Julimar-Brunello Plug and Abandonment Environment Plan

Projects Australia – Decommissioning

November 2025

Revision: 0

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1. INTRODUCTION

1.1 Overview

Woodside Energy Julimar Pty Ltd (Woodside*),* as Titleholder under the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023* (Cth) (referred to as the Environment Regulations), proposes to undertake plug and abandonment (P&A) and synthetic based mud remediation activities within Permit Area(s) WA-49-L and WA-34-L.

These activities will hereafter be collectively referred to as the Petroleum Activity and form the scope of this Environment Plan (EP). A detailed description of the activities is provided in Section 3. This EP has been prepared as part of the requirements under the Environment Regulations, as administered by the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

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 Petroleum Activity are identified.
- Appropriate management controls are implemented to reduce impacts and risks to a level that is 'as low as reasonably practicable' (ALARP) and acceptable.
- The Petroleum Activity is carried out in a manner consistent with the principles of ecologically sustainable development (ESD) (as defined in Section 3A of the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (Cth) [EPBC Act]).

1.3 Environment Plan summary

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

Table 1-1: EP summary

EP summary material requirement	Relevant section of this EP containing EP summary material
The location of the activity.	Section 3.3
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 6.8 and 6.9
The arrangements for ongoing monitoring of the Titleholder's environmental performance.	Section 7
Response arrangements in the oil pollution emergency plan.	Section 7.12
Consultation already undertaken and plans for ongoing consultation.	Section 5 and 7.10
Details of the Titleholder's nominated liaison person for the activity.	Section 1.5

1.4 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.

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

Criteria for acceptance	Content requirements/relevant regulations	Elements	Section of EP
Regulation 34(a): Is appropriate for the nature and scale of the activity.	Regulation 21: • Environmental assessment. Regulation 22: • Implementation strategy for the EP. Regulation 24: • Other information in the EP.	The principle of 'nature and scale' is applicable throughout the EP.	Section 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(b): • A statement of the Titleholder's corporate environmental policy. • A report on all consultations between the Titleholder and any relevant person.	Set the context (activity and existing environment). Define 'acceptable' (the requirements, the corporate policy, relevant persons). Detail the impacts and risks. Evaluate the nature and scale. Detail the control measures – ALARP and acceptable.	Section 1 Section 2 Section 3 Section 4 Section 5 Section 6 Section 7
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	Section 7

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Criteria for acceptance	Content requirements/relevant regulations	Elements	Section of EP
		Appendix G) and scientific monitoring. • Ongoing consultation.	
Regulation 34(f): Does not involve the activity or part of the activity, other than arrangements for environmental monitoring or for responding to an emergency, being undertaken in any part of a declared World Heritage property within the meaning of the EPBC Act.	Regulations 21(1)–21(3): • 21(1) Description of the activity. • 21(2) Description of the environment. • 21(3) Without limiting Regulation 21(2)(b), relevant values and sensitivities may include any of the following: – (a) the world heritage values of a declared World Heritage property within the meaning of the EPBC Act; – (b) the national heritage values of a National Heritage place within the meaning of that Act; – (c) the ecological character of a declared Ramsar wetland within the meaning of that Act; – (d) the presence of a listed threatened species or listed threatened ecological community within the meaning of that Act; – (e) the presence of a listed migratory species within the meaning of that Act; – (f) any values and sensitivities that exist in, or in relation to, part or all of: ▪ (i) a Commonwealth marine area within the meaning of that Act; or ▪ (ii) Commonwealth land within the	No activity, or part of the activity, undertaken in any part of a declared World Heritage property.	Section 3 Section 4

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Criteria for acceptance	Content requirements/relevant regulations	Elements	Section of EP
	meaning of that Act.		
Regulation 34(g): (i) the Titleholder has carried out the consultations required by Regulation 25 (ii) the measures (if any) that the Titleholder has adopted, or proposes to adopt, because of the consultations are appropriate.	Regulation 25: • Consultation with relevant authorities, persons and organisations, etc. Regulation 24(b): • A report on all consultations between the Titleholder and any relevant person.	Consultation undertaken in the preparation of this EP.	Section 5 Appendix F
Regulation 34(h): Complies with the Act and the regulations.	Regulation 21(4)(a): • Describe the requirements, including legislative requirements, that apply to activity and are relevant to the environmental management of the activity. Regulation 23: • Details of the Titleholder and liaison person. Regulation 24(a): • A statement of the Titleholder's corporate environmental policy. Regulation 24(c): • Details of all reportable incidents in relation to the proposed activity.	All contents of the EP must comply with the *Offshore Petroleum and Greenhouse Gas Storage Act 2006* (Cth) (OPGGS Act) and the Environment Regulations.	Section 2.3.3 Section 1.5 Section 1.6 Section 7.11

1.5 Description of the Titleholder

Woodside is the Titleholder for this activity, on behalf of a Joint Venture comprising Woodside Energy Julimar and KUFPEC Australia.

1.5.1 Details of Titleholder and nominated liaison person

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

1.5.1.1 Titleholder

Woodside Energy Ltd

11 Mount Street

Perth, Western Australia

T: 08 9348 4000

ACN: 63 005 482 986

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1.5.1.2 Nominated liaison person

Nicolas Wirtz

Corporate Affairs Manager

11 Mount Street

Perth, Western Australia

Telephone: 08 9348 4000

Email: feedback@woodside.com

1.5.2 Arrangements for notifying change

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

1.6 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.

