MGO and thus minimise the release.

5.2.1 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 activities which are detailed in Section 6.9 of the EP. The vessel master's roles and responsibilities are described in EP Section 7.3.

Performance standards for each contracted activity vessel are detailed in the vessel's specific SOPEP.

These standards maintain availability of sufficient resources and are adequately tested for successful implementation of the SOPEP in the event of a hydrocarbon spill.

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5.3 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.

5.3.1 Response need based on predicted consequence parameters

The following statements identify the key parameters upon which the response need can be based:

- The shortest timeframe that shoreline contact from floating oil above response threshold (100 g/m^2) for scenario CS-08 is predicted to be 0.33 days at the Dampier Archipelago at Legendre Island (69 m^3), 0.71 days at Keast Island (20 m^3) and 2.04 days at Cape Bruguieres (5 m^3).
- Pre-emptive assessment and SCAT will be mobilised to RPAs contacted at 100 g/m^2, which occurs from day 0.33 at Dampier Archipelago at Legendre Island.
- The duration of the spill will be instantaneous with shoreline response operations extending to 3 to 4 days 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 5-2: Response Planning Assumptions – Shoreline Protection and Deflection

Response Planning Assumptions	
Safety considerations	Shoreline protection and deflection operations cannot be implemented if the safety of response personnel cannot be guaranteed. This requires an initial and ongoing risk assessment of health and safety hazards and risks at the site. Personnel safety issues may include: • hydrocarbon gas and/or liquid exposure • safe for deployment and conditions within range of vessels • high ambient temperatures.
Shoreline Protection and Deflection	One Shoreline Protection and Deflection operation may include; • Quantity of shoreline sealing boom (as outlined in TRP) • Quantity of fence or curtain boom (as outlined in TRP) • 1-2 trained supervisors • 8-10 personnel/ labour hire Specific details of each operation would be tailored to the Tactical Response Plan implemented (where available).

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5.3.2 Environmental performance based on need

Table 5-3: Environmental Performance – Shoreline protection and deflection

Environmental Performance Outcome		To stop hydrocarbons encountering particularly sensitive areas		
Control measure		**Performance Standard**		**Measurement Criteria (Section 5.9)**
6	Response teams	6.1	In liaison with WA DTMI (for Level 2/3 incidents), relevant Tactical Response Plans (TRPs) will be identified in the First Strike plan for activation within 12 hours of the release.	1, 3A, 3C, 4
		6.2	In liaison with WA DTMI (for Level 2/3 incidents), mobilise teams to RPAs within 24 hours of 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
		6.3	In liaison with WA DTMI (for Level 2/3 incidents), 1 operation mobilised within 24 hours to each identified RPA.	1, 3A, 3B, 4
		6.4	12 trained personnel available within 24 hours. Sourced through resource pool.	1, 2, 3A, 3B, 3C, 4
		6.5	Open communication line to be maintained between IMT and infield operations to confirm awareness of progress against plan(s)	1, 3A, 3B
		6.6	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
7	Response equipment	7.1	Equipment mobilised from closest location within 24 hours of a predicted impact.	1, 3A, 3C, 4
		7.2	Supplementary equipment mobilised from State and AMOSC, stockpiles within 48 hours.	1, 3C, 4
		7.3	Supplementary equipment mobilised from OSRL within 48 hours.	
		7.4	Woodside maintains integrated fleet of vessels. Additional vessels can be sourced through existing contracts/frame agreements	1, 3A, 3C, 4
8	Management of environmental impact of the response risks	8.1	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
		8.2	Shallow draft vessels will be used to access remote shorelines to minimise the impacts associated with seabed disturbance on approach to the shorelines	

The resulting shoreline protection and deflection capability has been assessed against the WCCS. The range of techniques provide an ongoing approach to shoreline protection and deflection at identified RPAs.

Under optimal conditions, during the surface releases the capability available exceeds the need identified. It indicates that, the shoreline protection and deflection capability have the following expected performance:

- Stochastic modelling scenarios indicate that first shoreline impact at Dampier Archipelago and Legendre Island within 0.33 days for the vessel collision at the State Waters boundary (CS-08). There is no shoreline contact for the spill scenarios at the offshore location (CS-05).
- Existing capability allows for mobilisation and deployment of 1 protection and deflection operation (approximately 10-12 responders) within 24 hours (if required). Whilst modelling predicts contact at a total of 3 RPAs above response threshold within 24-48 hours (Table 3-1), it should be noted that this is based upon 200 stochastic model runs thus it is unlikely to occur from a single release.

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- 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 6.3.

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5.4 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).

5.4.1 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 for the CS-08 scenario (vessel collision at the State Waters boundary) that shoreline contact from floating oil above threshold is predicted to be 0.33 days at Dampier Archipelago at Legendre Island (69 m^3) with shoreline accumulation peaking on Day 1. There is no shoreline contact predicted for CS-05.
- Pre-emptive assessment and shoreline assessments will be mobilised within 24 hours of shoreline contact.
- The nature of the spill is instantaneous occurring within a timeframe of hours, with shoreline response operations extending to 3-4 days based on the predicted time to complete shoreline clean-up operations.
- Following SCAT and agreement of prioritisation with WA Department of Transport and Major Infrastructure (DTMI), clean-up operations would commence until agreed termination criteria are reached.
- Arrangements for support organisations who provide specialist services (trained personnel, labour hire, shoreline clean-up, and site management equipment) and/or resources and should be tested regularly.
- Tactical Response Plans (TRPs) for Response Protection Areas (RPAs) along with other relevant plans, procedures and support documents should be in developed and in place for Operational and Support Sections. These should be reviewed and updated regularly.

In addition, a number of assumptions are required to estimate the response need for shoreline clean-up. These assumptions have been described in the table below.

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Table 5-4: 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.

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Table 5-5: Shoreline Clean-up techniques and recommendations

Technique	Description	Shoreline type		Application
		Recommended	Not recommended	
Natural recovery	Allowing shoreline to self-clean; no intervention undertaken.	Remote and inaccessible shorelines for personnel, vehicles and machinery. Other clean-up techniques may cause more damage than allowing the shoreline to naturally recover. Natural recovery may be recommended for areas with mangroves and coral reefs due to their sensitivity to disturbance from other shoreline clean-up techniques. High-energy shorelines: where natural removal rates are high, and hydrocarbons will be removed over a short timeframe.	Low-energy shorelines: these areas tend to be where hydrocarbon accumulates and penetrates soil and substrates.	May be employed, if the operational NEBA identifies that other clean-up techniques will have a negligible or negative environmental impact on the shoreline. May also be used for buried or reworked hydrocarbons where other techniques may not recover these.
Manual recovery	Use of manpower to collect hydrocarbons from the shoreline. Use of this form of clean-up is based on type of shoreline.	Remote and inaccessible shorelines for vehicles and machinery. Areas where shorelines may not be accessible by vehicles or machinery and personnel can recover hydrocarbons manually. Where hydrocarbons have formed semi-solid to solid masses that can be picked up manually. Areas where nesting and breeding fauna cannot or should not be disturbed.	Coral reef or other sensitive intertidal habitats, as the presence of a response may cause more environmental damage then allowing them to recover naturally. For some high-energy shorelines such as cliffs and sea walls, manual recovery may not be recommended as it may pose a safety threat to responders.	May be used for sandy shorelines. Buried hydrocarbons may be recovered using shovels into small carry waste bags, but where possible the shoreline should be left to naturally recover to prevent any further burying of hydrocarbons (from general clean-up activities).
Sorbents	Sorbent boom or pads used to recover fluid or sticky hydrocarbons. Can also be used after manual clean-up to remove any residues from crevices or from vegetation.	When hydrocarbons are free-floating close to shore or stranded onshore. As a secondary treatment method after hydrocarbon removal and in sensitive areas where access is restricted.	Access for deploying and retrieving sorbents should not be through soft or sensitive habitats or affect wildlife.	Used for rocky shorelines. Sorbent boom will allow for deployment from small shallow draught vessels, which will allow deployment close to shore where water is sheltered and to aid recovery. Sorbents will create more solid waste compared with manual clean-up, so will be limited to cleaning rocky shorelines.

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Technique	Description	Shoreline type		Application
		Recommended	Not recommended	
Vacuum recovery, flushing, washing	The use of high volumes of low-pressure water, pumping and/or vacuuming to remove floating hydrocarbons accumulated at shorelines.	Suited to rocky or pebble shores where flushing can remobilise hydrocarbons (to be broken up) and aid natural recovery. Any accessible shoreline type from land or water. May be mounted on barges for water-based operations, on trucks driven to the recovery area, or hand-carried to remote sites. Flushing and vacuum may be useful for rocky substrate. Medium- to high-energy shorelines where natural removal rates are moderate to high. Where flushed hydrocarbons can be recovered to prevent further oiling of shorelines.	Areas of pooled light, fresh hydrocarbons may not be recoverable via vacuum due to fire and explosion risks. Shorelines with limited access. Flushing and washing not recommended for loose sediments. High-energy shorelines where access is restricted.	High volume low pressure (HVLP) flushing and washing into a sorbent boom could be used for rocky substrate, if protection booming has been unsuccessful in deflecting hydrocarbons from these areas.
Sediment reworking	Movement of sediment to surf to allow hydrocarbons to be removed from the sediment and move sand via heavy machinery.	When hydrocarbons have penetrated below the surface. Recommended for pebble/cobble shoreline types. Medium- to high-energy shorelines where natural removal rates are moderate to high.	Low-energy shorelines as the movement of substrate will not accelerate the natural cleaning process. Areas used by fauna which could potentially be affected by remobilised hydrocarbons.	Use of wave action to clean sediment: appropriate for sandy beaches where light machinery is accessible.
Vegetation cutting	Cutting vegetation to prevent oiling and reduce volume of waste and debris.	Vegetation cutting may be recommended to reduce the potential for wildlife being oiled. Where oiling is restricted to fringing vegetation.	Access in bird-nesting areas should be restricted during nesting seasons. Areas of slow-growing vegetation.	May be used on shorelines where vegetation can be safely cleared to reduce oiling.
Cleaning agents (OSCA)	Application of chemicals such as dispersants to remove hydrocarbons.	May be used for manmade structures and where public safety may be a concern.	Natural substrates and in low-energy environments where sufficient mixing energy is not present.	Not recommended for shorelines. Could be used for manmade structures such as boat ramps.

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5.4.2 Environmental performance based on need

Table 5-6: 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 5.9)**
9	Shoreline responders	9.1	In liaison with WA DTMI (for Level 2/3 incidents), deployment of 1 shoreline clean-up teams to contaminated RPAs comprised of: • 1-2 trained specialists per operation • 8-10 personnel/labour hire • Personnel sourced through resource pool within 24 hours of request from the IMT.	1, 2, 3A, 3B, 3C, 4
		9.2	Relevant Tactical Response Plans (TRPs) will be identified in the first strike plan for activation within 12 hours of a predicted impact..	1, 3A, 3C, 4
		9.3	Clean-up operations for shorelines in line with results and recommendations from SCAT outputs	1, 3A, 3B
		9.4	All shoreline clean-up sites will be zoned and marked before clean-up operations commence to prevent secondary contamination and minimise the mixing of clean and oiled sediment and shoreline substrates.	
		9.5	In liaison with WA DTMI (for Level 2/3 incidents), mobilise and deploy 1-2 shoreline clean-up operations within 24 hours.	1, 2, 3A, 3C, 4
		9.6	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
		9.7	Open communication line to be maintained between IMT and infield operations to ensure awareness of progress against plan(s)	1, 3A, 3B
10	Shoreline clean up equipment	10.1	Contract in place with 3rd party providers to access equipment.	1, 3A, 3C, 4
		10.2	Equipment mobilised from closest stockpile (detail in activity specific ALARP) within 24 hours.	
		10.3	Supplementary equipment mobilised from State and AMOSC, stockpiles within 48 hours.	1, 3C, 4
		10.4	Supplementary equipment mobilised from OSRL within 48 hours.	
11	Management of environmental impact of the response risks	11.1	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
		11.2	Shallow draft vessels will be used to access remote shorelines to minimise the impacts associated with seabed disturbance on approach to the shorelines	
		11.3	Vehicular access will be restricted on dunes, turtle nesting beaches an in mangroves	
		11.4	Removal of vegetation will be limited to moderately or heavily oiled vegetation	
		11.5	Shoreline access routes with the least environmental impact identified will be selected by a specialist in SCAT operations.	
		11.6	Oversight by trained personnel who are aware of the risks	
		11.7	Trained unit leader's brief personnel of the risks prior to operations	

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 will cover required shoreline clean-up operations for the activity.

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Whilst modelling predicts contact at a total of 3 RPAs above response threshold within 24-48 hours (Table 3-1), it should be noted that this is based upon 200 stochastic model runs thus it is unlikely to occur from a single release.

Safety factors have also been considered, including the potential for personnel to be exposed to hydrocarbon gas vapours in the early stages of the response. In addition, given the natural weathering rate of MGO, mobilising additional capability is not expected to provide a material net environmental benefit, therefore 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 3-5 shoreline clean-up teams (approximately 45–60 responders in total) by day 3 using existing labour hire contracts with Woodside, AMOSC, Core Group, WA DTMI and OSRL team leads.
- Assessment of response capability indicates that for a worst-case scenario the actual teams required would meet the available capability by day 7 and the response would extend for up to 2-3 months.
- 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 Onslow and Dampier and management of response generated waste. From previous assessment of accommodation in Onslow and Dampier, Woodside estimates that current accommodation can cater for a range of 500-700 personnel per day for an ongoing operation.
- TRPs have been developed for all identified RPAs excepting international locations.
- Woodside has assessed the existing capability available and considered potential alternative, additional and improved control measures. Where control measures have been selected and implemented, they are included in Section 6.4.

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5.5 Oiled wildlife response (including hazing)

Oiled wildlife response (OWR) includes wildlife surveillance/reconnaissance, wildlife hazing, pre-emptive capture, and the capture, cleaning, treatment, and rehabilitation of animals that have been oiled. In addition, it includes the collection, post-mortem examination, and disposal of deceased animals that have succumbed to the effects of oiling.

For a petroleum activity spill in Commonwealth waters, Woodside will act as the Control Agency and will be responsible for the wildlife response. In such circumstances, Woodside would implement a response in accordance with the *Oiled Wildlife Operational Plan*, the WA Oiled Wildlife Response Plan (WAOWRP) (DBCA, 2022a) and the WA OWR Manual (DBCA, 2022b). The *Oiled Wildlife Operational Plan* includes the process for the IMT to mobilise resources depending on the nature and scale of the spill. Oiled wildlife operations would be implemented with advice and assistance from the Oiled Wildlife Advisor from the Department of Biodiversity, Conservation and Attractions (DBCA).

The key plan for OWR in WA is the WAOWRP (DBCA, 2022a). The WAOWRP establishes the framework for preparing and responding to potential or actual wildlife impacts during a spill and sets out the management arrangements for implementing an OWR in conjunction with the DTMI *State Hazard Plan – Maritime Environmental Emergencies* (SHP-MEE). It is the responsibility of DBCA to administer the WAOWRP under the direction of the DTMI. The WA OWR Manual (DBCA, 2022b) supports, and should be used in conjunction with, the WAOWRP. The purpose of the WA OWR Manual is to standardise the operating procedures, protocols and processes for an OWR during a spill event in WA waters, and to create alignment between the wildlife response processes and the overall incident response (DBCA, 2022b).

If a spill occurs in WA State waters or enters State waters, DBCA is the Jurisdictional Authority for wildlife, for level 2/3 spills, and will also lead the oiled wildlife response under the control of the DTMI. DBCA is the State Government agency responsible for administering the *Biodiversity Conservation Act 2016 (BC Act)* which has provisions for authorising activities that affect wildlife.

For level 1 spills in State waters, Woodside will be the Control Agency, including for wildlife response. It is, however, also an expectation that for level 2/3 petroleum activity spills, Woodside will conduct the initial first-strike response actions for wildlife response and continue to manage those operations until DBCA is activated as the lead agency for wildlife response and formal handover occurs. Following formal handover, Woodside will function as a support organisation for the OWR and will be expected to continue to provide planning and resources as required.

Woodside retains specialist personnel to support and manage oiled wildlife operations, including trained and competent responders for deployment in Exmouth and Dampier. Additional personnel would be sourced through Woodside's arrangements to support an oiled wildlife response as required.

5.5.1 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 5-7 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 activities are described in Section 4 of the Angel CCS Geophysical and Geotechnical Surveys Environment Plan.

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For WA, the Pilbara and Kimberley Regional Oiled Wildlife Plans (DBCA [formerly Department of Parks and Wildlife), 2014) provide useful information relating to wildlife priority response areas in their respective regions.

Table 5-7: Key at-risk species potentially in Response Protection Areas and open ocean where there is 10 g/m^2 floating or 100 g/m^2 shoreline

Species	Dampier Archipelago	Madeleine Shoals	Legendre Island	Keast Island	Dampier MP	Cape Bruguieres
Marine turtles	✓	✓	✓	✓	✓	✓
Whale sharks	✓	✓	✓	✓	✓	✓
Seabirds and/or migratory shorebirds	✓	✓	✓	✓	✓	✓
Cetaceans – migratory whales	✓	✓	✓	✓	✓	✓
Cetaceans – dolphins and porpoises	✓	✓	✓	✓	✓	✓
Dugongs	✓	✓	✓	✓	✓	✓
Sharks and rays	✓	✓	✓	✓	✓	✓

The following statements identify the key parameters upon which a wildlife response need can be based:

- For CS-08, floating oil at >10 g/m^2 is predicted at:
  - Dampier Archipelago within 3 hours
  - Madeleine Shoals within 3 hours
  - Legendre Island within 7 hours
  - Keast Island within 17 hours
  - Dampier MP within 27 hours
- The shortest timeframe for shoreline accumulation at response thresholds (>100 g/m^2) for CS-08 is predicted to be 0.33 days at Dampier Archipelago at Legendre Island (69 m^3) with shoreline accumulation peaking on Day 1. There is no shoreline contact predicted for CS-05.
- 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 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 low and medium, as defined in the WAOWRP (DBCA, 2022a) (Table 5-8).

Table 5-8: 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

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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 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.

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5.5.2 Environmental performance based on need

Table 5-9: 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 5.9)**
12	Wildlife response arrangements	12.1	Oiled Wildlife Operational Plan in place and utilised during a response to plan, coordinate, implement and terminate operations.	1, 3A, 4
		12.2	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
13	Wildlife response equipment	13.1	Maintain contract with AMOSC for immediate access to oiled wildlife response equipment.	1, 3C, 4
		13.2	Maintain contract with OSRL to access additional oiled wildlife response equipment.	1, 3C, 4
14	Wildlife responders	14.1	Two Oiled Wildlife Team Members to supervise the oiled wildlife operations who have completed an OWR Management course.	1, 2, 3B
		14.2	Maintain contract with AMOSC for immediate access to trained oiled wildlife response specialists.	1, 3B, 3C
		15.3	Maintain contract with OSRL to access additional trained OWR specialists.	1, 3B, 3C
		15.4	Open communication line to be maintained between IMT and infield operations to ensure awareness of progress against plan(s).	1, 3A, 3B
15	Management of environmental impacts of response risks	15.1	Oiled wildlife operations (including hazing) would be implemented with advice and assistance from the Oiled Wildlife Advisor from the DBCA, and in accordance with the processes and methodologies described in the WA OWRP and the relevant regional plan.	1

The resulting wildlife response capability has been assessed against the WCCS. The range of techniques provide an ongoing approach to response at identified RPAs.

Under optimal conditions, during the subsea or surface release, the capability available meets the need identified. It indicates that, the wildlife response capability has the following expected performance:

- undertake OWR first strike response:
  - mobilisation of Monitor and Evaluate operations to identify wildlife and RPAs contacted or at imminent risk of contact by hydrocarbons.
- availability and mobilisation of trained OWR personnel to supervise OWR activities.
- access to wildlife resources (personnel and equipment) to meet the needs where there are medium or high levels of wildlife impact.

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5.6 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.

5.6.1 Response need based on predicted consequence parameters

Table 5-10: Response Planning Assumptions – Waste Management

Response planning assumptions: Waste management	
Waste loading per m^3 oil recovered (multiplier)	Shoreline clean-up (manual) – approximately 5-10 multiplier for oily solid and liquid wastes generated by manual clean-up.
	Oiled wildlife response – approximately 1 m^3 of oily solid and liquid waste generated for each wildlife unit cleaned.