1.6.1 Our Woodside Management System 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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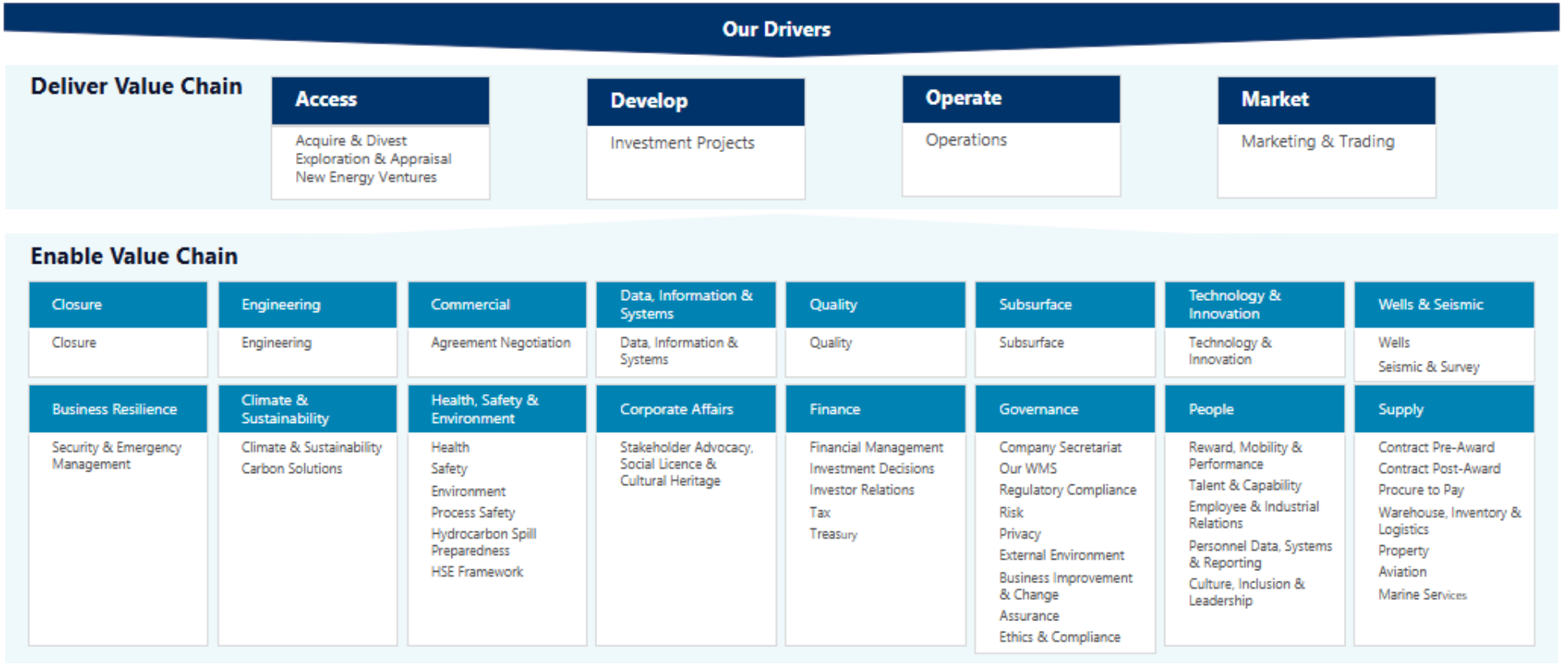

Figure 1-1: The Woodside Management System structure

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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.

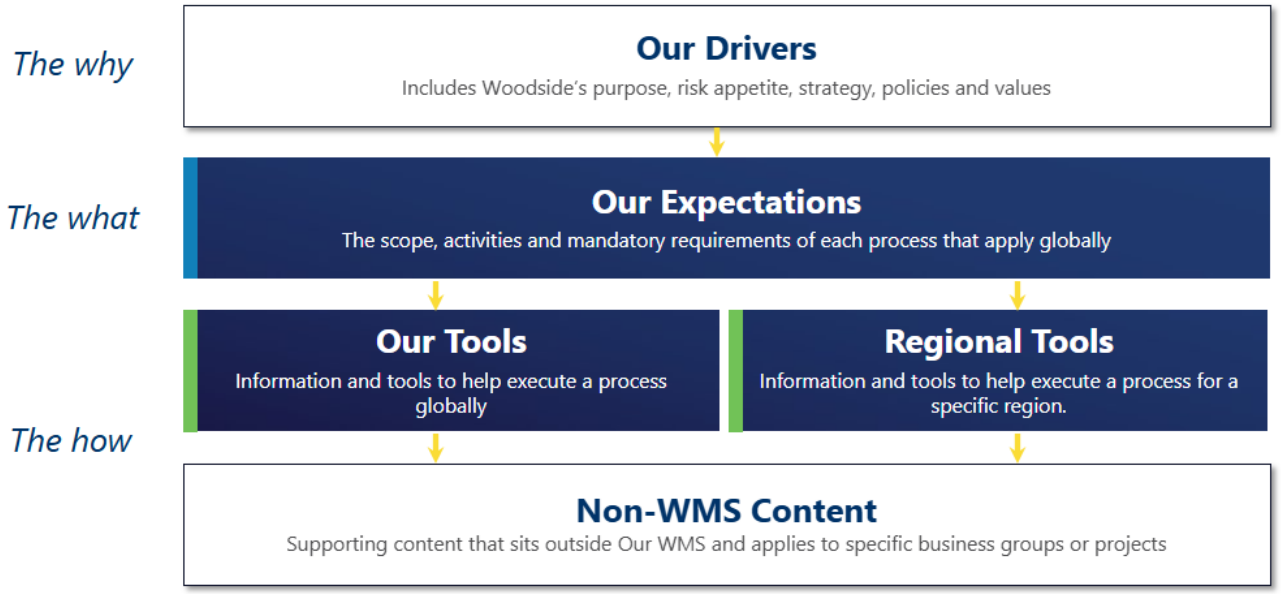

Figure 1-2: Our WMS information structure and document hierarchy

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

1.7 Description of relevant requirements

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

1.7.1 *Offshore Petroleum and Greenhouse Gas Storage Act 2006* (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.