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5.6.2 Environmental performance based on need

Table 5-11: 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 5.9)**
16	Waste Management	16.1	Contract with waste management services for transport, removal, treatment and disposal of waste.	1, 3A, 3B, 3C, 4
		16.2	Access to at least 675 m^3 of solid and liquid waste storage available within 4 days upon activation of 3rd party contract.	
		16.3	Access to up to 16,800 m^3 within 2 weeks.	
		16.4	Recovered hydrocarbons and wastes will be transferred to licensed treatment facility for reprocessing or disposal.	
		16.5	Waste management provider support staff available year-round to assist in the event of an incident with waste management as detailed in contract.	
		16.6	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
		16.7	Waste management to be conducted in accordance with Australian laws and regulations.	1, 3A, 3B, 3C, 4
		16.8	Waste management services available and employed during response.	
17	Management of environmental impacts of response risks	17.1	Teams will segregate liquid and solid wastes at the earliest opportunity.	1, 3A, 3B, 3C, 4

The resulting waste management capability has been assessed against the WCCS. The range of techniques provide an ongoing approach to waste management at identified RPAs.

Given the largest shoreline volumes ashore are predicted during day 1 at a maximum volume of 151 m^3, and up to 2513 m^3 of waste is expected across all shoreline clean-up operations up until day 7, the capability available will exceed the need identified by day 6.

Whilst modelling predicts contact at a total of 3 RPAs above response threshold within 24-48 hours (Table 3-1), it should be noted that this is based upon 200 stochastic model runs thus it is unlikely to occur from a single release.

It indicates that the waste management capability has the following expected performance:

- Shoreline and nearshore operations may generate up to an additional 2513 m^3 for one week of offshore operations for the vessel collision at the State Waters boundary (CS-08).
- Woodside has assessed the existing capability available and considered potential alternative, additional and improved control measures. Where control measures have been selected and implemented, they are included in Section 6.6.
- Woodside's waste contractor has access to approximately 120,000 m^3 to treat overall waste volumes. The waste management requirements are within Woodside's and its service providers existing capacity.

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5.7 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)** – Is undertaken during the course of the spill and includes any physical. chemical and biological assessments that may guide operational decisions such as selecting the appropriate response and mitigation methods and/or to determine a response activity. This monitoring is additional to the activities (aerial/vessel surveillance, tracking buoys, oil spill trajectory modelling and satellite tracking) performed as part of the Monitor and Evaluate Strategy (Section 5.1). Information needs to be collected and processed rapidly to suit response needs, with a lower level of sampling and accuracy needed than for scientific purposes. For the OMP initiation and termination criteria during a Level 2-3 spill event refer to Table 9-1 of the Joint Industry OSM Framework.
- **Scientific Monitoring (SM)** – 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)[1], 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 (AEP, 2021) and describes how this Framework applies to Woodside activities and spill risks.

A series of Operational Monitoring Plans (OMPs) and Scientific Monitoring Plans (SMPs) form part of the Joint Industry OSM Framework and provide detail on monitoring design, standard operating procedures, data management, quality assurance and quality control and reporting.

Table 5-12 lists the Joint Industry OMPs and SMPs that are relevant to the Angel Carbon Capture and Storage Geophysical and Geotechnical Surveys. The aims/objectives of each OMP and SMP are listed in Tables 5-1 and 6-1 of the Joint Industry OSM Framework respectively. Woodside confirms it has reviewed these aims/objectives and determined they are all appropriate to address the potential impacts, risks and response activities of this activity, noting that dispersant application is not a suitable response strategy for this activity.

The OSM-BIP is structured so that it can provide a flexible framework that can be adapted to individual spill incidents. The Combined OSM Planning Area (refer to section 2.1 of the OSM-BIP), derived from all Woodside worst-case scenarios, represents the geographical extent of the Woodside OSM-BIP.

The OSM requirements for this activities credible spill scenarios, including monitoring priorities, implementation timeframes and capability is provided in ANNEX C: Angel CCS GPGT Surveys OSM Activity Specific Assessment.

Woodside will review the initiation criteria for OMPs and SMPs (provided in Table 9-1 [OMPs] and Table 9-2 [SMPs] of the Joint Industry Operational and Scientific Monitoring Framework (AEP, 2021)) during the preparation of the initial IAPs, and subsequent IAPs. If any initiation criteria are met, then that relevant OMP and/or SMP will be activated via the OSM Services Provider.

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Table 5-12: Joint industry OSM plans relevant to Angel CCS GPGT activities

Operational Monitoring	Relevant for the activity	Scientific Monitoring	Relevant for the activity
OM1: Hydrocarbon Characterisation	✓	SM1: Water Quality Impact Assessment	✓
OM2: Hydrocarbon in Water Assessment	✓	SM2: Sediment Quality Impact Assessment	✓
OM3: Hydrocarbon in Sediment Assessment	✓	SM3: Intertidal & Coastal Habitat Assessment	✓
OM4a: Dispersant Effectiveness Monitoring (Subsea)	×	SM4: Seabirds and Shorebirds Assessment	✓
OM4b: Dispersant Effectiveness Monitoring (Surface)	×	SM5: Marine mega-fauna Assessment	✓
OM5: Rapid Marine Fauna Surveillance	✓	SM6: Benthic habitat Assessment	✓
OM6: Shoreline Clean-up Assessment (SCAT)	✓	SM7: Marine fish and elasmobranch assemblages assessment	✓
		SM8: Fisheries Impact Assessment	✓
		SM9: Heritage Features Assessment	✓
		SM10: Social Impact Assessment	✓

5.7.1 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 stochastic run with the shortest timeframe for shoreline accumulation at 100 g/m^2 predicted is 8 hours to Dampier Archipelago, including Legendre Island (CS-08).

In addition, a number of assumptions are required to estimate the response need for SCAT. These assumptions have been described in Table 5-13. Consequently, for planning purposes and based on the modelling results for shortest time to contact at 100 g/m^2 there are two RPAs (Keast Island and Legendre Island) requiring four SCAT specialists. These resourcing requirements can be met via the resourcing arrangements outlined in Table 8-3 of the OSM-BIP.

Table 5-13: 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

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5.7.2 Summary – operational and scientific monitoring

A detailed OSM preparedness assessment is provided in ANNEX C: Angel CCS GPGT Surveys OSM Activity Specific Assessment.

The ALARP assessment for operational and scientific monitoring (Section 6.7) 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.

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5.7.3 Environmental performance based on need

Table 5-14: 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 5.9)**
18	OSM arrangements	18.1	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, 4
		18.2	OSM Implementation Lead responsible for overseeing implementation of OMP and SMP components in accordance with the Woodside OSM Bridging Implementation Plan[1].	
19	Access to adequate OSM capability to provide both initial and ongoing monitoring	19.1	Maintain contract with third-party OSM Services Provider to provide access to suitably qualified and competent personnel and equipment to assist in the implementation of monitoring in accordance with the capability and resourcing requirement described in Sections 8–10 of the OSM-BIP and the activity-specific capability assessment in Table C - 7 and Table C - 8.	3A, 3B, 3C, 4
		19.2	Obtain monthly capability reports from OSM Service Provider to demonstrate the capability described in Section 10 of the OSM-BIP is available throughout the activity	
		19.3	Annual testing of OSM Service Provider standby arrangements and activation process	
20	Baseline studies assurance	20.1	Annual review of environmental baseline data for all locations where spill modelling has predicted contact at relevant hydrocarbon thresholds within 7 days	3C
21	OSM-BIP maintenance	21.1	Annual review will be conducted according to the criteria in Section 11 of the OSM-BIP	3A, 3B, 3C, 4
22	OSM response	22.1	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 (AEP, 2021)	1
		22.2	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	
		22.3	If the OSM Implementation Lead identifies that additional monitoring capability is required beyond that described in Section 10 of the OSM-BIP, the need for these resources will be identified as soon as practicable and mobilised through the OSM Services Provider Contract, which includes provisions for scaling up personnel to meet monitoring program requirements	
		22.4	Decisions regarding co-mobilisation of monitoring teams will be determined following a spill event, as part of the Incident Action Planning process. These decisions will be made by the CIMT in consultation with the OSM Services Provider and relevant stakeholders, with due consideration given to safety, access to sensitive receptors, timing, and data quality requirements	
		22.5	OSM to be conducted in accordance with the Woodside OSM-BIP and, where relevant to the activity, the assessment detailed in ANNEX C: Angel CCS GPGT Surveys OSM Activity Specific Assessment	
		22.6	Monitoring prioritisation will be undertaken in accordance with the process and checklist provided in Table 13-1, informed by the guidance in Section C.2 of the OSPRMA	
		22.7	Mobilisation and implementation of OMPs and SMPs will be undertaken in accordance with the indicative timeframes and sequencing described in Section C.3 of the OSPRMA and Part B of the OSM-BIP	
		22.8	Implementation of OSM will comply with the minimum standards listed in Appendix A of the Joint Industry OSM Framework	

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		22.9	Once Scientific Monitoring data reports are drafted they will be peer reviewed by an expert panel for data integrity	
		22.10	OMPs and SMPs will be terminated in accordance with the termination criteria provided in Table 9-1 and 9-2 of the Joint Industry OSM Framework (AEP, 2021)	
23	Shoreline Clean-up Assessment Technique (SCAT)	23.1	Mobilisation within 24 hours, in agreement with WA DTMI (for Level 2/3 incidents), deployment of 2 x specialist(s) in SCAT from resource pool for each of the Response Protection Areas (RPAs) with predicted impacts	1, 2, 3B, 3C, 4
		23.2	Reports from OM6: Shoreline Clean-up Assessment will be provided to the IMT daily, detailing the assessed areas to maximise effective utilisation of resources.	1, 3B, 4
		23.3	If vessels are required for access, anchoring locations will be selected to minimise disturbance to benthic primary producer habitats. Where existing fixed anchoring points are not available, locations will be selected to minimise impact to nearshore benthic environments with a preference for areas of sandy seabed where they can be identified	1
		23.4	Shallow draft vessels will be used to access remote shorelines to minimise the impacts associated with seabed disturbance on approach to the shorelines	
		23.5	Shoreline access routes with the least environmental impact identified will be selected by a specialist in SCAT operations	
		23.6	Vehicular access will be restricted on dunes, turtle nesting beaches an in mangroves	

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5.8 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 criterion, the IMS records the evidence of the timeliness of all response actions included in the environmental performance standards and the plans used for the activity.

As the IMS does not directly remove hydrocarbons spilt into the marine environment there is no direct relationship to the response planning need.

5.8.1 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 IC or Deputy 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.

5.8.2 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.

5.8.3 Consultation engagement process

Woodside will consult relevant persons/ organisations engaged during the spill response in accordance with internal standards. This process requires that Woodside will:

- Undertake all required notifications (including government notifications) for relevant persons/ organisations in the region (identified in the First Strike Plan). This includes notification to mariners to communicate navigational hazards introduced through response equipment and personnel.
- In the event of a response, identify and engage with relevant persons/ organisations and continually assess and review.

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5.8.4 Environmental performance based on need

Table 5-15: 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 5.9)**
25	Operational SIMA	25.1	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
		25.2	Record the evidence and justification for any deviation from the planned response activities.	
		25.3	Record the information and data from operational and scientific monitoring activities used to inform the SIMA.	
26	Stakeholder engagement	26.1	Prompt and record all notifications (including government notifications) for persons/ organisations in the region are made.	
		26.2	In the event of a response, identification of relevant persons/ organisations will be re-assessed throughout the response period.	
		26.3	Undertake communications in accordance with: • Functional Support Team Guideline – Reputation • External Communication and Continuous Disclosure Procedure.	
27	Personnel required to support any response	27.1	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
		27.2	A duty roster of trained and competent people will be maintained to maintain minimum manning requirements are met all year round.	3C
		27.3	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
		27.4	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.	
		27.5	S&EM advisors will be integrated into CIMT to monitor performance of all functional roles.	
		27.6	Continually communicate the status of the spill and support Woodside to determine the most appropriate response by delivering on the responsibilities of their role.	
		27.7	Follow the Hydrocarbon Spill Australia Regulatory Framework, Operational Plans, FSPs, support plans and the IAPs developed.	1, 2, 3A, 4
		27.8	Contribute to Woodside's response in accordance with the aims and objectives set by the Incident Commander.	1, 2, 3B, 3C, 4

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5.9 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 CEM Competency Dashboard

The CEM competency dashboard records the number of trained and competent responders that are available across Woodside to participate in a response.

This number varies dependent on expiry of competency certificates, staff attrition, internal rotations, leave and other absences. As such the Dashboard is designed to identify the minimum manning requirements and to identify sufficient redundancy to cater for the variances listed above.

Figure 5-1shows the minimum manning numbers for the different hydrocarbon spill response roles and the number of qualified persons against those roles.

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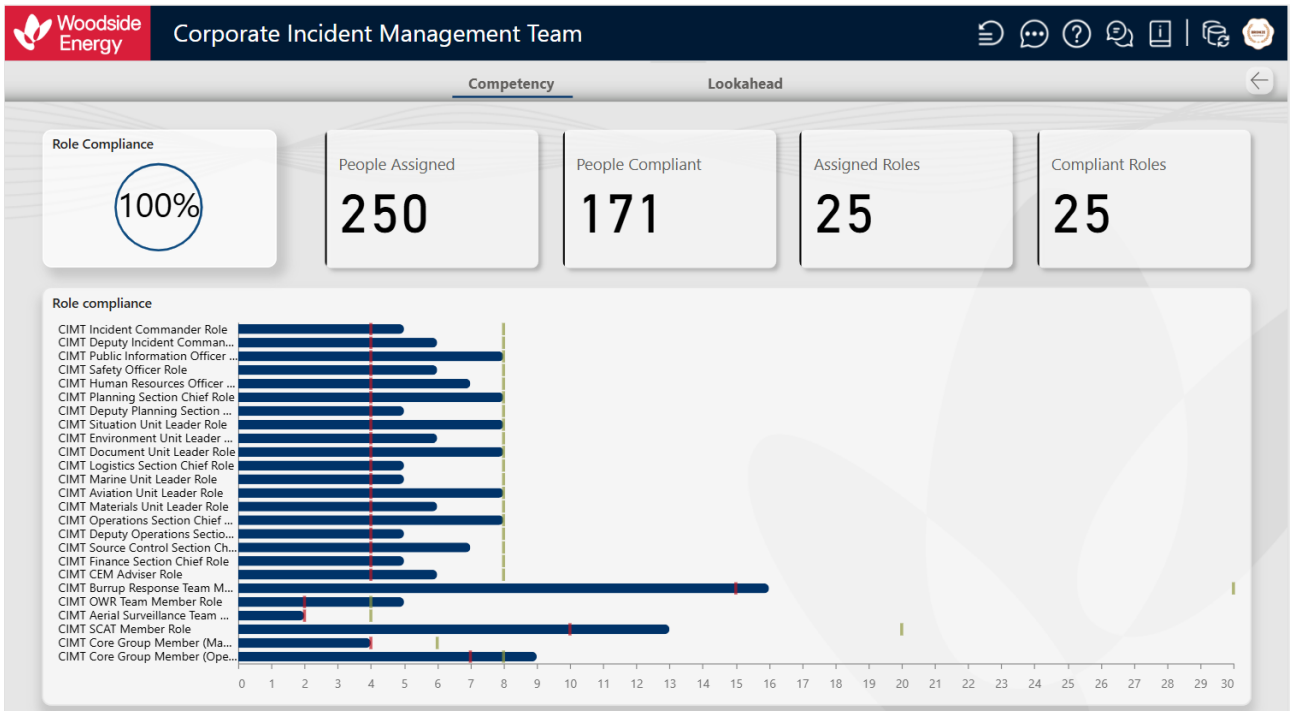


Figure 5-1: Example screenshot of the CEM dashboard

The Dashboard is one of Woodside's key means of monitoring its readiness to respond. It also demonstrates Woodside's ability to meet the requirements of the environmental performance standards that relate to filling certain response roles.

Figure 5-2shows an example of the SCAT role and the training modules required to show competence.

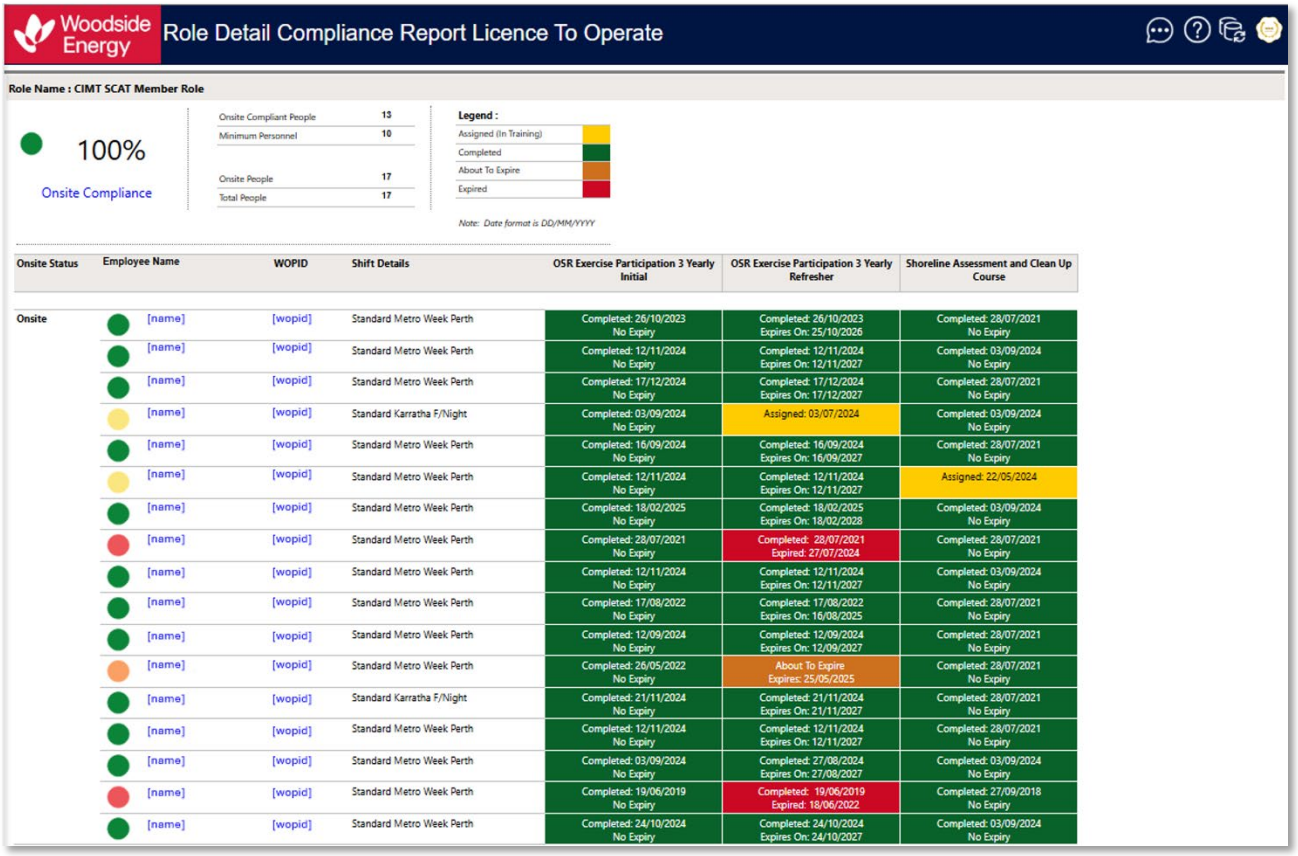


Figure 5-2: Example screenshot for the SCAT role

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Woodside also maintains access to a pool of trained responders which 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)
- Woodside contracted workforce

3. The Hydrocarbon Spill Preparedness Assurance Process

The Hydrocarbon Spill Response Team uses Woodside's assurance process to track compliance over three key control areas:

a) **Plans** – confirms all plans (including: Hydrocarbon Spill Australia Regulatory Framework, first strike plans, operational plans, support plans and tactical response plans) are current and in line with regulatory and internal requirements.

b) **Competency (personnel and testing)** – confirms the competency dashboard is up to date and there are the minimum numbers across CIMT, CMT and hydrocarbon spill response roles. The hydrocarbon spill training plan and exercise schedule, including testing of arrangements is also tracked. The Testing of Arrangements (TOA) register tracks the testing of all hydrocarbon spill response arrangements, key contracts and agreements in place with internal and external parties to ensure compliance.

c) **Capability (equipment and contracts)** – tracks and monitors capability that could be required in a hydrocarbon incident, including but not limited to: integrated fleet[7] vessel schedule, dispersant availability, rig/vessels monitoring, equipment stockpiles, tracking buoy locations and the CIMT duty roster.

The assurance process records how each commitment listed in the performance tables above is managed for ongoing compliance monitoring. The level of compliance can be reviewed in real time and is reported on a monthly basis through the CEM Function.

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 Planning Standard, Hydrocarbon Spill Planning Work Instruction (Australia), Hydrocarbon Spill Capability and Competency Standard, and Hydrocarbon Spill Response Standard

The Hydrocarbon Spill Planning Standard sets out how to plan and prepare for a liquid hydrocarbon spill to the marine environment. (Note, this standard does not apply to scenarios relating to gas releases in the marine environment). This standard details the requirement for an Oil Pollution Emergency Plan (OPEP) to be developed, maintained, reviewed, and approved by appropriate regulators (where applicable).

The Hydrocarbon Spill Planning Work Instruction (Australia) details planning for hydrocarbon spill response preparedness including:

- Developing OPEPs.
- Defining how spill scenarios are developed on an activity specific basis
- Priority response receptor determination.
- ALARP determination.

The Hydrocarbon Spill Capability and Competency Standard details:

- Developing spill training requirements and ongoing maintenance of training and competency for personnel

[7] The Integrated fleet consists of vessels from multiple operators that have been contracted to Woodside to undertake a number of duties including hydrocarbon spill response.

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- Developing requirements for spill exercising / testing of spill response arrangements
- Maintaining access to identified equipment, personnel and contracts.
- Ensuring compliance and assurance is undertaken in accordance with external and internal requirements.

The Hydrocarbon Spill Response Standard details requirements for appropriate hydrocarbon spill response standards including:

- safeguarding the safety and health of people (responders and communities)
- stopping the source of the spill as quickly as possible
- minimising the environmental and community impact

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6 ALARP EVALUATION

This Section should be read in conjunction with Section 5 which is the capability planned for this activity.

6.1 Monitor and evaluate – ALARP assessment

Alternative, additional and improved control measure options have been identified and assessed against the base capability described in Section 5 with 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 measure, 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. A$300,000.	This option is not adopted as the minimal environmental benefit gained is disproportionate to the cost and complexity of its implementation.	**No**

6.1.1.2 Additional Control Measures

Additional Control Measures considered *Additional control measures are evaluated in terms of them reducing an environmental impact or an environmental risk when added to the existing suite of control measures*					
Option considered	**Environmental consideration**	**Feasibility**	**Approximate Cost**	**Assessment conclusions**	**Implemented**
Additional personnel trained to use systems.	Current arrangement provides an environmental benefit in the availability of trained personnel facilitating access to 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. A$25,000.	This option is not adopted as the current capability meets the need.	**No**
Additional satellite tracking buoys to enable greater area coverage.	Increased capability does not provide an environmental benefit compared to the disproportionate cost in having an additional contract in place.	Tracking buoy on location at manned facility and additional needs are met from Woodside owned stocks in King Bay Support Facility (KBSF) and Exmouth or can be provided by service provider.	Cost for an additional satellite tracking buoy would be A$200 per day or A$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. Woodside 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. Woodside 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 and guidelines confirm all aircraft crews are competent for their roles. Woodside maintains a pool of trained and competent aerial observers with various home base locations to be called upon at the time of an incident. Regular audits of oil spill response organisations ensure training and competency is maintained.	Cost for additional trained aerial observers would be A$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**

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6.1.1.3 Improved Control Measures

Improved Control Measures considered *Improved control measures are evaluated for improvements they could bring to the effectiveness of adopted control measures in terms of functionality, availability, reliability, survivability, independence and compatibility*					
Option considered	**Environmental consideration**	**Feasibility**	**Approximate Cost**	**Assessment conclusions**	**Implemented**
Faster turnaround time from modelling contractor.	Improved control measure does not provide an environmental benefit compared to the disproportionate cost in having an additional contract in place.	External contractor on CIMT roster to be called as soon as required. However initial information needs to be gathered by CIMT team to request an accurate model. External contractor has person on call to respond from their own location.	Modelling service with a faster activation time would be achieved via membership of an alternative modelling service at an annual cost of A$50,000 for 24hr access plus an initial A$5000 per modelling run.	This option is not adopted as the minimal environmental benefit gained is disproportionate to the cost and complexity of its implementation.	**No**
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 Safety 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 activities:

- alternative
  - none selected
- additional
  - none selected
- improved
  - none selected.

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6.2 Source Control via Vessel SOPEP – ALARP Assessment

Alternative, additional and improved control measure options have been 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 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.

6.2.1 Source Control via Vessel SOPEP – Control Measure Options Analysis

6.2.1.1 Alternative Control Measures

Alternative Control Measures considered *Alternative control measures including potentially more effective and/or novel control measures are evaluated as replacements for an adopted control*					
Option considered	**Environmental consideration**	**Feasibility**	**Approximate Cost**	**Assessment conclusions**	**Implemented**
No reasonably practical alternative control measures identified					

6.2.1.2 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					

6.2.1.3 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					

6.2.2 Selected control measures

Following review of alternative, additional and improved control measures as outlined above, the following controls were selected for implementation for the activities:

- alternative
  - none selected
- additional
  - none selected
- improved
  - none selected.

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6.3 Shoreline Protection and Deflection - ALARP Assessment

Alternative, additional and improved control measure options have been identified and assessed against the base capability described in Section 5 with those that have been selected for implementation highlighted in green. Items highlighted in red have been considered and rejected on the basis that they are not feasible, the costs are clearly disproportionate to the environmental benefit, and/or the option is not reasonably practical. Control measures where there is not a clear justification for their inclusion or exclusion may be subject to a detailed ALARP assessment.

6.3.1 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.

6.3.2 Response Planning: Angel Carbon Capture and Storage Geophysical and Geotechnical Surveys – 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 operations confirm 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 commence mobilisation of shoreline protection equipment within 24 hours (if required). Stochastic modelling scenarios indicate that first shoreline impact at Dampier Archipelago at Legendre Island within 0.33 days for the vessel collision at the State Waters boundary (CS-08) scenario. Given shoreline contact at RPAs is predicted to arrive on day 0.33) at Dampier Archipelago at Legendre Island, the existing capability will meet the response need within 48 hours, guided by the ongoing monitor and evaluate operations.

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 techniques will inform the response, targeting RPAs where contact is predicted above response threshold levels.

Table 6-1 below outlines the capability required (number of RPAs predicted to be impacted) against the capability available (number of shoreline protection and deflection operations that can be mobilised and deployed). As can be seen from the table below. Woodside's capability meets the response planning need identified for shoreline protection and deflection operations at identified RPAs within 48 hours.

Table 6-1: Response Planning – Shoreline Protection and Deflection

Angel Carbon Capture and Storage Geophysical and Geotechnical Surveys		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 stochastic modelling) m^3	89	0	5	0	0	0	0	0	0	0	0	0
A	Capability Required												
A1	Number of RPAs contacted (> 100 g/m^2) – CS-08 (State Waters boundary)	2	0	1	0	0	0	0	0	0	0	0	0
A2	Number of RPAs contacted (> 100 g/m^2) - CS-05 (Offshore location)	0	0	0	0	0	0	0	0	0	0	0	0
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)	2	-1	0	-2	-2	-4	-6	-70	-70	-70	-330	-330
C2	SPD operations gap – per day (upper)	3	-2	-1	-4	-6	-8	-10	-84	-84	-84	-336	-336

A1 and A2 – 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 5.3),
C1 and C2 – the gap between the upper and lower number of shoreline protection and deflection operations required in A1 and A2 compared to the operations available in B1 and B2

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Table 6-2: Indicative Tactical response plan, aims and methods for identified RPAs

Tactical Response Plan	Response aims and methods
Legendre Island – Dampier	**First Response objective:** Ongoing Monitor and Evaluate activities and evaluation of hydrocarbon spill to adapt aims and response tactics to the evolving nature of the incident and to assist in locating relevant booming areas. **Second Response objective:** Protection of sensitive shorelines (mangrove) at Legendres Island through use of shoreline booms. Formation types to deploy will be dependent on the time available until the hydrocarbon impacts the shoreline and local geographical and tidal/ weather conditions **Third Response objective:** Clean-up impacted shoreline. Manual clean-up techniques, use of mechanical recovery methods and techniques where appropriate. **Fourth response aim:** Collection and specialist cleaning/ rehabilitation of oiled wildlife NOTES: • Relevant permissions must be sought from DBCA to carry out any response operations within the limits of the area. • In the event that the existing Woodside equipment stockpile at the King Bay Supply Base becomes exhausted, Woodside has an MoU with AMSA and the DTMI to provide surplus equipment from their stockpile. Additionally, Woodside is a member of both AMOSC and OSRL and has the ability to call upon their relevant technical advisory services and equipment stockpiles 24/7. • This TRP should be considered a draft until it has been verified and tested.
Dampier Archipelago – Inshore Waters of Mermaid Sound/ Dampier Archipelago (applicable to RPAs including; Gidley Island, Keast Island, Cape Bruguieres, Angel Island and Cohen Island)	**First response objective:** Ongoing Monitor and evaluate activities and evaluation of hydrocarbon spill to adapt aims and response tactics to the evolving nature of the incident and to assist in locating relevant booming areas. **Second response objective**: Recovery of floating oil at sea where possible through the use of skimming systems and other appropriate recovery devices to reduce shoreline impact. **Third response objective:** Protection of sensitive shorelines within Dampier Archipelago through use of shoreline booms. Formation types to deploy will be dependent on the time available until the hydrocarbon impacts the shoreline and local geographical and tidal/weather conditions. **Fourth response objective**: Clean-up of the shoreline. Manual clean up techniques, use of mechanical recovery methods and techniques where appropriate. NOTES: • Relevant permissions must be sought from DBCA to carry out any response operations within the limits of the area. • In the event that the existing Woodside equipment stockpile at the King Bay Supply Base becomes exhausted, Woodside has an MoU with AMSA and the DTMI to provide surplus equipment from their stockpile. Additionally, Woodside is a member of both AMOSC and OSRL and has the ability to call upon their relevant technical advisory services and equipment stockpiles 24/7. • This TRP should be considered a draft until it has been verified and tested.

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 Monitor and Evaluate activities/Operational Monitoring operations identify spill heading towards RPA(s) and there is sufficient time for deployment prior to shoreline contact.

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6.3.3 Shoreline Protection and Deflection – Control Measure Options Analysis

6.3.3.1 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 as the RPAs predicted to be contacted are based on modelling outputs and thus may differ under the prevailing conditions of a real event making it impractical to preposition equipment in advance. 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$6100 per package per day.	This option is not adopted as addition shoreline protection and deflection capability is not considered practicable due to uncertainty of the sites that may be contacted during a real spill event and the predicted time frames prior to contact. Safety factors have also been considered, including the potential for personnel to be exposed to volatile hydrocarbons in the early stage of the response. Given the rapid natural weathering rate of MGO, mobilising additional capability is not expected to provide a material net environmental benefit, therefore the current capability is considered to reduce the risk to ALARP.	**No**

6.3.3.2 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.	Whilst modelling for this activity predicts contact at 8 RPAs within 24-48 hours, it should be noted that this is based upon 200 stochastic model runs thus it is unfeasible for this to all occur from a single release. Safety factors have also been considered, including the potential for personnel to be exposed to volatile hydrocarbons in the early stage of the response. Given the rapid natural weathering rate of MDO, mobilising additional capability is not expected to provide a material net environmental benefit, therefore the current capability is considered to reduce the risk to ALARP. This option is not adopted as addition shoreline protection and deflection capability is not considered practicable in the time frames from a logistical perspective. Whilst modelling for this activity predicts contact at 3 RPAs within 72 hours, this is based upon 200 stochastic model runs thus it is unfeasible for this to all occur from a single release. Given the rapid natural weathering rate of MGO, mobilising additional capability is not expected to provide a material net environmental benefit, therefore the current capability is considered to reduce the risk to ALARP.	**No**

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Additional trained personnel	The level of training and competency of the response personnel allows the shoreline protection and deflection operation is delivered with minimum secondary impact to the environment. Training additional personnel does not provide an increased environmental benefit.	Additional personnel required to sustain an extended response can be sourced through the Woodside *People & Global Capability Surge Labour Requirement Plan*. Additional personnel sourced from contracted OSRO's (OSRL/AMOSC) to manage other responders. Response personnel are trained and exercised regularly in shoreline response techniques and methods. All personnel involved in a response will receive a full operational/safety briefing prior to commencing operations.	Additional Specialist Personnel would cost A$2000 per person per day.	This option is not adopted as the existing capability meets the need within 48 hours. Safety factors have also been considered, including the potential for personnel to be exposed to volatile hydrocarbons in the early stage of the response. Given the rapid natural weathering rate of condensate and MDO, mobilising additional capability is not expected to provide a material net environmental benefit, therefore the current capability is considered to reduce the risk to ALARP.	**No**

6.3.3.3 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	Modelling predicts floating or shoreline accumulation at threshold at day 0.33 at Dampier Archipelago and Legendre Island (CS-08), thus faster response times are not practicable.	Response teams, trained personnel, contracted oil spill response service providers, government agencies and the associated mitigation equipment required to enact an initial protection and deflection response will be available for mobilisation within 24-48 hrs of activation. Additional equipment from existing stockpiles and oil spill response service providers can be on scene within days.	The cost of establishing a local stockpile of new 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 additional shoreline protection and deflection capability is not considered practicable in the time frames from a logistical perspective. Safety factors have also been considered, including the potential for personnel to be exposed to hydrocarbon gas vapours in the early stage of the response. Given the rapid natural weathering rate of MGO, mobilising additional capability is not expected to provide a material net environmental benefit, therefore the current capability is considered to reduce the risk to ALARP.	**No**

6.3.4 Selected Control Measures

Following review of alternative, additional and improved control measures as outlined above, the following controls were selected for implementation for the activities:

- alternative
  - none selected
- additional
  - none selected
- improved
  - none selected.

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6.4 Shoreline Clean-up – ALARP Assessment

Alternative, additional and improved control measure options have been identified and assessed against the base capability described in Section 5 with those that have been selected for implementation highlighted in green. Items highlighted in red have been considered and rejected on the basis that they are not feasible, the costs are clearly disproportionate to the environmental benefit, and/or the option is not reasonably practical. Control measures where there is not a clear justification for their inclusion or exclusion may be subject to a detailed ALARP assessment.

6.4.1 Existing Capability – 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.

6.4.2 Response planning: Angel Carbon Capture and Storage Geophysical and Geotechnical Surveys – 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 activities.

Modelling predicts shoreline contact from day 0.33 at Dampier Archipelago at Legendre Island (69 m^3) for the vessel collision at the State Waters boundary (CS-08) with ongoing accumulation over the following days, Woodside is satisfied that the current capability (which is predicted to meet the response need within 72 hours) is managing risks and impacts to ALARP. The largest volumes ashore are Dampier Archipelago at Legendre Island with approximately 69 m^3 predicted on day 0.33. These volumes 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 6-2**.

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.

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 Dampier to undertake clean-up operations and to manage wastes generated during the response effort. From previous assessment of facilities in Dampier, 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 6.5.3.

Table 6-3: 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	89	0	5	0	0	0	0	0	0	0	0	0	0
	Oil remaining following response operations - m^3	0	26	0	0	0	0	0	0	0	0	0	0	0
A	**Capability Required (number of operations)**													
A1	**SCU operations required (lower)**	10	3	1	0	0	0	0	0	0	0	0	0	0
A2	**SCU operations required (upper)**	0	4	1	0	0	0	0	0	0	0	0	0	0
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)**	10	2	-3	-5	-8	-12	-15	-105	-105	-105	-560	-560	-560
C2	**SHC operations gap (upper)**	0	2	-4	-8	-10	-15	-20	-140	-140	-140	-560	-560	-560

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 5.4),
C1 and C2 – the gap between the upper and lower number of shoreline clean-up operations required in A1 and A2 compared to the operations available in B1 and B2

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6.4.3 Shoreline Clean-up – 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**
No reasonably practical alternative control measures identified					

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**
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 briefing prior to commencing operations.	Additional specialist personnel would cost A$2000 per person per day.	Modelling for this activity predicts shoreline contact at feasible response thresholds within 24 hours of the spill and Woodside's existing capability allows for mobilisation to commence within 24-48 hours. Larger numbers of additional personnel may also be detrimental to sensitive shoreline areas. Safety factors have also been considered, including the potential for personnel to be exposed to hydrocarbon gas vapours in the early stage of the response. Given the rapid natural weathering rate of MGO, mobilising additional capability is not expected to provide a material net environmental benefit, therefore the current capability is considered to reduce the risk to ALARP.	**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. 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.	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$2000 per person per day.	This option is not adopted as deployment of larger numbers of additional trained personnel may be detrimental to sensitive shoreline areas. Safety factors have also been considered, including the potential for personnel to be exposed to hydrocarbon gas vapours in the early stage of the response. Given the rapid natural weathering rate of MGO, mobilising additional capability is not expected to provide a material net environmental benefit, therefore the current capability is considered to reduce the risk to ALARP.	**No**

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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	Modelling predicts floating or shoreline impacts at threshold (>100 g/m^2) at day 0.33 (CS-08) , thus faster response times are not practicable.	Response teams, trained personnel, contracted oil spill response service providers, government agencies and the associated mitigation equipment required to enact an initial protection and deflection response will be available for mobilisation within 24-48 hrs of activation. Additional equipment from existing stockpiles and oil spill response service providers can be on scene within days.	The cost of establishing a local stockpile of new shoreline clean-up equipment closer to the expected hydrocarbon stranding areas is not commensurate with the need.	This option is not adopted as additional shoreline clean-up capability is not considered practicable in the time frames prior to contact. Safety factors have been considered, including the potential for personnel to be exposed to hydrocarbon gas vapours in the early stage of the response. Given the rapid natural weathering rate of MGO, mobilising additional capability is not expected to provide a material net environmental benefit, therefore the current capability is considered to reduce the risk to ALARP.	**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 activities:

- alternative
  - none selected
- additional
  - none selected
- improved
  - none selected.

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6.5 Oiled Wildlife Response – ALARP Assessment

Alternative, additional and improved control measure options have been identified and assessed against the base capability described in Section 5 with those that have been selected for implementation highlighted in green. Items highlighted in red have been considered and rejected on the basis that they are not feasible, the costs are clearly disproportionate to the environmental benefit, and/or the option is not reasonably practical. Control measures where there is not a clear justification for their inclusion or exclusion may be subject to a detailed ALARP assessment.

6.5.1 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.

6.5.2 Oiled Wildlife Response – Control Measure Options Analysis

6.5.2.1 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**

6.5.2.2 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 (>100 g/m^2) with shoreline is expected from day 1 (CS-08), given the low likelihood of such an event occurring and that the current capability meets the need within 48 hours of the spill, the cost of implementing measures to reduce the mobilisation time is considered disproportionate to the benefit. Oiled wildlife response capacity would be addressed for open Commonwealth waters through the AMOSC arrangements, as informed by monitor and evaluate operations, and under the direction of DBCA in nearshore areas. The cost and organisational complexity of this approach is moderate, and the overall delivery effectiveness is high.	Additional wildlife response resources could total A$1700 per operational site per day.	This option is not adopted as the existing capability meets the need within 48 hours of the spill.	**No**
Additional trained wildlife responders	Numbers of oiled wildlife are expected to be low in the remote offshore setting of the oiled wildlife response, given the distance from known aggregation areas. The potential environmental benefit of training additional personnel is expected to be low.	Current numbers meet the needs required within 48 hours of the spill and additional personnel are available through existing contracts with oil spill response organisations and environmental panel contractors. Additional equipment and facilities would be required to support ongoing response, depending on the scale of the event and the impact to wildlife and maybe sourced via existing contracts with OSROs. Materials for holding facilities, portable	Additional wildlife response personnel cost A$2000 per person per day	This option is not adopted as the existing capability meets the need within 48 hours of the spill.	**No**

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		pools, enclosures and rehabilitation areas would be sourced as required.			