1.7.2 *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 which aims to ensure that actions taken are on (or impacting upon) Commonwealth land or waters are consistent with the principles of ESD.

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

1.7.2.1 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 Petroleum Activity against all relevant recovery plans and threat abatement plans is contained in Section 6.10.

1.7.2.2 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 potential impacts from petroleum activities on AMPs

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

1.7.2.3 World Heritage properties

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

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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 1-3 outlines the principles that are relevant to assessing impacts from the Petroleum Activity on World Heritage Properties within the EMBA, which are identified in Section 4.

Table 1-3: 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 Petroleum Activity in Section 6. 3.03 (c): Relevant stakeholder 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. For consideration of the protection, conservation, presentation or transmission to future generations of the World Heritage values of the property, refer to Section 6.
	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 Petroleum Activity. This includes a description of the environmental risk management methodology that is used to identify, analyse and evaluate risks to meet ALARP and acceptability requirements; and to develop EPOs and EPS. This section also describes Woodside's risk management methodologies applicable to implementation strategies applied during the activity.

2.2 Environmental Plan process

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

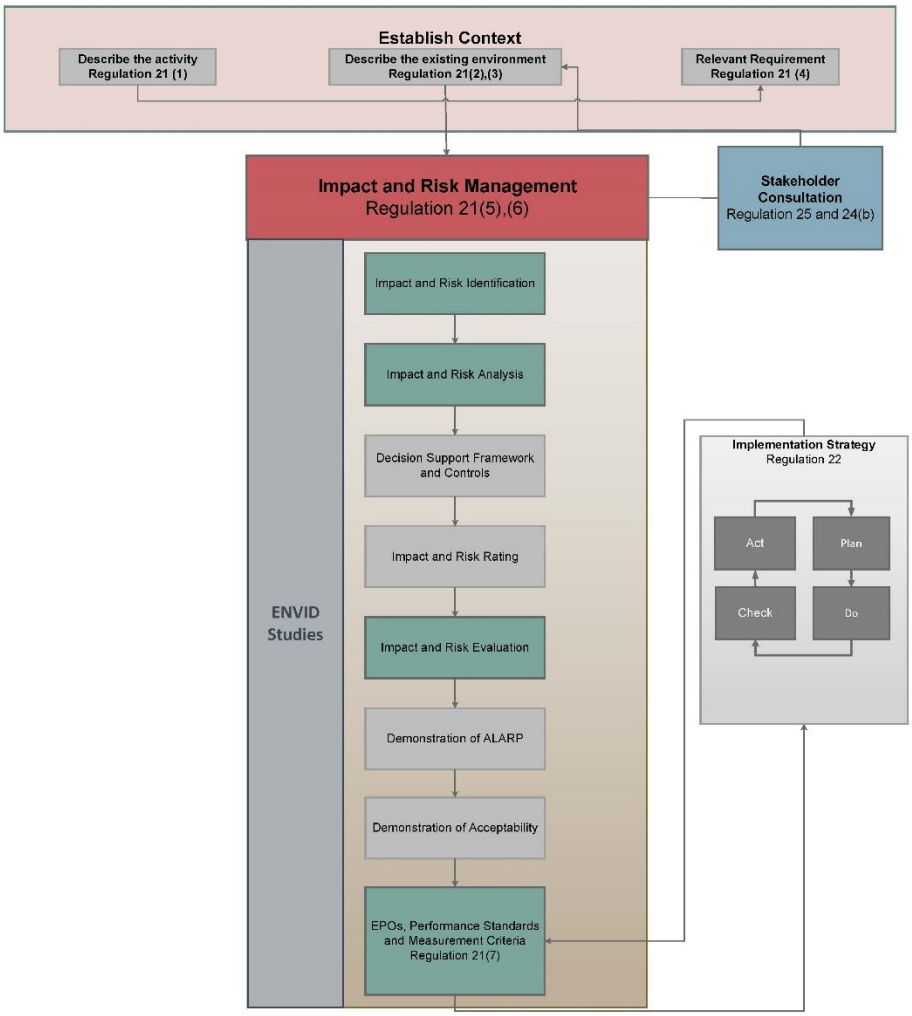

Figure 2-1: EP development process

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2.3 Establish the context

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

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

2.3.1 Activity description

The EP describes the activity including the following:

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

The 'what' and 'how' are described in the context of 'environmental aspects' to inform the 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 Petroleum Activity.

2.3.2 Existing environment description

The values and sensitivities relevant to environment where the Petroleum Activity is proposed to be undertaken have been identified in Section 4, to the extent required to inform impact and risk assessment to environmental receptors from the Petroleum Activity.