6.5.2.3 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 not sufficient for expected first shoreline contact. This control measure provides increased effectiveness through faster mobilisation of specialists. Some net environmental benefit is expected if teams could be mobilised by Day 1.	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 from day 2.	**No**

6.5.3 Selected control measures

Following review of alternative, additional and improved control measures as outlined above, the following controls were selected for implementation for the activities:

- alternative
  - none selected
- additional
  - none selected
- improved
  - none selected.

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6.6 Waste Management – ALARP Assessment

Alternative, additional and improved control measure options have been identified and assessed against the base capability described in Section 5 with those that have been selected for implementation highlighted in green. Items highlighted in red have been considered and rejected on the basis that they are not feasible, the costs are clearly disproportionate to the environmental benefit, and/or the option is not reasonably practical. Control measures where there is not a clear justification for their inclusion or exclusion may be subject to a detailed ALARP assessment.

6.6.1 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.

6.6.2 Waste Management - Control Measure Options Analysis

6.6.2.1 Alternative Control Measures

Alternative Control Measures considered
Alternative control measure including potentially more effective and/or novel control measures are evaluated as replacements for an adopted control

Option considered	Environmental consideration	Feasibility	Approximate Cost	Assessment conclusions	Implemented
No reasonably practical alternative control measures identified					

6.6.2.2 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 Woodside's waste service provider'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 AMOSC/ OSRL. Existing arrangements meet identified need for the GPGT Surveys Program.	Cost for increased waste disposal capability would be approx. A$1300 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 from day 3.	**No**

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 response time	The access to Woodside's waste service provider's 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 the waste service provider'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**

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	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.				

6.6.3 Selected control measures

Following review of alternative, additional and improved control measures as outlined above, the following controls were selected for implementation for the activities:

- alternative
  - none selected
- additional
  - none selected
- improved
  - none selected.

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6.7 Operational and Scientific Monitoring – ALARP Assessment

Alternative, additional and improved options have been identified and assessed against the base capability described in Section 5 with those that have been selected for implementation which are highlighted in green. Items highlighted in red have been considered and rejected on the basis that they are not feasible, the costs are clearly disproportionate to the environmental benefit, and/or the option is not reasonably practical. Control measures where there is not a clear justification for their inclusion or exclusion may be subject to a detailed ALARP assessment.

6.7.1 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.

6.7.2 Operational and Scientific Monitoring – 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
Dedicated contracted OSM vessel (exclusive to Woodside)	Would provide marginally faster mobilisation time of first-strike monitoring resources. However, the timescale difference would be limited when compared to the availability of in-field support vessels which are equipped with water quality sampling equipment, meaning it would result in very minor to no environmental benefit.	Chartering and equipping additional vessels on standby for operational and scientific monitoring has been considered. The option is reasonably practicable but the sacrifice (charter costs and organisational complexity) is significant, particularly when existing contracted support vessels can be equipped with water quality sampling equipment. Additionally, vessels are not the limiting factor in deployment times, as the majority of operational and scientific monitoring components require trained specialists, who can take > 72 hours to mobilise.	The cost and organisational complexity of contracting a dedicated response vessel is considered disproportionate to the marginal environmental benefit by adopting these delivery options.	This control measure is not adopted as the costs and complexity are considered disproportionate to any environmental benefit that might be realised.	**No**

6.7.2.2 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
Pre-position a team of trained scientific monitoring personnel on standby in Dampier	Pre-positioning a team of trained scientific monitoring personnel closer to the spill location would result in quicker mobilisation times for one or two priority OMPs or SMPs to be implemented.	A trained team of scientific monitoring personnel positioned in Dampier could result in a more rapid deployment of initial monitoring. However, this option is reliant on suitable vessels being readily available in Dampier and not requiring relocation from nearby ports or adjacent offshore locations.	The costs of having a small team of trained scientific monitoring personnel available on standby in Dampier would be in excess of $3-4M / annum and would be an associated cost to the activity whether there was a spill or not.	The cost of maintaining a team of trained scientific monitoring personnel on standby in Dampier is considered disproportionate, as multiple teams of trained personnel are required to implement multiple OMPs and SMPs. It is considered more cost effective and feasible to pre-position first strike sampling kits on support vessels (see below).	**No**
Contract additional OSM Service Providers to increase availability of monitoring personnel in the first 2 weeks of the spill	The availability of additional monitoring personnel could theoretically increase the number of receptors and locations able to be monitored, however, the ability to deploy personnel would be subject to a range of feasibility considerations.	This option has been considered and evaluated; however, it has been discounted on the basis that deploying a significantly larger number of monitoring teams concurrently with response operations would introduce additional safety, environmental, and operational risks. The current resource assessment within Table C - 7indicates that up to 24 monitoring teams may be required during the initial two weeks of the response. Expanding this effort further by engaging additional contracted monitoring teams would likely result in increased simultaneous operations (SIMOPs), elevating the potential for vessel interactions, collision risks, anchoring impacts, and waste discharges, thereby increasing the overall risk profile. To ensure risk remains ALARP, a staged and scalable approach to resourcing has been adopted. Should additional monitoring capacity be required from week 3 onwards, this will	Cost to contract an additional OSM Service Provider.	The option to contract an additional OSM Service Provider to increase the number of contracted monitoring teams during the initial stages of the spill response has been assessed and found not to be reasonably practicable due to the elevated safety and environmental risks associated with SIMOPs, including vessel collisions, anchoring impacts, and waste discharges. These risks outweigh the marginal benefit of increased early-stage monitoring coverage, particularly given the scale of the existing response and monitoring deployment already planned.	**No**

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		be identified early through ongoing review of monitor and evaluate activities and existing monitoring efforts. Woodside will activate additional resourcing via its existing contract with the OSM Services Provider, thereby ensuring a streamlined and controlled expansion of effort. By this stage of the response, operational response activities are expected to have stabilised, reducing the likelihood and severity of SIMOPs-related risks. In addition, efficiencies may be gained by reallocating existing monitoring teams to other priority receptors where monitoring is still required, particularly in cases where termination criteria have been met at initial locations. This dynamic resourcing approach ensures that additional personnel are only deployed when necessary, thereby supporting both environmental and safety performance outcomes and maintaining ALARP principles throughout the monitoring program.		
Purchase initial water quality / hydrocarbon sampling kits for pre-positioning on nearby support vessels and develop technical procedure for sample collection	The availability of initial water quality / hydrocarbon sampling kits on nearby support vessels (and an accompanying technical procedure for sample collection) will provide an opportunity for more rapid initial measurements of hydrocarbon properties and concentrations. This information will provide important initial situational awareness information that will aid decision making in both monitoring and response efforts.	This control measure will improve the availability and timeframe for initialwater quality sampling.	Implementing this additional control measure will involve time and effort to source and supply initialsampling kits to the selected supply vessels. There will also be employee time involved in developing and conducting training to vessel crews on the technical procedure for sample collection.	Adoption of this control measure will provide an additional and quicker opportunity for initialwater quality sampling, resulting in improved situational awareness for decision making in monitoring and response teams.	**Yes**
Modify Woodside Aerial Surveillance Observer Log to enable observers to record marine fauna sightings (presence and type of fauna)	Initial aerial surveillance provides important information for decision making in response operations, but can also provide important initial environmental monitoring data. Amending the Woodside Aerial Surveillance Observer Log to include the ability to report on location, presence and type of fauna could assist in a more rapid, effective deployment of specialised OMP teams for Marine Fauna Assessment and Oiled Wildlife Response.	This control measure is considered reasonably practicable to implement.	Cost to modify the Aerial Surveillance Observer Log is minimal and is associated with time and effort of existing employees.	Adoption of this control measure is considered to be beneficial as it could assist in more effective and efficient deployment of fauna monitoring and response efforts.	**Yes**
Conduct periodical review of existing baseline data sources across receptors predicted to be contacted within 7 days at the low thresholds and a probability ≥10%	This ensures that receptors with deficient baseline data are identified. This a consideration for first-strike monitoring prioritisation and the finalisation of each SMP design	This control measure is considered reasonably practicable to implement.	Cost of contract with Service Provider.	Understanding the presence or absence, suitability and quality of baseline data for receptors predicted to be contacted within 7 days, at a probability ≥ 10%, is an important preparatory measure. Understanding which receptors have insufficient baseline data will help quickly guide monitoring prioritisation and the finalisation of each SMP design and whether there is a need to include alternative designs.	**Yes**

6.7.2.3 Improved Control Measures considered

Improved Control Measures considered *Improved control measures, including potentially more effective and/or novel control measures are evaluated as replacements for an adopted control*					
Option considered	**Environmental consideration**	**Feasibility**	**Approximate Cost**	**Assessment conclusions**	**Implemented**
Adoption of the OSRL OSM Supplementary Service Agreement for OSM capability provision	A Joint Industry capability provision has considerable benefits, including an improvement to industry OSM standards; improved reliability in accessing specialist personnel; efficiencies and capability growth associated with shared testing and exercising; and greater depth in Monitoring Service Provider (MSP) capability, with a centralised	This control measure has already been developed by Industry and is considered reasonably practicable to implement.	Cost of annual subscription to OSRL OSM Supplementary Service Agreement	Adopting this control measure involves additional costs, but the benefits of a Joint Industry OSM capability provision outweighs the costs and therefore this additional measure has been accepted.	**Yes**

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	contract coordinating multiple consultancies and MSPs.				
Determine the required specifications for suitable monitoring vessels, including specialised equipment for OMPs and SMPs (i.e. hiab) and the requirement of shallow draft vessels to access offshore islands and priority monitoring areas	Understanding vessel specification requirements for OSM at priority locations will result in quicker mobilisation times, and more effective monitoring, as correctly equipped vessels will be made available at the commencement the monitoring effort.	This control measure is considered reasonably practicable to implement.	Cost to determine vessel specifications is minimal and is associated with time and effort of existing employees.	This control measure would result in the correct vessels being mobilised for monitoring personnel and result in quicker implementation of monitoring.	**Yes**

6.7.3 Selected Control Measures

Following review of alternative, additional and improved control measures as outlined above, the following controls were selected for implementation for the GPGT Surveys Program:

- alternative
  - none selected
- additional
  - purchase water quality / hydrocarbon sampling kits for pre-positioning on nearby support vessels and develop technical procedure for sample collection
  - modify Woodside Aerial Surveillance Observer Log to enable observers to record marine fauna sightings (presence and type of fauna)
  - conduct periodical review of existing baseline data sources for receptors predicted to be contacted within 7 days, at the low thresholds and a probability ≥ 10%.
- improved
  - adoption of the OSRL OSM Supplementary Service Agreement for OSM capability provision
  - determine the required specifications for suitable monitoring vessels, including specialised equipment for OMPs and SMPs (i.e. hiab) and the requirement of shallow draft vessels to access offshore islands and priority monitoring areas

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6.7.4 ALARP and Acceptability Summary

ALARP and Acceptability Summary		
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, 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 GPGT Surveys Program, 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 activities 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.		

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7 ENVIRONMENTAL RISK ASSESSMENT OF SELECTED RESPONSE TECHNIQUES

The implementation of response techniques may modify the impacts and risks identified in the EP and response activities can introduce additional impacts and risks from response operations themselves. Therefore, it is necessary to complete an assessment to ensure these impacts and risks have been considered and specific measures are put in place to continually review and manage further impacts and risks to ALARP and an acceptable level. 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. Please refer to the EP for details regarding how these risks are being managed as they are not discussed further in this document. These risks include:

- 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:

- vessel operations and anchoring
- presence of personnel on the shoreline
- human presence (manual cleaning)
- vegetation cutting
- additional stress or injury caused to wildlife
- secondary contamination from the management of waste.

7.2 Analysis of impacts and risks from implementing response techniques

The table below compares the adopted control measures for this activity against the environmental values that can be affected when they are implemented.

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Table 7-1: Analysis of risks and impacts

	Environmental Value						
	Soil and Groundwater	Marine Sediment Quality	Water Quality	Air Quality	Ecosystems/ Habitat	Species	Socio-Economic
Monitor and evaluate		✓	✓		✓	✓	
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

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)
- 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 shoreline clean-up and oiled wildlife response operations
- semi-solids/solids (oily solids), collected during shoreline clean-up and oiled wildlife response operations
- debris (e.g. seaweed, sand, woods, plastics), collected during shoreline clean-up operations and oiled wildlife response.

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If not managed and disposed of correctly, wastes generated during the response have the potential for secondary contamination of previously uncontaminated areas and/ or 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 is 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 (Performance Standard (PS) 8.1, PS 11.1, PS 23.3).
- Shallow draft vessels will be used to access remote shorelines to minimise the impacts associated with seabed disturbance on approach to the shorelines (PS 8.2, PS 11.2, PS 23.4).

Presence of personnel on the shoreline

- Oversight by trained personnel who are aware of the risks (PS 11.6, PS 23.7).
- Trained unit leader's will brief personnel prior to operations of the environmental risks of presence of personnel on the shoreline (PS 11.7, PS 23.8).

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 11.5, PS 23.6).
- Vehicular access will be restricted on dunes, turtle nesting beaches and in mangroves (PS 11.3, PS 23.5).

Waste generation

- All shoreline clean-up sites will be zoned and marked before clean-up operations commence to prevent secondary contamination and minimise the mixing of clean and oiled sediment and shoreline substrates (PS 9.4).

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- Removal of vegetation will be limited to moderately or heavily oiled vegetation (PS 11.4).
- Teams will segregate liquid and solid wastes at the earliest opportunity (PS 17.1).

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 (PS 15.1).

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8 ALARP CONCLUSION

An analysis of alternative, additional and improved control measures has been undertaken to determine their reasonableness and practicability. The tables in Section 6 document the considerations made in this evaluation. Where the costs of an alternative, additional, or improved control measure have been determined to be clearly disproportionate to the environmental benefit gained from its adoption it has been rejected. Where this is not considered to be the case, the control measure has been adopted.

The risks from a hydrocarbon spill have been reduced to ALARP because:

- Woodside has a significant hydrocarbon spill response capability to respond to the WCCS through the control measures identified.
- New and modified impacts and risks associated with implementing response techniques have been considered and will not increase the risks associated with the activity.
- A consideration of alternative, additional, and improved control measures identified any other control measures that delivered proportionate environmental benefit compared to the cost of adoption for this activity ensuring that:
    - Known, reasonably practicable control measures have been adopted.
    - No additional, reasonably practicable alternative and/or improved control measures would provide further environmental benefit.
    - No reasonably practical additional, alternative, and/or improved control measure exists.
- A structured process for considering alternative, additional, and improved control measures was completed for each control measure.
- The evaluation was undertaken based on the outputs of the WCCS so that the capability in place is sufficient for all other scenario from this activity.
- The likelihood of the WCCS spill has been ignored in evaluating what was reasonably practicable.

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9 ACCEPTABILITY CONCLUSION

Following the ALARP evaluation process, Woodside deems the hydrocarbon spill risks and impacts have been reduced to an acceptable level by meeting all of the following criteria:

- Techniques are consistent with Woodside's processes and relevant internal requirements including policies, culture, processes, standards, structures and systems.
- Levels of risk/ impact are deemed acceptable by relevant persons/ organisations are aligned with the uniqueness of, and/or the level of protection assigned to the environment, its sensitivity to pressures introduced by the activity, and the proximity of activities to sensitive receptors, and have been aligned with Part 3 of the EPBC Act.
- Selected control measures meet requirements of legislation and conventions to which Australia is a signatory (e.g. MARPOL, the World Heritage Convention, the Ramsar Convention, and the Biodiversity Convention etc.). In addition to these, other non-legislative requirements met include:
    - Australian IUCN reserve management principles for Commonwealth marine protected areas and bioregional marine plans.
    - National Water Quality Management Strategy and supporting guidelines for marine water quality.
    - conditions of approval set under other legislation.
    - national and international requirements for managing pollution from ships.
    - national biosecurity requirements.
- Industry standards, best practices and widely adopted standards and other published materials have been used and referenced when defining acceptable levels. Where these are inconsistent with mandatory/ legislative regulations, explanation has been provided for the proposed deviation. Any deviation produces the same or a better level of environmental performance (or outcome).

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11 GLOSSARY AND ABBREVIATIONS

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 the activities.
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 activities.
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.

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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.

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11.2 Abbreviations

Abbreviation	Meaning
ADIOS	Automated Data Inquiry for Oil Spills
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
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
DBCA	Western Australia Department of Biodiversity, Conservation and Attractions (former Western Australian Department of Parks and Wildlife)
DTMI	Western Australia Department of Transport and Major Infrastructure
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
IUCN	International Union for Conservation of Nature
KBSF	King Bay Supply Facility

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Abbreviation	Meaning
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
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
PEARL	People, Environment, Asset, Reputation, and Livelihood
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
WHA	World Heritage Area
Woodside	Woodside Energy Limited
WCC	Woodside Communication Centre

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Abbreviation	Meaning
WWCI	Wild Well Control Inc
WCCS	Worst Case Credible Scenario
ZoA	Zone of Application

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ANNEX A: NET ENVIRONMENTAL BENEFIT ANALYSIS DETAILED OUTCOMES

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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 activities for Angel Carbon Capture and Storage Geophysical and Geotechnical Surveys. The complete list of potential receptor locations within the EMBA is included in Section 6.7.1 of the EP.

The locations utilised for the NEBA were limited to the identified RPAs 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 Angel Carbon Capture and Storage Geophysical and Geotechnical Surveys preoperational NEBAs contains the full assessments.

Table A-1: NEBA assessment technique recommendations for Angel Carbon Capture and Storage Geophysical and Geotechnical Surveys

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 via vessel SOPEP
Dampier Archipelago	Yes	No	N/A	No	Yes	Yes	Potentially	No	Yes	No	No	Yes
Cape Bruguieres	Yes	No	N/A	No	Yes	Yes	Potentially	No	Yes	No	No	Yes
Keast Island	Yes	No	N/A	No	Yes	Yes	Potentially	No	Yes	No	No	Yes
Legendre Island	Yes	No	N/A	No	Yes	Yes	Potentially	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 via vessel SOPEP
Is this response Practicable?	Yes	No	N/A	No	Yes	Yes	Potentially	No	Yes	No	No	Yes
NEBA identifies response potentially of net environmental benefit?	Yes	No	N/A	No	Yes	Yes	Potentially	No	Yes	No	No	Yes

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NEBA Impact Ranking Classification Guidance

To reduce variability between assessments, the following ranking descriptions have been devised to guide the workshop process:

			Degree of impact[8]	Potential duration of impact	Equivalent Woodside Corporate Risk Matrix Consequence Level
Positive	**3P**	**Major**	Likely to prevent: • behavioural impact to biological receptors • behavioural impact to socio-economic receptors e.g. changes to day-today business operations, public opinion/behaviours (e.g. avoidance of amenities such as beaches) or regulatory designations.	Decrease in duration of impact by > 5 years	N/A
	2P	**Moderate**	Likely to prevent: • significant impact to a single phase of reproductive cycle of biological receptors • detectable financial impact, either directly (e.g. loss of income) or indirectly (e.g. via public perception), for socio-economic receptors.	Decrease in duration of impact by 1–5 years	N/A

	1P	**Minor**	Likely to prevent impacts on:
			• significant proportion of population or breeding stages of biological receptors
			• socio-economic receptors such as:
			  ○ significant impact to the sensitivity of protective designation; or
			  ○ significant and long-term impact to business/industry.
				Decrease in duration of impact by several seasons (< 1 year)	N/A

	0	**Non-mitigated spill impact**	**No detectable difference to unmitigated spill scenario.**		
Negative	**1N**	**Minor**	Likely to result in: • behavioural impact to biological receptors • behavioural impact to socio-economic receptors e.g. changes to day-to-day business operations, public opinion/behaviours (e.g. avoidance of amenities such as beaches), or regulatory designations.	Increase in duration of impact by several seasons (< 1 year)	Increase in risk by one sub-category, without changing category (e.g. Minor (E) to Minor (D))
	2N	**Moderate**	Likely to result in: • significant impact to a single phase of reproductive cycle for biological receptors; or • detectable financial impact, either directly (e.g. loss of income) or indirectly (e.g. via public perception), for socio-economic receptors. This level of negative impact is recoverable and unlikely to result in closure of business/industry in the region.	Increase in duration of impact by 1–5 years	Increase in risk by one category (e.g. Minor (D) to Moderate (C or B))

	3N	**Major**	Likely to result in impacts on:
			• significant proportion of population or breeding stages of biological receptors
			• socio-economic receptors resulting in either:
			  ○ significant impact to the sensitivity of protective designation; or
			  ○ significant and long-term impact to business/industry.
				Increase in duration of impact by > 5 years or unrecoverable	Increase in risk by two categories (e.g. Minor (E) to Major (A))

.

[8] NOTE: the maximum likely impact should be considered; for example, if a spill were to directly impact the behaviour that results in an impact to reproduction and/or the breeding population (such as fish failing to aggregate to spawn), then the score should be a 2 or 3 rather than a 1. Similarly, if a change in behaviour resulted in an increased risk of mortality of a population, then it should be scored as a 2 or 3

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ANNEX B: MONITOR AND EVALUATE ACTIVATION AND TERMINATION CRITERIA

Table B-1: Operational monitoring 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

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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 -- Pre-emptive assessment of sensitive receptors at risk	Pre-emptive shorelines assessment aims to undertake a rapid assessment of the presence, extent and current status of shoreline sensitive receptors prior to contact from the hydrocarbon spill, by providing categorical or semi-quantitative information on the characteristics of resources at risk. The primary objective of pre-emptive shorelines assessment is to confirm understanding of the status and characteristics of environmental resources, predicted by predictive modelling and surveillance, to be at risk, to further assist in making decisions on the selection of appropriate response actions and prioritisation of resources. Indirectly, qualitative/semi-quantitative pre-contact information collected by pre-emptive shorelines assessment on the status of environmental resources may also aid in the verification of environmental baseline data and provide context for the assessment of environmental impacts, as determined through subsequent SMPs. Pre-emptive shorelines assessment would be undertaken in liaison with WA DTMI as the control agency once the oil is in State Waters (if a Level 2/3 incident).	Triggers for commencing pre-emptive shorelines assessment include: • Contact of a sensitive habitat or shoreline is predicted by predictive modelling and surveillance. • The pre-emptive assessment methods can be implemented before contact from hydrocarbons (once a receptor has been contacted by hydrocarbons it will be assessed via SCAT.	The criteria for the termination of pre-emptive shorelines assessment at any given location are: • Locations predicted to be contacted by hydrocarbons have been contacted. • The location has not been contacted by hydrocarbons and is no longer predicted to be contacted by hydrocarbons (resources should be reallocated as appropriate).

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ANNEX C: ANGEL CCS GPGT SURVEYS OSM ACTIVITY SPECIFIC ASSESSMENT

The Woodside OSM-BIP[1] comprehensively presents important information for OSM assessment and implementation, including the process for assessing OSM requirements for each activity. This Annex provides the activity-specific information required for the Angel CCS GPGT Surveys (hereafter referred to as the GPGT Surveys Program) OSM Assessment, including:

- OSM Planning Area;
- Monitoring priorities;
- Mobilisation and implementation timeframes; and
- Resourcing requirements and capability assessment.

C.1 Determine if the activity OSM Planning Area fits within the Combined OSM Planning Area

The OSM Planning Area for the GPGT Surveys Program credible spill scenarios (as shown in Figure C - 1) fits within the Combined OSM Planning Area (Figure 2-1 in the OSM-BIP).

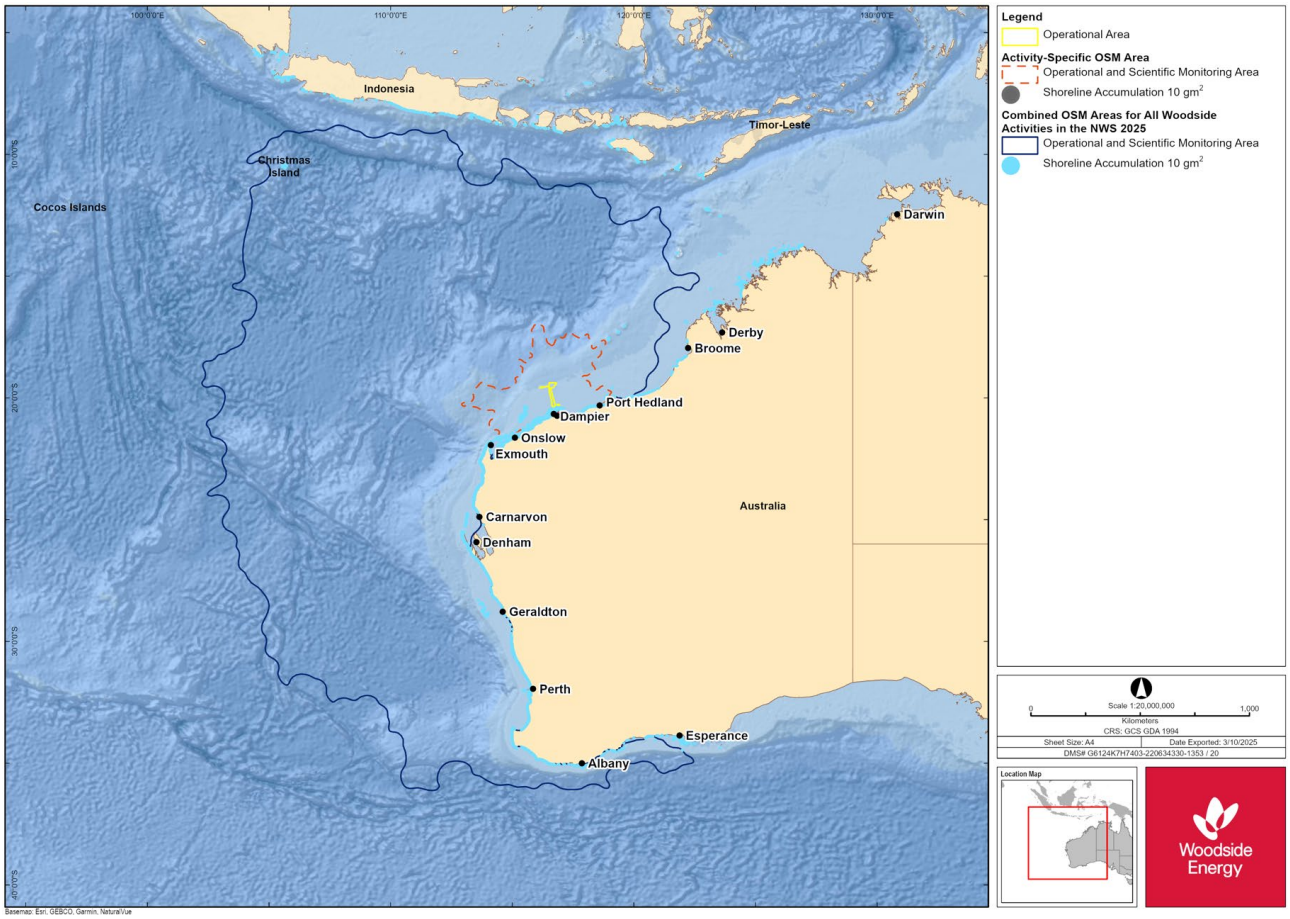


Figure C - 1: GPGT Surveys Program OSM Planning Area based on the area potentially contacted by the low (below ecological impact) hydrocarbon thresholds in the event of the worst-case credible spill scenarios (CS-05 and CS-08)

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C.2 Determine activity-specific monitoring priorities

Assess spill exposure risk using trajectory modelling

Woodside has reviewed the stochastic oil spill modelling results for the worst-case credible spill scenarios listed in Table 2-1 and as outlined in Section 2.2 of the OSM-BIP, identified receptors contacted at a higher probability of rapid contact. Table C - 1 presents the receptors contacted within 14 days at a probability >10% at the low threshold for dissolved (≥10 ppb), entrained (≥10 ppb), floating (≥1 g/m^2), and shoreline contact (≥10 g/m^2).

Evaluate availability of adequate baseline data

The availability of baseline data may influence monitoring priorities. Section 4 of the OSM-BIP outlines Woodside's baseline review and evaluation process. Using the Marine Environment Baseline Database, Woodside has reviewed baseline data for all of the receptors predicted of being rapidly contacted at a higher probability from CCS GPGT activities (Table C - 1) to help determine which receptors and key features have insufficient or no baseline data available and should be given a higher monitoring priority.

It is anticipated that some receptors and locations may be impacted before monitoring teams can begin the assessments. Given this constraint, and the limited baseline data at many priority monitoring locations and receptors, scientific monitoring will likely need to use a combination of approaches including gradient analysis, impact versus control comparisons, and lines of evidence methodologies. During a spill, it may be necessary to identify additional unaffected control sites for comparative monitoring where possible. As such, control sites have been factored into capability planning in Section C.4.

Consideration of Key Ecological Features, Biologically Important Areas and transient receptors

A number of broadscale ecological features are located within the OSM Planning Area and have been considered in monitoring prioritisation and OSM capability planning for the GPGT Surveys Program activities. The following Key Ecological Features (KEFs) (and their distances to the Operational Area) are noted in Table 4-14 of the EP:

- Ancient Coastline at 125 m depth contour (overlaps Operational Area)
- Glomar Shoals (overlaps Operational Area)

The Ancient Coastline KEF overlaps the GPGT Surveys Program Operational Area, so is at a higher risk of contact with hydrocarbons. All KEFs within the OSM Planning Area are described in detail in Section 4.7 and Appendix C-1 of the EP. These KEFs include subsea receptors therefore, OSM planning and resourcing for this activity includes relevant monitoring requirements, such as water quality, sediment quality, benthic habitats and fish for these features (refer to Table C - 3 and Table C - 7).

The OSM Area also overlaps a number of Biologically Important Areas (BIAs) with protected species potentially occurring in the area, as described in Section 4.6 of the EP and listed in Table C - 3. A number of the BIAs and protected species are located within the geographical extents of other receptors, such as marine turtles within the Dampier AMP, so these BIAs and protected species would automatically be included in the relevant SMPs for that receptor (refer to Table C - 6). Where BIAs, protected species and KEFs are situated away from the monitoring priorities, they will be captured in the Offshore Environs monitoring unit described in Table C - 6.

Initial Monitoring Priorities

Monitoring prioritisation during the initial stages of a spill should focus on sensitive receptors with the highest risk of adverse consequences and where oil spill modelling predicts high probability of rapid contact. During the initial monitoring response, emphasis will be placed on receptors contacted by floating, shoreline, and dissolved hydrocarbon phases. If a receptor is only contacted by low concentrations of entrained hydrocarbons and not by any other hydrocarbon phase, it will be considered a lower priority during the initial monitoring response.

To further guide monitoring prioritisation in the event of a spill, Woodside has also compared the availability of baseline data against the WA State-based protection prioritisation evaluation rankings. The WA DTMI protection priority rankings were established through the Western Australian Marine Oil Pollution Risk Assessment process. These rankings evaluate each receptor's vulnerability to marine oil spills, considering impacts from both floating and dissolved oil, as shown in Table C - 4. This information is then used to determine the resultant initial monitoring priorities for the activity.

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Table C - 1: GPGT Surveys Program credible spill scenarios stochastic modelling results for receptors with a probability of contact ≥10% and <14 hours

Receptor	Total contact probability (%) floating oil ≥1 g/m²	Min. arrival time floating oil ≥1 g/m² (hours)	Total contact probability (%) shoreline accumulation ≥10 g/m²	Min. arrival time shoreline accumulation ≥10 g/m² (hours)	Probability (%) entrained oil at ≥10 ppb	Min. arrival time entrained oil ≥10 ppb (hours)	Probability (%) dissolved oil at >10 ppb	Min. arrival time dissolved oil ≥10 ppb (hours)
Instantaneous Release of 150 m3 of MGO at the State Waters boundary-08 (CS-08)								
Dampier MP*	4.5	6	NA	NA	47.5	4	0.5	NC
Cape Bruguieres	0.5	30	0.5	30	10	33	<0.5	NC
Dampier Archipelago	9	2	4.5	7	30.5	2	0.5	NC
Cohen Island	1	15	1	16	15	15	<0.5	NC
Keast Island	1	16	1	16	12.5	17	<0.5	NC
Kendrew Island	<0.5	NC	0.5	100	19.5	40	<0.5	NC
Legendre Island	4.5	5	4.5	7	23.5	5	<0.5	NC
Lowendal Islands	<0.5	NC	<0.5	NC	11	263	<0.5	NC
Rosemary Island	0.5	24	0.5	26	24	24	<0.5	NC
Barrow Island MMA*	<0.5	NC	NA	NA	10.5	273	<0.5	NC
Montebello Islands MP	<0.5	NC	<0.5	NC	10	266	<0.5	NC
Cod Bank*	<0.5	NC	NA	NA	12	109	<0.5	NC
Courtenay Shoal*	<0.5	NC	NA	NA	13.5	41	<0.5	NC
Hammersley Shoal*	1	15	NA	NA	16.5	14	<0.5	NC
Madeleine Shoals*	12	3	NA	NA	50	3	1.5	NC
Instantaneous Release of 150 m3 of MGO at offshore location-05 (CS-05)								
Montebello MP	<0.5	NC	NA	NA	13	149	<0.5	NC

Key
Receptor contacted within 7 days
Receptor contacted within 7–14 days
Receptor only contacted by entrained hydrocarbons at a probability >10% and a concentration ≥10 ppb

*Submerged receptor that has no features above the sea surface. Modelling indicates 'contact' with these receptors when the hydrocarbons pass over the receptor on the sea surface;
NA = not applicable;
NC = no contact

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Table C - 2: Baseline data assessment versus SMPs for receptors predicted at being contacted >10% probability and <14 days

Receptor	SM1: Water quality impact	SM2: Sediment quality impact	SM3: Intertidal and coastal habitat	SM4: Seabirds and shorebirds	SM5: Marine megafauna – reptiles	SM5: Marine megafauna – whale sharks, dugong and cetacean	SM6: Benthic habitat	SM7: Marine fish and elasmobranch assemblages	SM8: Fisheries impact	SM9 & 10: Heritage and social impact
Dampier Archipelago					Turtle Rosemary Island Turtle elsewhere Sea snake				(Locations to be determined in consultation with key stakeholders to reflect current fishing zones/effort)	(Locations to be determined in consultation with key stakeholders)
Reefs, shoals and banks			N/A							

Key	
	No baseline data available, or existing data are inadequate in quality, scope, or relevance. Caveat: Additional relevant data may exist but be unknown and therefore not included in the assessment.
	Comprehensive baseline data or ongoing monitoring collected within the last 5 years. Data align with Joint Industry SMP parameters and methods, cover required species/communities and span the necessary spatial extent.
	Historical data (>5 years old) that remain of value, or some current but not extensive baseline data. Caveat: Additional relevant data may exist but be unknown and therefore not included in the assessment.
NA	N/A: not applicable as the receptor is submerged

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Table C - 3: Receptors contacted within 14 days at a probability >10% versus relevant OMPs and SMPs

Receptor	OM1: Hydrocarbon Characterisation	OM2: Hydrocarbon in Water	OM3: Hydrocarbon in Sediment	OM6: Shoreline Clean-up Assessment	OM5: Rapid Marine Fauna Surveillance	SM1: Water quality impact assessment	SM2: Sediment quality impact assessment	SM3: Intertidal and coastal habitat assessment	SM4: Seabirds and shorebirds	SM5: Marine megafauna assessment- reptiles	SM5: Marine megafauna assessment- whale sharks, dugong and cetacean	SM6: Benthic habitat assessment	SM7: Marine fish and elasmobranch assemblages assessment	SM8: Fisheries impact assessment	SM9 & 10: Heritage and social impact assessment
AMPs															
Dampier AMP	✓	✓	✓	-	✓	✓	✓	-	^	^	^	✓	✓	✓	✓
Islands															
Dampier Archipelago	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Reefs, Shoals and Banks	✓	✓	✓	-	✓	✓	✓	-	^	^	^	✓	✓	✓	^
KEFs															
Ancient Coastline at 125 m depth contour	-	✓	✓	-	✓	✓	✓	-	^	^	^	✓	-	-	-
Glomar Shoals	-	✓	✓	-	✓	✓	✓	-	^	^	^	✓	✓	-	-
BIAs															
Whale shark BIA	-	✓	-	-	✓	✓	-	-	-	-	✓	-	-	-	✓
Humpback whale BIA	-	✓	-	-	✓	✓	-	-	-	-	✓	-	-	-	-
Flatback turtle BIAs	-	✓	-	✓	✓	✓	✓	-	-	✓	-	✓	-	-	-
Green turtle BIAs	-	✓	-	✓	✓	✓	✓	-	-	✓	-	✓	-	-	-
Hawksbill turtle BIAs	-	✓	-	✓	✓	✓	✓	-	-	✓	-	✓	-	-	-
Loggerhead turtle BIAs	-	✓	-	✓	✓	✓	✓	-	-	✓	-	✓	-	-	-
Fairy tern BIA	-	✓	-	✓	✓	✓	✓	-	✓	-	-	-	-	-	-
Lesser crested tern	-	✓	-	✓	✓	✓	✓	-	✓	-	-	-	-	-	-
Roseate tern BIA	-	✓	-	✓	✓	✓	✓	-	✓	-	-	-	-	-	-
Wedge-tailed shearwater BIA	-	✓	-	✓	✓	✓	✓	-	✓	-	-	-	-	-	-

Key	
✓	It is highly likely that the initiation criteria would be met for the relevant OMP/SMP
^	It is possible that the initiation criteria may or may not be met for the relevant OMP/SMP
-	Not applicable

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Table C - 4: Initial monitoring priorities

Receptor	Key sensitivities / values	Relevant key periods	Baseline Priority	DTMI Ranking (Floating oil)	DTMI Ranking (Dissolved oil)	Initial Monitoring Priority
Dampier Archipelago	**Mangroves**	N/A	Low	3	3	Low
	Turtles Hawksbill (*Eretmochelys imbricata*) (critically endangered), green (*Chelonia mydas)* (endangered) and flatback (*Natator depressus)* (data deficient) turtles.	Nesting Oct to Mar	High, with the exception of Rosemary Island (low)	4	3	High
	Marine mammals Humpback whale (*Megaptera novaeangliae*) (least concern) migration area. Resident marine mammals include dugong (*Dugong dugon*) (vulnerable), Australian humpback dolphin (*Sousa sahulensis*) (vulnerable), and Indo-Pacific bottlenose dolphin (*Tursiops aduncus*) (unknown).	Humpback whale migration: Jun to Oct Humpback dolphins, Indo-Pacific bottlenose dolphins and dugongs: year-round	High	3	2	Medium
	Birds Many of the islands are important seabird nesting sites. Important feeding and resting area for migratory shorebirds, utilising many beaches and mudflats.	Nesting: Sep to Feb Migratory shorebirds: Aug to Apr	High	3	2	Medium
	Coral and other subsea benthic habitats	Coral spawning: Mar & Oct	Low	3	4	Medium
	Socio-economic Recreational fishing/ charter boats, tourism related to water-based activities and nature. National Heritage. Aboriginal sites. Camping beaches. Shipping fairway and proximity to major port.	Year-round	High	4	4	High
Dampier AMP	**Birds** Foraging habitat for seabirds.	Year-round	High	3	2	Medium
	Turtles Important inter-nesting habitat for hawksbill (Eretmochelys imbricata) (critically endangered), loggerhead (*Caretta caretta)*(vulnerable), green (*Chelonia mydas)* (vulnerable) and flatback (*Natator depressus)* (data deficient) turtles.	Oct-Mar	High	3	3	Medium
	Coral and other subsea benthic habitats The Dampier AMP is a hotspot for sponge biodiversity. The marine park includes several coral reefs and shoals, including, Delambre Reef and Tessa Shoals.	Coral spawning: Mar & Oct	Low	3	4	Medium

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Receptor	Key sensitivities / values	Relevant key periods	Baseline Priority	DTMI Ranking (Floating oil)	DTMI Ranking (Dissolved oil)	Initial Monitoring Priority
	Marine mammals Humpback whale (*Megaptera novaeangliae*) (least concern) migration area.	Humpback whale migration: Jun to Oct	High	3	2	Medium
	Socio-economic Recreational fishing Commercial fishing Shipping and port operations.	Year-round	High	4	4	High
Reefs, shoals and banks	**Coral and other subsea benthic primary producers**	Coral spawning: Mar & Oct	High	3	4	High
	Marine mammals Humpback whale (*Megaptera novaeangliae*) (least concern) migration area.	Humpback whale migration: Jun to Oct	High	3	2	Medium

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C.3 Mobilisation and timing of OMP and SMP implementation

Table C - 5 provides a list of OMPs and SMPs relevant to GPGT Surveys Program activities, as well as indicative timeframes for mobilisation of each OMP and SMP for key receptors. In addition, monitor and evaluate activities will capture initial observations of fauna, habitat, and other sensitive receptors. Water samples will be collected during vessel surveillance for OM1: Hydrocarbon Characterisation, when safe to do so. SCAT teams will begin mobilisation within 48–72 hours of notification and will also document fauna observations. This information will be provided to the IMT to aid early decision making per the process outlined in Section 18.1 of the OSM-BIP.