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

2.3.3 Environmental legislation and other requirements

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

2.3.4 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, include those directly and indirectly associated with the Petroleum Activity and potential emergency and accidental events. This may include environment impacts and risk that are a consequence of the proposed activity but are not within Woodside's control. In this EP:

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

An environmental impacts and risks identification and assessment workshop (ENVID) was undertaken by multidisciplinary teams comprising relevant operational, technical and environmental personnel with sufficient breadth of knowledge, training, and experience to reasonably assure that risks and impacts were identified, and their potential environmental consequences assessed. Impacts and risks were identified, during the workshop, for both planned (routine and non-routine) activities and unplanned (accidents/incidents/emergency conditions) events. During this process, 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

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

Impacts, risks and potential consequences were identified based on planned and potential interaction with the activity (based on the description in Section 3), the existing environment (Section 4) and the outcomes of 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 type A, B and C, which are discussed further below.

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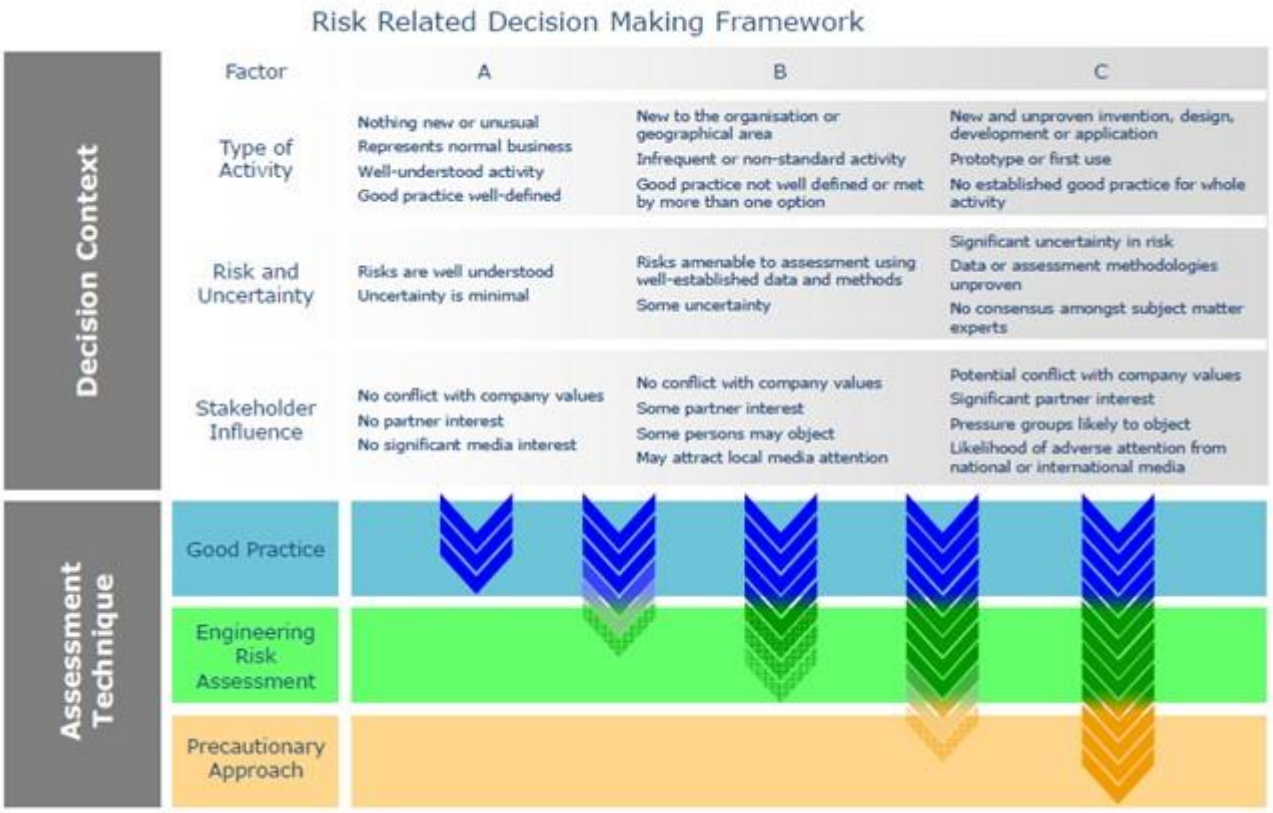

Figure 2-2: Risk-related decision-making framework

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.

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

2.3.4.4 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.

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

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- 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.
- 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 using the Woodside Environment Risk and Impact Rating Tool as a guide. Impact significance levels are assigned based on the magnitude of the potential impact 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**

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2.3.6.2 Risk classification

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

2.3.6.2.1 Select the Risk Consequence Level

Table 2-2 describes the possible environmental and social-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.

2.3.6.2.2 Determine the risk consequence Level

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

2.3.6.2.3 Select the likelihood level

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

Table 2-3: Woodside risk matrix likelihood levels

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

2.3.6.2.4 Calculate the risk rating

The risk rating is derived from the consequence and likelihood levels determined above, in accordance with the Woodside Risk Matrix summarised in Table 2-4. This risk rating is used as an input into the risk evaluation process and ultimately for prioritising further risk reduction measures. Once each risk is treated to ALARP, the risk rating articulates the ALARP baseline risk in the environmental impacts and risk register.