Table C - 5: Indicative OMP and SMP implementation schedule for OSM activities if initiation criteria are met

Proximity to spill source	Monitoring type	0–48 hours from OSM activation	Within 72 hours of OSM activation	~5–7 days from OSM activation	Weeks 1–2 from OSM activation	Ongoing
Spill site and surrounding waters	OM	• Activation of OMP Team Leads. • Finalise OMPs. • Aerial surveillance – which will also document fauna observations. • Commence activation and mobilisation of OM personnel.	• OM1: Hydrocarbon Characterisation, where resources are available (e.g. Supply Vessel with onboard sampling equipment). • OM2: Hydrocarbons in Water Assessment • OM3: Hydrocarbons in Sediment Assessment • OM5: Rapid Marine Fauna Surveillance • Continue to finalise OMPs. • Continue to activate and mobilise OM personnel.	Continued (as per ongoing arrangements)	Continued (as per ongoing arrangements)	As results from implemented OMPs are available, data are provided to relevant personnel in IMT (e.g. Situation Unit) and used in the Incident Action Planning process for the next operational period. OMP is redesigned or reallocated according to the specifics of the actual spill.
	SM	• Commence activation and mobilisation process. • Activation of SMP Team Leads.	• Continue to activate and mobilise personnel. • Work on finalising SMPs.	• SM1: Water Quality Impact Assessment • SM2: Sediment Quality Impact Assessment • SM6: Benthic Habitat Assessment • SM7: Marine fish and elasmobranch assemblages assessment	Continued	Continue SMP monitoring until termination criteria are met
Sensitive receptors predicted to be contacted within 7 days	OM	• Activation of OMP Team Leads. • Finalise OMPs. • Aerial surveillance – which will also document fauna observations. • OM6: Shoreline Clean-up Assessment	• OM1: Hydrocarbon Characterisation • OM2: Hydrocarbons in Water Assessment • OM3: Hydrocarbons in Sediment Assessment • OM5: Rapid Marine Fauna Surveillance • Continue to finalise OMPs.	Continued (as per on-going arrangements)	Continued (as per on-going arrangements)	As results from implemented OMPs are available, data are provided to relevant personnel in IMT (Situation Unit Lead) and used in the Incident Action Planning process for the next operational period. OMP is redesigned or reallocated according to the specifics of

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Proximity to spill source	Monitoring type	0–48 hours from OSM activation	Within 72 hours of OSM activation	~5–7 days from OSM activation	Weeks 1–2 from OSM activation	Ongoing
		• Commence activation and mobilisation of OM personnel.	• Continue to activate and mobilise OM personnel.			the actual spill until termination criteria are met
	SM	• Activation of SMP Team Leads and finalisation of SMPs.	• Continue to activate and mobilise personnel. • Work on finalising SMPs.	• SM1: Water Quality Impact Assessment • SM2: Sediment Quality Impact Assessment • SM4: Seabirds and Shorebirds • SM3: Intertidal and Coastal Habitat Assessment • SM5: Marine Mega-fauna Assessment – Reptiles • SM5: Marine Mega-fauna Assessment –Cetaceans, Whale Sharks, Dugong • SM6: Benthic Habitat Assessment • SM7: Marine Fish and Elasmobranch Assemblages assessment • SM8: Fisheries impact assessment • SM9: Heritage Features Assessment • SM10: Social Impact Assessment	Continued	Continue SMP implementation until termination criteria are met.
Sensitive receptors (including shorelines, reefs, banks and shoals) predicted to be contacted week 1–2	OM	–	–	• Additional Activation of OMP Team Leads. • Commence activation and mobilisation of additional OM personnel.	• Continue to finalise OMPs. • Continue to activate and mobilise OM personnel. • OM1: Hydrocarbon Characterisation • OM2: Hydrocarbons in Water Assessment • OM3: Hydrocarbons in Sediment Assessment • OM5: Rapid Marine Fauna Surveillance • OM6: Shoreline Clean-up Assessment	As results from implemented OMPs are available, data are provided to relevant personnel in IMT (Situation Unit Leader) and used in the Incident Action Planning process for the next operational period. OMP is redesigned or reallocated according to the specifics of the actual spill until termination criteria are met

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Proximity to spill source	Monitoring type	0–48 hours from OSM activation	Within 72 hours of OSM activation	~5–7 days from OSM activation	Weeks 1–2 from OSM activation	Ongoing
	SM	–	–	• Additional Activation of SMP Team Leads. • Commence activation and mobilisation of additional SM personnel.	• SM1: Water Quality Impact Assessment • SM2: Sediment Quality Impact Assessment • SM3: Intertidal and Coastal Habitat Assessment • SM4: Seabirds and Shorebirds • SM5: Marine Mega-fauna Assessment – Reptiles • SM5: Marine Mega-fauna Assessment –Cetaceans, Whale Sharks, Dugong • SM6: Benthic Habitat Assessment • SM7: Marine Fish and Elasmobranch Assemblages assessment • SM8: Fisheries impact assessment • SM9: Heritage Features Assessment • SM10: Social Impact Assessment	Continue SMP monitoring until termination criteria are met

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C.4 Determine the OSM resourcing requirements and assess capability for the activity

To guide the resourcing requirements assessment for the GPGT Surveys Program activity, the spill scenario (see Table 2-1) most likely to require the greatest initial capability was selected for further assessment. Selection was based on stochastic modelling results, focussing on the scenario predicted to contact the greatest number of receptors at the low hydrocarbon thresholds for floating, shoreline or dissolved contact within 14 days and at the highest contact probabilities. If a receptor is only contacted by low concentrations of entrained hydrocarbons and not by any other hydrocarbon phase, it will be considered a lower priority during the initial monitoring response as outlined in Section 2.2 of the OSM-BIP. The Instantaneous Release of 150 m^3 of MGO at the State Waters boundary-08 (CS-08) was identified as the worst-case scenario, affecting the most locations within 14 days and determined to require the greatest OSM capability.

The first 14 days of the response has been selected as the focus area for the OSM resourcing assessment as it is the period during which resources are likely to be overwhelmed, before additional resources (including appropriately qualified personnel, suitable vessels and additional monitoring equipment) can be scaled in locally and from interstate and international resources. Other factors influencing the selection of the scenario with the highest capability requirements were location of the spill, proximity to receptors, and hydrocarbon properties. The OSM Services Provider Contract includes provision of scale-up resources, which would be considered and mobilised as soon as practicable following the spill.

Monitoring Units

Using the stochastic modelling results, Woodside has grouped the monitoring priorities for GPGT Surveys Program activities into monitoring 'units' (Table C - 6). These units incorporate all of the possible receptors that may be contacted by the GPGT Surveys Program scenarios shown in Table C - 1 at a probability >10%. Receptors only contacted by entrained hydrocarbons and no other phase of hydrocarbon were not included. These unit groupings are based on consultation with experienced monitoring personnel and planners, who often group these receptors together for time-bound monitoring projects. The grouping of units is based on factors such as access and distance to ports, SIMOPS of multiple vessels and teams working in a close area, travel time between individual locations/receptors and time taken to collect samples for each SMP.

The monitoring units presented in Table C - 6 also include KEFs, BIAs and transient species. Additional information on the seasonality of the receptors can be found in Appendix B of the OSM-BIP and in Section 4.7 of the EP. Each monitoring unit will require 1-2 teams during the initial response (first 14 days). The number of teams allocated to each unit will depend on the extent of the spill, the outcome of the monitoring prioritisation finalised at the time of the spill (Section 13 of the OSM-BIP), the ALARP assessment, and SIMOPs.

It should be noted that not all monitoring units will be contacted by a single spill and that the list below has been generated from stochastic modelling results.

Table C - 6: Monitoring units for GPGT Surveys Program activities relevant to stochastic modelling results

Monitoring Unit	Receptors within Monitoring Unit
Dampier	• Dampier Archipelago and Islands • Dampier AMP* • Madeleine Shoals* • Hammersley Shoal* • Courtenay Shoal* • Marine turtle BIAs • Pygmy blue whale (distribution) BIA • Seabird and shorebird BIAs • Humpback whale (migration) BIA
Offshore Environs	• Rankin Bank* • Glomar Shoals* • Ancient Coastline at 125 m depth contour* • Continental Slope Demersal Fish Communities* • Humpback whale (migration) BIA • Pygmy blue whale (distribution) BIA

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Monitoring Unit	Receptors within Monitoring Unit
	• Whale shark (foraging) BIA • Marine turtle BIAs • Seabird and shorebird BIAs
Control	• Control sites

**Submerged receptor that has no features above the sea surface.*

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Table C - 7: Resources required for initially implementing operational monitoring plans for the PAP spill scenarios

OMP	Week 1 (total)	Week 2 (total)	Arrangement
OM1: Hydrocarbon characterisation*^	1 team (spill site and surrounds) 1 team Dampier Unit# 1 team Offshore Environs Unit **Total 3 teams**	1 team (spill site and surrounds) 1 team Dampier Unit# 1 team Offshore Environs Unit **Total 3 teams**	OSRL OSM Supplementary Service Agreement Woodside Contracted Vessel Providers Laboratory arrangements
OM2: Hydrocarbon in water assessment*	Refer to OMP: Hydrocarbon properties and weathering behaviour at sea resourcing* (all sites)		OSRL OSM Supplementary Service Agreement Woodside Contracted Vessel Providers
OM3: Hydrocarbon in sediment assessment*	Refer to OMP: Hydrocarbon properties and weathering behaviour at sea resourcing* (all sites)		OSRL OSM Supplementary Service Agreement Woodside Contracted Vessel Providers
OM5: Rapid marine fauna surveillance	1 team to conduct aerial surveys for spill site and Dampier Unit (2 observers per aircraft) 1 team to conduct aerial surveys for Offshore Environs Unit (2 observers per aircraft) **Total 2 teams** Note: Fauna related SMPs are likely to be initiated simultaneously or following aerial assessment with vessel and ground based fauna surveys carried out as part of the relevant fauna SMP.		OSRL OSM Supplementary Service Agreement Woodside Contracted Vessel Providers Aviation contractors
OM7: Air quality modelling (responder health and safety)	1 model	N/A	3rd party modelling provider / OSRO
Total number of teams	**5 teams**	**5 teams**	

 # Specific monitoring units are mentioned for planning and guidance purposes based on a worst-case planning approach. In the event of an actual spill, other locations and/or receptors may be contacted and the ability to access these locations (i.e. with consideration of safety and simultaneous operations (SIMOPS)) would be assessed. This would be identified and managed as part of implementation as per the guidance in Section 13 of the BIP.

** Initial co-mobilisation between OMP: Hydrocarbon properties and weathering behaviour at sea, OMP: Water quality assessment, and OMP: Sediment quality assessment*

^ These resources may not be required if relevant scientific monitoring components' initiation criteria have been triggered.

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Table C - 8: Resources required for initially implementing scientific monitoring plans for GPGT Surveys Program activity spills

SMP	Week 1 (total)	Week 2 (total)	Arrangement
SM1: Water quality impact assessment *^	1 team (spill site and surrounds) 1 team Dampier Unit# 1 team Offshore Environs Unit 1 team control site(s) **Total 4 teams**	1 team (spill site and surrounds) 1 team Dampier Unit 1 team Offshore Environs Unit 1 team control site(s) **Total 4 teams**	OSRL OSM Supplementary Service Agreement Woodside Contracted Vessel Providers Laboratory arrangement
SM2: Sediment quality impact assessment *	Refer to SMP: Water quality impact assessment* (all sites)		OSRL OSM Supplementary Service Agreement Woodside Contracted Vessel Providers Laboratory arrangement
SM3: Intertidal and coastal habitat assessment	1 team Dampier Unit 1 team control site(s) **Total 2 teams**	1 team Dampier Unit 1 team control site(s) **Total 2 teams**	OSRL OSM Supplementary Service Agreement Woodside Contracted Vessel Providers Laboratory arrangement
SM4: Seabirds and shorebirds^	1 team to conduct initial aerial surveys for Dampier and Offshore Environs Unit **Total 1 aerial team** 1 team to conduct vessel-based surveys Dampier Unit 1 team Offshore Environs Unit 1 team control site(s) (surveys would include all fauna [birds, reptiles, cetaceans, dugong and whale shark]) **Total 3 vessel-based teams** 1 team to conduct ground-based surveys for Dampier Unit 1 team control site(s) (1 experienced ornithologists per team) **Total 2 ground-based teams**	1 team to conduct initial aerial surveys for Dampier Unit and Offshore Environs Unit **Total 1 aerial teams** 1 team to conduct vessel-based surveys for Dampier Unit 1 team Offshore Environs Unit 1 team control site(s) (surveys would include all fauna [birds, reptiles, cetaceans, dugong and whale shark]) **Total 3 vessel-based teams** 1 team to conduct ground-based surveys for Dampier Unit 1 team control site(s) (1 experienced ornithologists per team) **Total 2 ground-based teams**	OSRL OSM Supplementary Service Agreement Woodside Contracted Vessel Providers Laboratory arrangement
SM5: Marine mega-fauna assessment – whale shark, dugong and cetaceans^	• Aerial surveys refer to SMP: Seabirds and shorebirds • Vessel surveys refer to SMP: Seabird and shorebirds	• Aerial surveys refer to SMP: Seabirds and shorebirds • Vessel surveys refer to SMP: Seabird and shorebirds	OSRL OSM Supplementary Service Agreement Woodside Contracted Vessel Providers Laboratory arrangement
SM5: Marine mega-fauna assessment – reptiles^	• Aerial surveys refer to SMP: Seabirds and shorebirds • Vessel surveys refer to SMP: Seabird and shorebirds Ground based survey refer to SMP: Seabird and shorebirds (including 1 member experienced with ground turtle surveys)	• Aerial surveys refer to SMP: Seabirds and shorebirds • Vessel surveys refer to SMP: Seabird and shorebirds Ground based survey refer to SMP: Seabird and shorebirds (including 1 member experienced with ground turtle surveys)	OSRL OSM Supplementary Service Agreement Woodside Contracted Vessel Providers Laboratory arrangement

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SMP	Week 1 (total)	Week 2 (total)	Arrangement
SM6: Benthic habitat assessment	1 team (spill site and surrounds) 1 team Dampier Unit 1 team Offshore Environs Unit 1 team control site(s) **Total 4 teams**	1 team (spill site and surrounds) 1 team Dampier Unit 1 team Offshore Environs Unit 1 team control site(s) **Total 4 teams**	OSRL OSM Supplementary Service Agreement Woodside Contracted Vessel Providers Laboratory arrangement
SM7: Marine fish and elasmobranch assemblages assessment	1 team (spill site and surrounds) 1 team Dampier Unit 1 team Offshore Environs Unit 1 team control site(s) **Total 4 teams**	1 team (spill site and surrounds) 1 team Dampier Unit 1 team Offshore Environs Unit 1 team control site(s) **Total 4 teams**	OSRL OSM Supplementary Service Agreement Woodside Contracted Vessel Providers Laboratory arrangement
SM8: Fisheries impact assessment	**Total 2 teams** to cover all relevant Commonwealth and State fisheries – initial locations determined in consultation with key stakeholders to reflect current fishing zones/effort		OSRL OSM Supplementary Service Agreement Woodside Contracted Vessel Providers Laboratory arrangement
SM9: Heritage features assessment	**1 team**	**1 team**	OSRL OSM Supplementary Service Agreement Woodside Contracted Vessel Providers Laboratory arrangement
SM10: Social impact assessment	**1 team**	**1 team**	OSRL OSM Supplementary Service Agreement
Total number of teams	**24 teams**	**24 teams**	

[#] *Specific monitoring units are mentioned for planning and guidance purposes based on a worst case planning approach. In the event of an actual spill, other locations and/or receptors may be contacted and the ability to access these locations (i.e. with consideration of safety and SIMOPS) would be assessed. This would be identified and managed as part of implementation as per the guidance in Section 13 of the BIP.*

** Initial co-mobilisation between SMP: Water quality impact assessment and SMP: Sediment quality impact assessment.*

^ Can initially be performed by the same team as the relevant OMP. This SMP may replace the relevant OMP, if the relevant OMP's termination criteria are triggered.

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ANNEX D: TACTICAL RESPONSE PLANS

TACTICAL RESPONSE PLANS
Exmouth
Mangrove Bay
Turquoise Bay
Yardie Creek
Muiron Islands
Jurabi to Lighthouse Beaches Exmouth
Ningaloo Reef – Refer to Mangrove/ Turquoise Bay and Yardie Creek
Exmouth Gulf
Shark Bay Area 1: Carnarvon to Wooramel
Shark Bay Area 2: Wooramel to Petite Point
Shark Bay Area 3: Petite Point to Dubaut Point
Shark Bay Area 4: Dubaut Point to Herald Bight
Shark Bay Area 5: Herald Bight to Eagle Bluff
Shark Bay Area 6: Eagle Bluff to Useless Loop
Shark Bay Area 7: Useless Loop to Cape Bellefin
Shark Bay Area 8: Cape Bellefin to Steep Point
Shark Bay Area 9: Western Shores of Edel Land
Shark Bay Area 10: Dirk Hartog Island
Shark Bay Area 11: Bernier and Dorre Islands
Abrolhos Islands: Pelseart Group
Abrolhos Islands: Wallabi Group
Abrolhos Islands: Easter Group
Dampier
Rankin Bank & Glomar Shoals
Barrow and Lowendal Islands
Pilbara Islands – Southern Island Group
Montebello Island – Stephenson Channel Nth TRP
Montebello Island – Champagne Bay and Chippendale channel TRP
Montebello Island – Claret Bay TRP
Montebello Island – Hermite/Delta Island Channel TRP
Montebello Island – Hock Bay TRP
Montebello Island – North and Kelvin Channel TRP
Montebello Island – Sherry Lagoon Entrance TRP
Withnell Bay
Holden Bay
King Bay

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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

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APPENDIX H OIL POLLUTION FIRST STRIKE PLAN

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Woodside Energy

Angel Carbon Capture and Storage Geophysical and Geotechnical Surveys – Oil Pollution First Strike Plan

Corporate HSE

Hydrocarbon Spill Preparedness

January 2026
Revision 0

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CONTROL AGENCIES AND INCIDENT CONTROLLERS

Source	Location	Level	Jurisdictional Authority/ Hazard Management Agency	Control Agency	Incident Controller
Spill from facility including subsea infrastructure Note: pipe laying and accommodation vessels are considered a "facility" under Australian regulations	Commonwealth waters	1	NOPSEMA	Woodside	Person In Charge (PIC) with support from Onshore Team Leader (OTL)
		2/3		Woodside	Corporate Incident Management Team Incident Commander (CIMT IC)
	State waters	1/2/3	Western Australian Department of Transport and Major Infrastructure (DTMI)	DTMI	DTMI Incident Controller
	Within port limits	1	DTMI	Port Authority	Port Harbour Master
		2/3		Port Authority/ DTMI	Port Harbour Master/ DTMI Incident Controller
Spill from vessel Note: SOPEP should be implemented in conjunction with this document	Commonwealth waters	1	Australian Marine Safety Authority (AMSA)	AMSA	Vessel Master
		2/3		AMSA	AMSA (with response assistance from Woodside)
	State waters	1/2/3	DTMI	DTMI	DTMI Incident Controller
	Within port limits	1	DTMI	Port Authority	Port Harbour Master
		2/3		Port Authority/ DTMI	Port Harbour Master/ DTMI Incident Controller

SPILLS IN STATE/PORT WATERS

In the event of a hydrocarbon spill (hereafter 'spill') where Woodside Energy Ltd ('Woodside') is the responsible party and the spill may impact State waters and shorelines, Woodside (or the Vessel Master) will commence the initial response actions and notify the Western Australian Department of Transport and Major Infrastructure (DTMI). In the event that Woodside is the responsible party for a spill that occurs within port limits or impacts Port Waters, Woodside will notify the Port Authority and DTMI for all spills.

Initially Woodside will be required to make available an appropriate number of suitably qualified persons to work in the DTMI IMT (APPENDIX F – Woodside Liaison Officer Resources to DTMI). DTMI/ PPA's role as the Controlling Agency in State waters/ within port limits does not negate the requirement for Woodside to have appropriate plans and resources in place to adequately respond to a marine hydrocarbon spill incident in State Waters/ within port limits or to commence the initial response actions to a spill prior to DTMI establishing incident control in line with DTMI *Offshore Petroleum Industry Guidance Note – Marine Oil Pollution: Response and Consultation Arrangements* (July 2020). Cost recovery arrangements for offshore marine pollution incidents (MOP) are in accordance with Section 9 of the Guidance Note:

https://www.transport.wa.gov.au/mediaFiles/marine/MAC_P_Westplan_MOP_OffshorePetroleumIndGuidance.pdf

Woodside's Incident Management Structure for a hydrocarbon spill, including Woodside Liaison Officer's command structure within DTMI can be seen at APPENDIX E – Woodside Incident Management Structure.

The coordination structure for a concurrent hydrocarbon spill in both Commonwealth and State waters/ shorelines is shown in APPENDIX D – Coordination structure for a concurrent hydrocarbon spill in both Commonwealth and State waters/ shorelines .

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RESPONSE PROCESS OVERVIEW

	For guidance on credible scenarios and hydrocarbon characteristics, refer to APPENDIX A	
ALL INCIDENTS	Notify the Woodside Communication Centre (WCC) on: [1]	
	If further support required, Incident Commander or delegate to implement this Oil Pollution First Strike Plan per relevant actions detailed in **Table 1-1** and **Table 2-1**.	
LEVEL 1	**FACILITY INCIDENT**	**VESSEL INCIDENT**
	Coordinate pre-identified tactics in **Table 2-1** of this Oil Pollution First Strike Plan. Remember to download each Operational Plan.	Notify AMSA or Port Authority (if within port limits) and coordinate pre-identified tactics in **Table 2-1** of this Oil Pollution First Strike Plan Remember to download each Operational Plan.
	If the spill escalates such that the site cannot manage the incident, inform the WCC on: [1] and escalate to a level 2/3 incident.	
LEVEL 2/3	**FACILITY INCIDENT**	**VESSEL INCIDENT**
	Handover control to CIMT and notify DTMI or Port Authority (if within port limits)	Handover control to AMSA or Port Authority (if within port limits) and stand up CIMT to assist.
	Commence quick revalidation of the recommended strategies in **Table 2-1** taking into consideration seasonal sensitivities and current situational awareness. Commence validated strategies.	If requested by AMSA/Port Authority: Commence quick revalidation of the recommended strategies in **Table 2-1** taking into consideration seasonal sensitivities and current situational awareness. Commence validated strategies.
	Create an Incident Action Plan (IAP) for all ongoing operational periods. The content of the IAP should reflect the selected response strategies based on current situational awareness. For the full detailed pre-operational Net Environmental Benefit Analysis (NEBA) see the OSPRMA Appendix A	If requested by AMSA/Port Authority: Create an IAP for all ongoing operational periods. The content of the IAP should reflect the selected response strategies based on current situational awareness. For the full detailed pre-operational NEBA see the OSPRMA Appendix A

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1. NOTIFICATIONS

The Incident Controller or delegate must ensure the below notifications (Table 1-1) are completed within the designated timeframes.

For spills from a vessel, relevant notifications must be undertaken by a Woodside representative.

Table 1-1: Notifications

In the event of an incident between campaign vessels, also activate relevant vessel Emergency Response Plans and/or Bridging Documents

Timing	By	To	Name	Contact	Instruction	Form	Complete? (✓)
NOTIFICATIONS FOR ALL LEVELS OF SPILL							
Immediately	Offshore Installation Manager (OIM) or Vessel Master	Woodside Communication Centre (WCC)	Corporate Incident Management Team Incident Commander (CIMT IC)	[1]	Verbally notify WCC of event and estimated volume and hydrocarbon type. If further support required, Incident Commander or delegate to implement this Oil Pollution First Strike Plan per relevant actions detailed in **Table 1-1** and **Table 2-1**.	Verbal	
Within 2 hours	Woodside Site Rep (WSR), CIMT IC or Delegate	National Offshore Petroleum Safety Environmental Management Authority (NOPSEMA[1])	Incident notification office	[2]	Verbally notify NOPSEMA for spills >80L. Record notification using Initial Verbal Notification Form or equivalent and send to NOPSEMA as soon as practicable (cc to NOPTA and DMPE).	Link	
Within 3 days	WSR, CIMT IC or Delegate				Provide a written NOPSEMA Incident Report Form as soon as practicable (no later than 3 days after notification) (cc to NOPTA and DMPE) NOPSEMA [2] NOPTA [3] DMPE [4]	[2]	
As soon as practicable	CIMT IC or Delegate	Woodside	Environment Unit Leader	As per roster	Verbally notify Environment Unit Leader of event and seek advice on relevant performance standards from EP	Verbal	
As soon as practicable if spill arises in or is likely to extend into port limits.	CIMT IC or Delegate	Pilbara Ports	Pilbara Ports, Port of Dampier Vessel Traffic Services (VTS)	[5]	Any spill within or close to the Dampier Port boundary should be reported immediately to the Pilbara Ports, Port of Dampier VTS	Verbal/ [5]	
Within 2 hours of becoming aware of a marine pollution incident (MOP) that occurs in or may impact state waters	CIMT IC or Delegate	WA Department of Transport and Major Infrastructure	DTMI Maritime Environmental Emergency Response Unit (MEER) Duty Officer	[6]	Verbally notify DTMI MEER Duty Officer that a spill has occurred and, if required, request use of equipment stored in Karratha. Follow up with a written Marine Pollution Report (POLREP) as soon as practicable following verbal notification. Additionally, DTMI to be notified if spill is likely to extend into WA State waters. Request DTMI to provide Liaison to Woodside IMT.	[6]	
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	
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: [15]	Email	

[1] Notification to NOPSEMA must be from a Woodside Representative.

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Timing	By	To	Name	Contact	Instruction	Form	Complete? (✓)
Within 24 hours of Woodside reporting the incident to the appropriate authority	CIMT IC or Delegate	WA Fishing Industry Council (WAFIC)	Industry Liaison Officer	[16]	Notification to WAFIC via email within 24 hours of Woodside reporting the incident to the appropriate authority: [16]	Verbal/ email	
As soon as practicable if there is potential for oiled wildlife or the spill is expected to contact land or waters managed by WA Department of Biodiversity, Conservation and Attractions	CIMT IC or Delegate	WA Department of Biodiversity, Conservation and Attractions (DBCA)	Duty Officer	[8]	Phone call notification	Verbal	
As soon as practicable	Public Information	Relevant persons/ organisations	To be determined	To be determined	Should it be identified that additional persons such as, but not limited to, commercial fishers or tourism operators may be affected, Woodside would, at the relevant time, engage with these parties as appropriate and in alignment with the Oil Spill Preparedness and Response Mitigation Assessment (OSPRMA) for Angel Carbon Capture and Storage Geophysical and Geotechnical Surveys. 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 Angel Carbon Capture and Storage Geophysical and Geotechnical Surveys. 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)	Response Coordination Centre (RCC)	[9]	Verbally notify AMSA RCC of the hydrocarbon spill. Follow up with a written Hazardous 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. 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. 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 30 personnel depending on what skills are required. Please note that provision of these personnel from MSRC are on a best endeavours basis and are not guaranteed.	Verbal	

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2. RESPONSE TECHNIQUES

Table 2-1: Response techniques

Technique	Spill type	Level	Pre- Identified Tactics	Responsible	ALARP Commitment Summary	Link to Operational Plans for notification numbers and actions
	MGO					
Monitor and evaluate – tracking buoy	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	**WITHIN 24 HOURS:** Tracking buoy deployed within 2 hours.	Surveillance and Reconnaissance to Detect Hydrocarbons and Resources at Risk – see Operational Monitoring Operational Plan. Deploy tracking buoy in accordance with Link.
Monitor and evaluate – predictive modelling	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	**WITHIN 24 HOURS:** Initial modelling within 6 hours using the Rapid Assessment Tool.	Predictive Modelling of Hydrocarbons to Assess Resources at Risk – see Operational Monitoring Operational Plan. *Planning Section to download immediately and follow steps*
	Yes	ALL	Send Oil Spill Trajectory Modelling (OSTM) form (Appendix B, Form 7) to RPS Response ([13]). Outputs will be uploaded to OceansMap by RPS.	Situation	**WITHIN 24 HOURS:** Detailed modelling within 4 hours of RPS Response receiving information from Woodside.	
Monitor and evaluate – aerial surveillance	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	**WITHIN 24 HOURS:** 2 trained aerial observers. 1 aircraft available. Report made available to the IMT within 2 hours of landing after each sortie.	Surveillance and Reconnaissance to Detect Hydrocarbons and Resources at Risk – see Operational Monitoring Operational Plan. *Planning Section to download immediately and follow steps*
Monitor and evaluate – satellite tracking	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: [13] • Others identified by CIMT	Situation	**WITHIN 24 HOURS:** Service provider will confirm availability of an initial acquisition within 2 hours. Data received to be uploaded into Woodside Common Operating Picture.	
Revalidate pre-operational NEBA	Yes	ALL	Environment Unit Leader to revalidate pre-operational NEBA against current situational awareness from monitor and evaluate techniques.	Environment	**WITHIN 24 HOURS**: Revalidate pre-operational NEBA and incorporate into IAP	Pre-operational NEBAs
Monitor and evaluate – pre-emptive assessment of receptors at risk	Yes	ALL	Consider the need to mobilise resources to undertake pre-emptive assessment of sensitive receptors at risk (OM04).	Planning or Environment	**WITHIN 48 HOURS:** In agreement with WA DTMI, deployment of 2 specialists for each of the Response Protection Areas (RPA) with predicted impacts.	Pre-emptive Assessment of Sensitive Receptors – see Operational Monitoring Operational Plan..
Operational monitoring – shoreline assessment	Yes	ALL	Consider the need to mobilise resources to undertake shoreline assessment surveys (OM05).	Planning or Environment	**WITHIN 48 HOURS:** In agreement with WA DTMI, deployment of 2 specialists trained in Shoreline Clean-up Assessment Technique (SCAT) for each of the RPAs with predicted impacts.	Mobilise OSM service via OSRL: [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.
Operational and Scientific Monitoring	Yes	ALL	Consider the need to mobilise OSM resources via third party service provider.	Environment	**WITHIN 24 HOURS:** Notify service provider of spill event and mobilise required programs depending upon nature of spill event	
Mechanical dispersion	No	N/A	This response strategy is not recommended.			
In-situ burning	No	N/A	This response strategy is not recommended.			
Shoreline protection and deflection	Yes	ALL	Concentrations over 100 g/m^2 may impact shorelines. Any high-value sections of shoreline can be selected for protection and deflection. Equipment from Woodside, PPA (if within port limits), AMOSC and AMSA Western Australian Stockpiles mobilised. Consideration of mobilisation of interstate/international shoreline protection equipment (i.e. OSRL).	Operations and Planning	**WITHIN 24 HOURS:** In agreement with WA DTMI (for Level 2/3 incidents), activate relevant Tactical Response Plans (TRPs) within 12 hours. In agreement with WA DTMI (for Level 2/3 incidents), mobilise teams to RPAs within 24 hours of operational monitoring predicting impacts.	Protection and Deflection Operational Plan *Logistics Section to download immediately and follow steps*

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Technique	Spill type	Level	Pre- Identified Tactics	Responsible	ALARP Commitment Summary	Link to Operational Plans for notification numbers and actions
	MGO					
					In agreement with WA DTMI (for Level 2/3 incidents), equipment mobilised from closest stockpile within 24 hours. **WITHIN 48 HOURS:** Supplementary equipment mobilised from State, AMOSC, AMSA stockpiles within 48 hours. Supplementary equipment mobilised from OSRL within 48 hours.	
Shoreline clean-up	**Yes**	**ALL**	Concentrations over 100 g/m^2 may impact shorelines. Any high-value sections of shoreline can be selected for clean up. Equipment from Woodside, and/or PPA (if within port limits) 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	**WITHIN 24 HOURS:** Equipment mobilised from closest stockpile within 24 hours. TRPs available for at risk shorelines within 24 hours. Deployment of shoreline clean-up teams to contaminated RPAs within 24 hours. Access to at least 124 m^3 of solid and liquid waste storage available within 24 hours upon activation of 3rd party contract.	Shoreline Clean-up Operational Plan *Logistics Section to download immediately and follow steps*
Oiled wildlife response	**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	**WITHIN 24 HOURS:** Initiate a wildlife first strike response within 24 hours of confirmed or imminent wildlife contact.	Oiled Wildlife Response Operational Plan

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3. RESPONSE PROTECTION AREAS

Action: Provide relevant Control Agency with applicable Tactical Response Plans for any Response Protection Areas (RPAs) identified during operational monitoring.

Based on hydrocarbon spill modelling results, the sensitive receptors outlined in **Table 3-1** are identified as priority protection areas, as they have the potential to be contacted by hydrocarbon at or above impact threshold levels within 48 hours of a spill.

Table 3-1: Receptors for Priority Protection with Potential Impact within 48 Hours

Receptor	Distance and Direction from Operational Area (km)	Minimum time to shoreline contact (above 100g/m^2) in days	Maximum shoreline accumulation (above 100g/m^2) in m^3	Tactical Response Plans
Dampier Archipelago at Legendre Island	~ 8 km south	CS-08 – 0.33 days	CS-08 – 69 m^3	Mermaid Sound/ Dampier Archipelago Inshore Waters Tactical Response Plan
Keast Island	~ 10 km south-east	CS-08 – 0.71 days	CS-08 – 20 m^3	

Hydrocarbon spill modelling results indicate the sensitive receptors listed below have the potential to be contacted by hydrocarbons beyond 48 hours of a spill:

- Cape Bruguieres – 12 km south-east of the Operational Area. 2.04 days (5 m^3)

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 Angel Carbon Capture and Storage Geophysical and Geotechnical Surveys Operational Area and identifies priority protection areas.

Consideration should be given to other stakeholders (including mariners) in the vicinity of the spill location. **Table 3-2** indicates the assets within the vicinity of the Angel Carbon Capture and Storage Geophysical and Geotechnical Surveys Operational Area.

Table 3-2: Assets in the vicinity of the Angel Carbon Capture and Storage Geophysical and Geotechnical Surveys Operational Area

Asset	Distance and Direction from Operational Area	Operator
North Rankin Complex	Overlaps	Woodside
Goodwyn Alpha	22 km west	Woodside
Goodwyn Alpha Pipeline	Overlaps	Woodside
NWS Pipeline	Overlaps	Woodside
North Rankin Pipeline	Overlaps	Woodside
Pluto LNG Export Pipeline to Burrup	Overlaps	Woodside
Cossack-Wanaea Pipeline	Overlaps	Woodside
Wandoo A & B	16 km west	Vermilion
Reindeer	32 km west	Santos
Stag	36 km west	Jadestone

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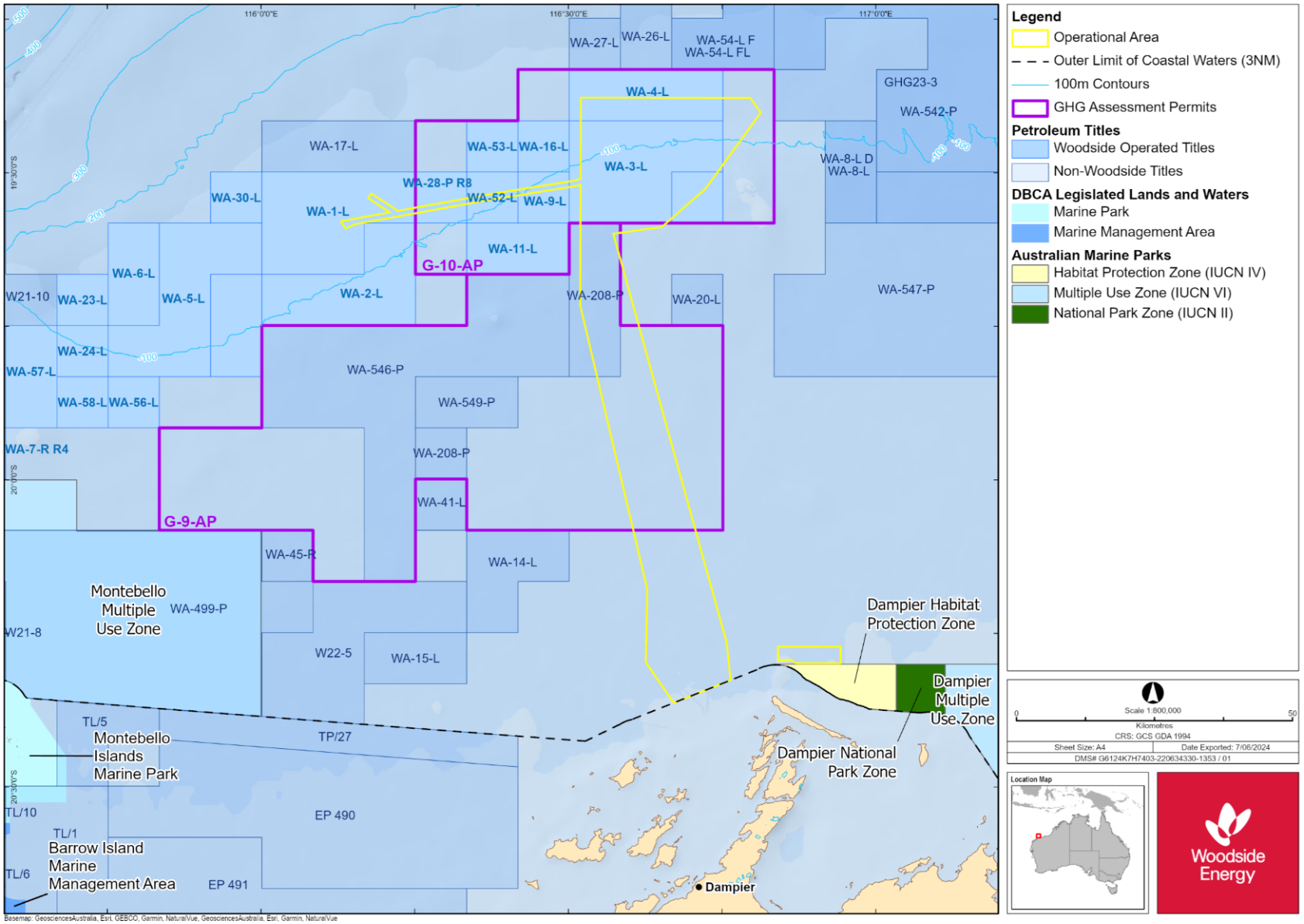


Figure 3-1: Operational Area

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4. DISPERSANT APPLICATION

Dispersant is not considered an appropriate response strategy for this activity as described in the Angel Carbon Capture and Storage Geophysical and Geotechnical Surveys Environment Plan Appendix D (Woodside's Oil Spill Preparedness and Response Mitigation Assessment).