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

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

Risk rating
Severe
Very High
High
Moderate
Low

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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' (ALARP)

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

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

Risk	Impact	Decision type
Low and moderate (below C, D, E or F level consequence)	***Negligible, slight, or minor (D, E or F)***	***A***
Woodside demonstrates these impacts, risks and decision types are reduced to ALARP if: • Identified controls meet legislative requirements, industry codes and standards, applicable company requirements and industry guidelines, or • further effort towards impact/risk reduction (beyond using opportunistic measures) is not reasonably practicable without sacrifices that are grossly disproportionate to the benefit gained.		
High, very high or severe (A or B level consequence)	***Moderate and above (C, B or A)***	***B and C***
Woodside demonstrates these higher-order risks, impacts and decision types are reduced to ALARP where it can be shown good industry practice and RBA have been employed, if legislative requirements are met, societal concerns are accounted for, and the alternative control measures are grossly disproportionate to the benefit gained.		

2.4.2 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 using good industry practice and RBA, if legislative requirements are met and societal concerns are accounted for and the alternative control measures are grossly disproportionate to the benefit gained. In undertaking this process for moderate and high risks, Woodside evaluates: • The principles of ESD as defined under the EPBC Act. • The internal context – the proposed controls and consequence/risk level are consistent with Woodside policies, procedures and standards. • The external context – consideration of the environment consequence and stakeholder acceptability are considered. • Other requirements – the proposed controls and consequence/risk level are consistent with national and international industry standards, laws and policies ad consideration of applicable plans for management and conservation advices, conventions and significant impact guidelines (e.g. MNES). Additionally, very high and severe risks require 'escalated investigation' and mitigation. If after further investigation the risk remains in the very high or severe category, the risk requires appropriate business engagement with increasing involvement of senior management in accordance with Woodside's Risk Management Procedure to accept the risk. This includes due consideration of regulatory requirements.		

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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 1.7.2.1). This assessment follows the following process:

- Identify relevant listed threatened species and ecological communities (Section 4.6).
- Identify relevant recovery plans and threat abatement plans (Section 6.10).
- List all objectives and (where relevant) the action areas of these plans and assess whether these objectives/action areas apply to government, the Titleholder, and the Petroleum Activity (Section 6.10).
- For those objectives/action areas applicable to the Petroleum Activity, identify the relevant actions of each plan, and evaluate whether impacts and risks resulting from the activity are clearly not inconsistent with that action. (Section 6.10).

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

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

The implementation strategy is presented in Section 7.

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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 Petroleum Activity under this EP.

3.2 Project overview

Woodside proposes to undertake permanent plug and abandonment (P&A) for a number of subsea exploration wells in the Julimar-Brunello licence WA-49-L as follows:

- P&A of three subsea wells associated within the Julimar-Brunello Field (WA-49-L) using a Mobile Offshore Drilling Unit (MODU) with combined Dynamic Positioning (DP) and mooring capability:
  - Julimar East-1
  - Brunello-1 ST1
  - Brulimar-1

In addition, Woodside proposes to remediate/remove and/or isolate non-water-based-mud (NWBM[2]) in the annulus of one additional well:

  - Balnaves Deep-1

All four wells in this scope were drilled as exploration or appraisal wells between 2007 and 2011.

The three wells earmarked for P&A were suspended following exploration activities in accordance with the regulation of the time period (Temporarily Abandoned in today's terminology). The temporary abandonment methodology conducted does not however, align with the current legislative requirements, regulatory expectations, and best practice for permanent abandonment, driving the need for further P&A activities[3]. Due to the cement-based temporary abandonment plugs already present in these three wells, it is unlikely that a flow path exists between the wellbore and the reservoir(s), and the most likely fluid contained in the wellbore is suspension fluid rather than reservoir hydrocarbons.

The reservoir interval in the Balnaves Deep-1 exploration well has been accepted as permanently abandoned. NWBM was left in one of the annuli in the well, with the annulus being exposed to the marine environment upon wellhead removal. NWBM will be isolated or circulated to the MODU for discharge if oil concentration is <1% by volume. If NWBM contains oil >1% by volume the fluid will be returned to shore.

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

- Vessel-based inspection, maintenance, and repair (IMR) activities4 (including wellhead (WH) inspection, testing and cleaning) from an IMR vessel or anchor handling tug supply vessel (AHTSV). Depending on the outcome of the inspection scope a separate IMR campaign may be required to conduct machining on the wellhead seal faces and/or pre-deploy wellhead adaptors to increase the length of the wells re-entry mandrel.
- Vessel-based MODU mooring and/or tether clump weight installation and recovery, including Anchor Hold Testing by an IMR vessel or AHTSV.
- Permanent P&A of three wells using a MODU.
- NWBM remediation and/or isolation at Balnaves Deep-1 using a MODU or IMR vessel.

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[2] NWBM includes Synthetic Based Mud (SBM). The terms SBM and NWBM can be used interchangeably when referencing remediation or isolation of the SBM//NWBM in the Balnaves Deep-1 annulus.

[3] At the date of this EP, the above wells have not been accepted as plug and abandoned by NOPSEMA Well Integrity. ALARP assessment may be progressed after submission of this EP. Should any wells be accepted as abandoned in their current state, no further P&A operations will be performed under this EP.

[4] Vessel based IMR activities and wellhead removal may take place within the same campaign as the MODU-based P&A activity, or in a separate campaign prior to the arrival of the MODU and may be managed under the accepted NWS and Julimar Exploration Wellhead Decommissioning Environment Plan

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- Removal and recovery of well infrastructure below or as close as reasonable to the mudline using the MODU immediately following P&A or wet parking of wellhead for recovery by a vessel at a later date.

Table 3-1: Petroleum Activity overview

Item	Description
Permit Titles	WA-49-L MODU moorings for Brulimar-1 may extend into WA-34-L (Woodside operated title). MODU moorings for Julimar East-1 may extend into currently vacant acreage (previously WA-526-P).
Location	Barrow Sub-Basin.
Water depth	~120 metres (m) to ~210 m (Operational Area) ~135 m to ~171 m (well locations)
Number of wells/wellheads	Four Exploration Temporary Abandonment (ETA) wells (1 requiring NWBM remediation and/or isolation).
Vessels	MODU with combined DP and mooring capability. Up to three MODU support vessels, including anchor handling tug support vessel (AHTSV) and general supply/support vessels. IMR vessel (typically a multi-purpose support vessel (MPSV) or light construction vessel (LCV).
Key activities	Permanent plugging and abandonment of three Julimar-Brunello ETA wells: • Julimar East-1 • Brunello-1 ST1 • Brulimar-1 Remediation and/or isolation of NWBM in the annulus: • Balnaves Deep-1 For this well, the reservoir has already been accepted as permanently abandoned, and loss of containment of reservoir fluids is thus not considered a credible scenario for this well. Removal of four wellheads, which may be recovered following P&A or temporarily placed on a mud mat on the seabed for later recovery. Preparation and support activities (IMR activities such as e.g. wellhead inspections, cleaning and testing; pre-laying of moorings and tethering clump weights, recovery of moorings and clump-weights).

3.3 Location

The Petroleum Activity is located in Commonwealth waters in the Barrow Sub-Basin. The wells are located in permit area WA-49-L, approximately 185 kilometres (km) WNW of Karratha in ~135 m to ~171 m water depth (Figure 3-1). The approximate location coordinates and water depth of the subsea exploration wells are provided in Table 3-2.

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

Well	Water depth (approx. m LAT)	Latitude (WGS84)	Longitude (WGS84)	Petroleum title(s)
Julimar East-1	~171 m	20° 06’ 23.21” S	115° 05’ 07.97” E	WA-49-L
Brunello-1 ST1	~151 m	20° 03’ 16.247” S	115° 10’ 25.273” E	WA-49-L
Brulimar-1	~171 m	20° 00’ 18.265” S	115° 11’ 04.989” E	WA-49-L
Balnaves Deep-1	~135 m	20° 04’ 58.213” S	115° 10’ 34.192” E	WA-49-L

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3.3.1 Activities outside Woodside's titles

Woodside notes that the Operational Area is larger than the area of Woodside's existing permit titles and crosses into currently vacant acreage (previously WA-526-P), represented as 'expired/relinquished' in Figure 3-1. To the extent that mooring placement may be carried out in parts of the Operational Area not included in Woodside's existing permit titles, Woodside will obtain the relevant authority or permit as required and only carry out activities in those areas in accordance with the authority or permit. This EP considers potential impacts to environmental receptors and other marine users, including other oil and gas operators, and where relevant, commitments made in this EP may be reflected in relevant agreements established with third parties related to access outside Woodside's titles.

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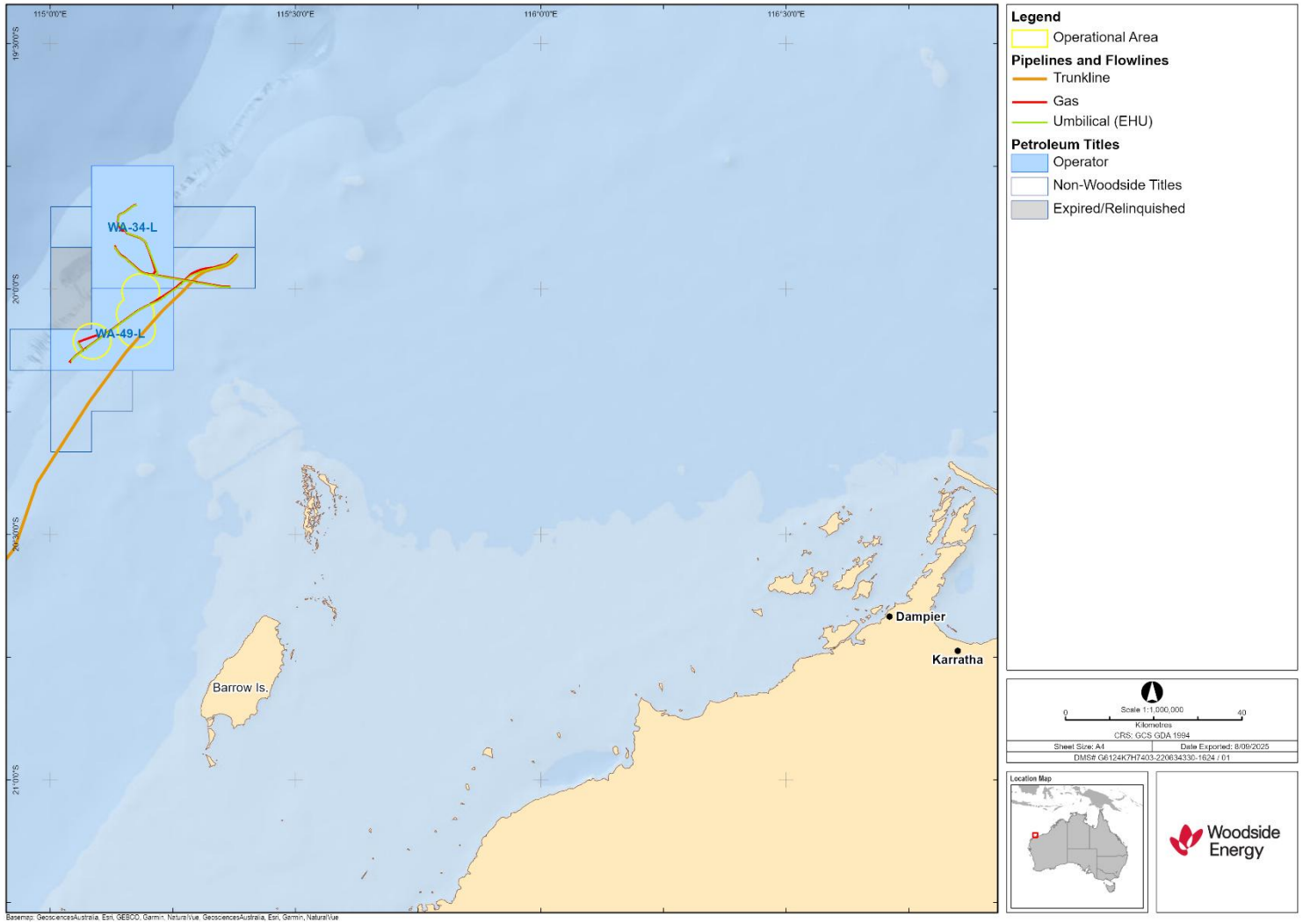