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APPENDIX A – CREDIBLE SPILL SCENARIOS AND HYDROCARBON INFORMATION

Table A - 1: Credible spill scenarios and hydrocarbon information

Scenario	Product	API gravity	Volume	Residue	Weathering rate		Suggested ADIOS2 Analogue[2]
CS-08 (WCCS) **Instantaneous Release of 150 m^3 of Marine Gas Oil at the State Waters boundary**	Marine gas oil	0.829 @ 25°C	150 m^3	5% or 7.5 m^3	12 hours (BP < 180 °C)	6 %	Diesel Fuel Oil (Southern USA 1). API of 37.
					24 hours (180 °C < BP < 265 °C)	34.6 %	
					Several days (265 °C < BP < 380 °C)	54.4 %	
CS-05 **Instantaneous Release of 150 m^3 of Marine Gas Oil at an offshore location**	Marine gas oil	0.829 @ 25°C	150 m^3	5% or 7.5 m^3	12 hours (BP < 180 °C)	6 %	Diesel Fuel Oil (Southern USA 1). API of 37.
					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.

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APPENDIX B – NOTIFICATION FORMS

Table B - 1: Notification forms

No.	Form Name	Link
1	Record of initial verbal notification to NOPSEMA template	Link
2	NOPSEMA Incident Report Form	[2]
3	Hazardous Substances Report (POLREP – AMSA)	[9]
4	AMOSC Service Contract	[10]
5	Marine Pollution Report (POLREP – DTMI)	[6]
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

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FORM 1 – RECORD OF INITIAL VERBAL NOTIFICATION TO NOPSEMA

Woodside Energy

NOPSEMA phone: [2]		
Date of call		
Time of call		
Call made by		
Call made to		
Information to be provided to NOPSEMA:		
Date and time of incident/ time caller became aware of incident		
Details of incident	**1. Location**	
	2. Title	
	3. Source	**□ Platform**
		□ Pipeline
		□ FPSO
		□ Exploration drilling
		□ Well
		□ Other (please specify)
	4. Hydrocarbon type	
	5. Estimated volume	
	6. Has the discharge ceased?	
	7. Fire, explosion or collision?	
	8. Environment Plan(s)	
	9. Other Details	
Actions taken to avoid or mitigate environmental impacts		
Corrective actions taken or proposed to stop, control or remedy the incident		
After the initial call is made to NOPSEMA, please send this record as soon as practicable to:		
NOPSEMA	**[2]**	
NOPTA	**[3]**	
DMPE	**[4]**	

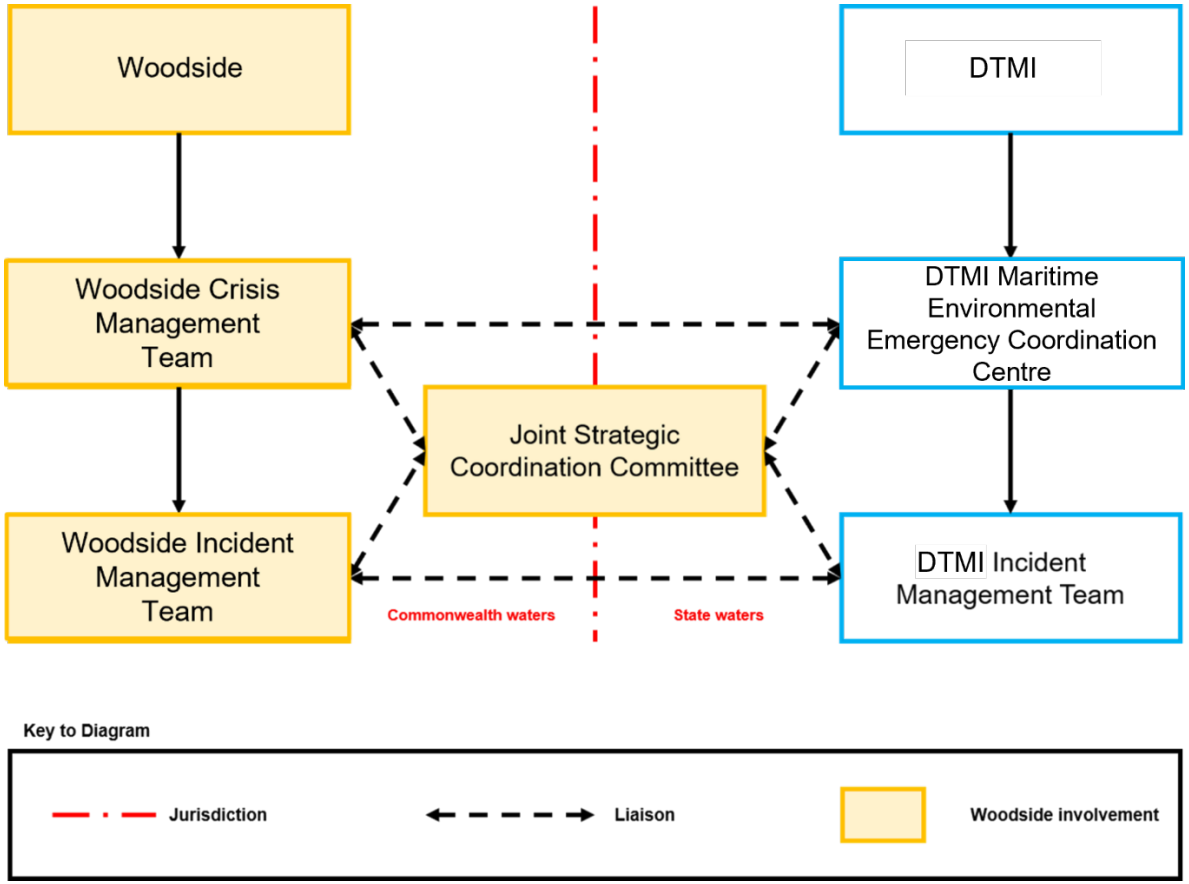
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APPENDIX C – SPILL ASSESSMENT QUESTIONS

What has happened?		
Date/time		
Spill source		
Spill cause		
Safety situation		
What is it?		
Oil type and name		
Oil properties	Specific gravity	
	Viscosity	
	Pour point	
	Asphaltenes	
	Wax content	
	Boiling point	
Where is it?		
Latitude and longitude		
Distance and bearing		
Affected area	☐ Offshore	
	☐ Subsea	
	☐ Shoreline	
	☐ Estuary	
	☐ Port	
	☐ Harbour	
	☐ Inland	
	☐ River	
	☐ Other (please detail):	
Water depth		
How big is it?		
Area		
Release type	☐ Instantaneous	Estimated volume:
	☐ Continuous release	Estimated release rate:
Where is it going?		
Metocean conditions		
Currents and tides		
What is in the way?		
Resources at risk		
Time until resource contact		
What's happening to it?		
Weathering processes		
Response actions underway		

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APPENDIX D – COORDINATION STRUCTURE FOR A CONCURRENT HYDROCARBON SPILL IN BOTH COMMONWEALTH AND STATE WATERS/ SHORELINES [3]



The Control Agency for a hydrocarbon spill in Commonwealth waters resulting from an offshore petroleum activity is Woodside (the Petroleum Titleholder).

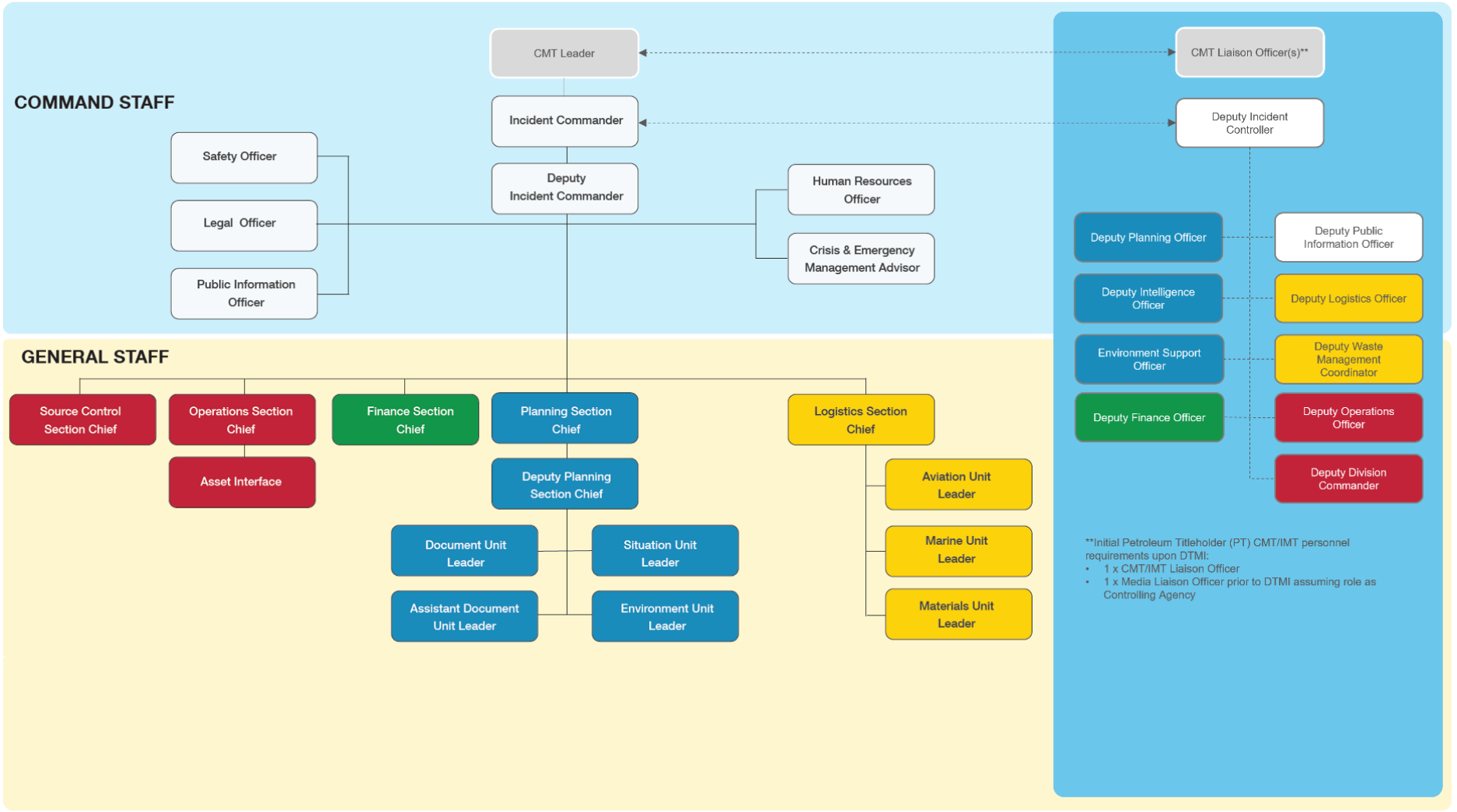
The Control Agency/ Hazard Management Agency (HMA) for a hydrocarbon spill in State waters/shorelines resulting from an offshore petroleum activity is DTMI. DTMI will appoint an Incident Controller and form a separate IMT to only manage the spill within State waters/shorelines.

[3] Adapted from DTMI Offshore Petroleum Industry Guidance Note, Marine Oil Pollution: Response and Consultation Arrangements July 2020. Note: For full structure up to Commonwealth Cabinet/Minister refer to Marine Oil Pollution: Response and Consultation Arrangements Section 6.5, Figure 4.

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APPENDIX E – WOODSIDE INCIDENT MANAGEMENT STRUCTURE

Woodside Incident Management Structure for Hydrocarbon Spill (including Woodside Liaison Officers Command Structure within DTMI IMT if required). Woodside's CIMT would operate from the Emergency Operations Centre (EOC) at the Woodside headquarters in Perth.



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APPENDIX F – WOODSIDE LIAISON OFFICER RESOURCES TO DTMI

In the event that DTMI is required to establish an IMT, Woodside will make available an appropriate number of appropriately qualified persons to work within the DTMI IMT. In the event the Port Authority is the Control Agency within the Dampier Port Limits, Woodside will make available similar roles as requested.

It is an expectation that Woodside's nominated CMT Liaison Officer and the Deputy Incident Controller attend the DTMI Fremantle Incident Control Centre (ICC) as soon as possible after the formal request has been made by the State Marine Pollution Coordinator (SMPC) , and that the remaining initial cohort will attend no later than 8 am on the day following the request being formally made to Woodside by the SMPC. For Woodside personnel designated to serve in DTMI'S Forward Operating Base (FOB), it is expected that they arrive at the FOB no later than 24 hours from the formal request being made by the SMPC.

Area	Role	Woodside personnel[4]	Key Duties	#
DTMI Maritime Environmental Emergency Coordination Centre (MEECC)	CMT Liaison Officer	CIMT Liaison	• Provide a direct liaison between the CMT and the MEECC. • Facilitate effective communications and coordination between the CIMT Leader and SMPC. • Offer advice to SMPC on matters pertaining to PT crisis management policies and procedures.	1
DTMI IMT Incident Control	Deputy Incident Controller	Deputy Incident Commander (Deputy IC)	• Provide a direct liaison between the PT IMT and DTMI IMT. • Facilitate effective communications and coordination between the PT IC and the DTMI IC. • Offer advice to the DTMI IC on matters pertaining to PT incident response policies and procedures. • Offer advice to the Safety Coordinator on matters pertaining to PT safety policies and procedures, particularly as they relate to PT employees or contractors operating under the control of the DTMI IMT.	1
DTMI IMT Intelligence	Deputy Intelligence Officer	Situation Unit Leader (Intelligence)	• As part of the Intelligence Team, assist the Intelligence Officer in the performance of their duties in relation to situation and awareness. • Facilitate the provision of relevant modelling and predications from the PT IMT. • Assist in the interpretation of modelling and predictions originating from the PT IMT. • Facilitate the provision of relevant situation and awareness information originating from the DTMI IMT to the PT IMT. • Facilitate the provision of relevant mapping from the PT IMT. • Assist in the interpretation of mapping originating from the PT IMT. • Facilitate the provision of relevant mapping originating from the DTMI IMT to the PT IMT.	1
DTMI IMT Intelligence – Environment	Environment Support Officer	Deputy Environment Unit Leader	• As part of the Intelligence Team, assist the Environment Coordinator in the performance of their duties in relation to the provision of environmental support into the planning process. • Assist in the interpretation of the PT OPEP and relevant TRP plans.	1

[4] *These positions would be mobilised, in consultation with DTMI, to align to the actual spill scenario. The selected roles and/or individual personnel would be subject to continued evaluation to ensure continued 'best fit'. For CIMT roster arrangements, contact the WCC. During a prolonged response, additional personnel may be sourced through internal resourcing and mutual Aid agreements such as the AMOSC Core Group via [10].*

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Area	Role	Woodside personnel[4]	Key Duties	#
			• Facilitate in requesting, obtaining and interpreting environmental monitoring data originating from the PT IMT. • Facilitate the provision of relevant environmental information and advice originating from the DTMI IMT to the PT IMT.	
DTMI IMT Planning-Plans/ Resources	Deputy Planning Officer	Deputy Planning Section Chief	• As part of the Planning Team, assist the Planning Officer in the performance of their duties in relation to the interpretation of existing response plans and the development of incident action plans and related sub plans. • Facilitate the provision of relevant IAP and sub plans from the PT IMT. • Assist in the interpretation of the PT OPEP from the PT. • Assist in the interpretation of the PT IAP and sub plans from the PT IMT. • Facilitate the provision of relevant IAP and sub plans originating from the DTMI IMT to the PT IMT. • Assist in the interpretation of the PT existing resource plans. • Facilitate the provision of relevant components of the resource sub plan originating from the DTMI IMT to the PT IMT. **(Note this individual must have intimate knowledge of the relevant PT OPEP and planning processes)**	1
DTMI IMT Public Information-Media/ Community Engagement	Deputy Public Information Officer	Deputy Public Information Officer	• As part of the Public Information Team, provide a direct liaison between the PT Media team and DTMI IMT Media team. • Facilitate effective communications and coordination between the PT and DTMI media teams. • Assist in the release of joint media statements and conduct of joint media briefings. • Assist in the release of joint information and warnings through the DTMI Information and Warnings team. • Offer advice to the DTMI Media Coordinator on matters pertaining to PT media policies and procedures. • Facilitate effective communications and coordination between the PT and DTMI Community Liaison teams. • Assist in the conduct of joint community briefings and events. • Offer advice to the DTMI Community Liaison Coordinator on matters pertaining to the PT community liaison policies and procedures. • Facilitate the effective transfer of relevant information obtained from through the Contact Centre to the PT IMT.	1
DTMI IMT Logistics	Deputy Logistic Officer	Deputy Logistics Section Chief	• As part of the Logistics Team, assist the Logistics Officer in the performance of their duties in relation to the provision of supplies to sustain the response effort. • Facilitate the acquisition of appropriate supplies through the PTs existing OSRL, AMOSC and private contract arrangements. • Collects Request Forms from DTMI to action via PT IMT. **(Note this individual must have intimate knowledge of the relevant PT logistics processes and contracts)**	1

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Area	Role	Woodside personnel[4]	Key Duties	#
DTMI IMT Finance-Accounts/ Financial Monitoring	Deputy Finance Officer	Deputy Finance Section Chief	• As part of the Finance Team, assist the Finance Officer in the performance of their duties in relation to the setting up and payment of accounts for those services acquired through the PTs existing OSRL, AMOSC and private contract arrangements. • Facilitate the communication of financial monitoring information to the PT to allow them to track the overall cost of the response. • Assist the Finance Officer in the tracking of financial commitments through the response, including the supply contracts commissioned directly by DTMI and to be charged back to the PT.	1
DTMI IMT Operations	Deputy Operations Officer	Deputy Operations Section Chief	• As part of the Operations Team, assist the Operations Officer in the performance of their duties in relation to the implementation and management of operational activities undertaken to resolve an incident. • Facilitate effective communications and coordination between the PT Operations Section and the DTMI Operations Section. • Offer advice to the DTMI Operations Officer on matters pertaining to PT incident response procedures and requirements. • Identify efficiencies and assist to resolve potential conflicts around resource allocation and simultaneous operations of PT and DTMI response efforts.	1
DTMI IMT Operations – Waste Management	Deputy Waste Management Coordinator	Deputy Waste Coordinator (Materials)	• As part of the Operations Team, assist the Waste Management Coordinator in the performance of their duties in relation to the provision of the management and disposal of waste collected in State waters. • Facilitate the disposal of waste through the PT's existing private contract arrangements related to waste management and in line with legislative and regulatory requirements. • Collects Request Forms from DTMI to action via PT IMT.	1
DTMI FOB Operations Command	Deputy Division Commander	FOB Deputy Incident Commander	• As part of the Field Operations Team, assist the Division Commander in the performance of their duties in relation to the oversight and coordination of field operational activities undertaken in line with the IMT Operations Section's direction. • Provide a direct liaison between the PT FOB and DTMI FOB. • Facilitate effective communications and coordination between the PT Division Commander and the DTMI Division Commander. • Offer advice to the DTMI Division Commander on matters pertaining to PT incident response policies and procedures. • Assist the Safety Coordinator deployed in the FOB in the performance of their duties, particularly as they relate to PT employees or contractors. • Offer advice to the Safety Coordinator deployed in the FOB on matters pertaining to PT safety policies and procedures.	1
			Total initial Woodside personnel requirement to DTMI	11

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APPENDIX G – DTMI LIAISON OFFICER RESOURCES TO WOODSIDE

Once DTMI activates a State waters/shorelines IMT, DTMI will make available the following roles to Woodside.

Area	DTMI Liaison Role	Personnel Sourced from:	Key Duties	#
Woodside CIMT	DTMI Liaison Officer (prior to DTMI assuming Controlling Agency)/ Deputy Incident Controller – State waters (after DTMI assumes Controlling Agency)	DTMI	• Facilitate effective communications between DTMI's SMPC/ Incident Controller and the Petroleum Titleholder's appointed CMT Leader / Incident Controller. • Provide enhanced situational awareness to DTMI of the incident and the potential impact on State waters. • Assist in the provision of support from DTMI to the Petroleum Titleholder. • Facilitate the provision technical advice from DTMI to the Petroleum Titleholder Incident Controller as required.	1
Woodside CIMT Public Information – Media	DTMI Media Liaison Officer	DTMI	• Provide a direct liaison between the PT Media team and DTMI IMT Media team. • Facilitate effective communications and coordination between the PT and DTMI media teams. • Assist in the release of joint media statements and conduct of joint media briefings. • Assist in the release of joint information and warnings through the DTMI Information & Warnings team. • Offer advice to the PT Media Coordinator on matters pertaining to DTMI and wider Government media policies and procedures.	1
			Total initial DTMI personnel requirement to Woodside	2

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