Figure 3-1: Location of the Petroleum Activity

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3.4 Operational Area

The Operational Area applicable to the scope of this EP is shown in Figure 3-1 and is defined by a 4000 m radius around each well to allow a moored MODU to undertake P&A/NWBM remediation and/or isolation activities. This includes a 1500 m radius around each well for non-moored activities and 1000 m buffer around well infrastructure to allow for IMR activities. A temporary 500 m exclusion zone will be implemented to manage vessel movements around the MODU during permanent plugging and NWBM remediation/removal activities.

Vessel-related activities within the Operational Area, conducted under this EP will comply with the requirements of this EP. Vessels supporting the Petroleum Activity, 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.

3.5 Timing

Proposed timing of the Petroleum Activity is outlined below, with approximate timings and durations for the activities provided in Table 3-3.

Vessel-based IMR activities are targeted to commence from 1 March 2026 may take place within the same campaign as the MODU or in a separate campaign prior to the arrival of the MODU[5]. The installation of moorings and/or tether clump weights may be required prior to MODU arrival or may occur concurrently to the Activity. Installation of moorings and/or tether clump weights is targeted to commence from 1st March 2026, subject to EP acceptance, however, these installation and consequent removal activities may occur concurrent to MODU-based activities during the campaign (e.g. the relocation of moorings and tether clump weights from one well to the next).

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

Timing and duration of the P&A activities is subject to change due to project schedule requirements, metocean conditions, vessel availability, unforeseen circumstances and weather. For this reason, the EP will be prepared as a 3-year EP.

This EP has risk-assessed activities throughout the year (all seasons) to provide operational flexibility for requirements and schedule changes, as well as vessel availability. This provides operational flexibility for requirements and schedule changes and vessel/MODU availability. The timeframes are therefore subject to change within the defined calendar years and, as no particular time periods have been nominated for avoidance based on environmental or stakeholder sensitivities, changes to the timing described above and as shown in Table 3-3 will not be interpreted as ‘new stages’ against Regulation 39(1).

[5] Vessel based IMR activities and wellhead removal may take place within the same campaign as the MODU-based P&A activity, or in a separate campaign prior to the arrival of the MODU and may be managed under the accepted NWS and Julimar Exploration Wellhead Decommissioning Environment Plan.

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

Activity	Approx. timing (and cumulative duration in the field)
Preparatory IMR activities (multiple activities to clean, inspect and test the wellhead prior to MODU arrival as described in Section 3.11.7).	Earliest commencement 1st March 2026[5]. 1 to 7 days per wellhead inspection.
IMR activities from an IMR vessel or AHTSV.	Commence any time to prepare for and support P&A activities, inspect, monitor, repair and maintain infrastructure until it is completely removed.
Vessel-based MODU pre-laid mooring or tether clump weight installation and recovery, including Anchor Hold Testing.	Conducted approximately one to four months prior to P&A activities or concurrently. Earliest commencement 1st March 2026. Approximately five to 10 days per well.
P&A Activity (Julimar East-1, Brulimar-1, Brunello-1 ST1).	Earliest commencement 1st April 2026 and be completed by December 2027. Approximately 10 to 60 days per well for three wells (up to 180 total days).
NWBM removal and/or isolation activity (Balnaves Deep-1).	Earliest commencement 1st April 2026 and be completed by December 2027. Approximately 2 to 20 days.

3.6 Vessels

Several vessel types will be required to complete the Petroleum Activity. These are summarised in Table 3-4.

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

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

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

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Table 3-4: Project vessel overview

Vessel	Activities
MODU	MODU, likely with combined DP and mooring capability, will perform the permanent plugging activities. NWBM isolation/removal activities at Balnaves Deep-1 well may be performed by MODU unless the activity is performed by an IMR vessel (which would be managed under the accepted NWS and Julimar Exploration Wellhead Decommissioning Environment Plan[6]). Typical specifications for a MODU are provided in Table 3-5.
Offshore project vessels	An IMR vessel (typically a MPSV, LCV or AHTSV) may be used to conduct removal of marine growth prior to the permanent plugging activity, in-situ machining, tether installation and IMR activities. An AHTSV will be used to install MODU moorings or tethering clump weights. Other support vessels may include: • Infield Support Vessel (ISV) or Platform Supply Vessel (PSV) for transporting equipment and materials from port/staging area to the Operational Area (e.g. equipment, fluids and cement) and for general resupply and support for the MODU. Support vessels will not anchor within the Operational Area and therefore will use DP.

3.6.1 Mobile offshore drilling unit

A MODU will be required to undertake the Petroleum Activity. The reference case is to use a hybrid MODU (Transocean Endurance) with both mooring and DP capability. Indicative specifications for the MODU are provided in Table 3-5. At least one support vessel will be in the field on standby duties near the MODU at all times.

Whilst the hybrid MODU has a DP thruster system capability to maintain station keeping as required, the majority of the P&A activities are expected to be performed by MODU secured via a mooring system anchored to the seabed. The MODU moves between wells using DP and maintains active DP systems until the MODU is completely connected to the mooring system. Subject to confirmation though riser and wellhead strength and fatigue analysis, some operations may be performed on DP mode. When the MODU is operating in moored mode, the DP system may be actively engaged to ensure the MODU does not offset beyond safe operating limits during abandonment operations, to allow for equipment maintenance or testing, or as otherwise required by MODU Contractor.

The NWBM remediation on Balnaves Deep-1 will be performed by MODU (if not completed by an IMR vessel) either being moored or on DP mode pending engineering assessment of the riser and wellhead strength and fatigue.

The MODU mooring system is planned to consist of eight anchors but may be expanded to 12 anchors, ranging from 15 t to 40 t with an individual footprint of 30 m² to 60 m², although the final design of the mooring system will be dependent on the outcome of a detailed mooring analysis undertaken prior to the commencement of the activity. The mooring anchors may be pre-installed where practicable, however, installation and removal may also occur concurrent to MODU activities during the campaign (e.g. the relocation of moorings and tether clump weights from one well to the next during MODU-based well P&A operations).

Each of the mooring lines will be connected to drum winches aboard the MODU enabling the tensioning of individual moorings to compensate for MODU movement during the activity. Multiple mooring spreads may be installed concurrently to facilitate efficient use of the MODU (i.e., ‘leap-frogging’ to pre-laid moorings when moving between drill centres).

[6] *Vessel based IMR activities and wellhead removal may take place within the same campaign as the MODU-based P&A activity, or in a separate campaign prior to the arrival of the MODU and may be managed under the accepted NWS and Julimar Exploration Wellhead Decommissioning Environment Plan.*

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The MODU will have a well control package to manage wellbore hydrocarbons during re-entry. Additionally, the rig may also be equipped with a well fluid handling package, enabling more efficient recovery, treatment, and storage of fluids containing residual hydrocarbons. Residual liquid hydrocarbons will either be retained onboard for onshore disposal or flared. Residual gas will be either flared or cold vented. All hydrocarbons recovered from wells will be managed in accordance with the MODU Safety Case.

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

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

- utility discharges, such as sewage, grey water, cooling water, reverse osmosis brine, and putrescible wastes.
- deck drainage/bilge water (Section 6.8.6) that conforms to discharge standards.
- ballast water.
- blow out prevention (BOP) fluids and hydraulic fluids.
- fluids recovered from wells, such as water, brine, operational contaminated by residual NWBM (within approved discharge limits).
- drilled cement, or in the case of Balnaves Deep-1 see Section 3.12.3.
- excess drilling fluids and related materials that meet discharge standards (Sections 6.8.7 and 6.8.8) such as:
  - excess cement slurry (including cement unit test slurry),
  - excess brine and water-based drilling fluids, and
  - drilled swarf, cement and cuttings.

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

The MODU will discharge deck drainage from open drainage areas, bilge water from closed drainage areas, putrescible waste, treated sewage, and grey water.

Volumes of treated sewage, putrescible wastes and grey water to the marine environment are estimated to be approximately 15 m³ per vessel per day. This is based on average volume of 75 L/person/day and a maximum of 200 persons on board.

Aqueous Film Forming Foam (AFFF) may be discharged where MODU helideck testing requirements (typically annual) fall within the on-hire period, and/or in the event of an emergency. Hazardous and non-hazardous wastes generated are removed from the vessels and disposed of onshore.

Table 3-5: Typical mobile offshore drilling unit specifications

Component	Specification
Rig type/design/class	Semi-submersible MODU
Accommodation (maximum persons on board)	200 persons (maximum persons on board)
Station keeping	For moored MODU: eight to 12-point anchor mooring system For hybrid MODU: eight to 12 point anchor mooring system and thrusters for Dynamic Positioning (DP3); mooring and DP can be used individually or combined For DP MODU: thrusters for Dynamic Positioning (DP3)
Bulk mud and cement storage capacity	Up to ~770 m³
Liquid mud storage capacity	Up to ~2500 m³
Fuel oil storage capacity	Up to ~4000 m³
Drill water storage capacity	Up to ~3500 m³

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3.6.2 Offshore support vessels

The MODU will be accompanied by at least one, but up to three, offshore support vessels. Support vessels will primarily be used to deploy and recover anchors, towing and supply (e.g., fuel, provisions, consumables etc.), but may perform other duties as required (e.g., pre-laying anchors or tethering clump weights, and emergency response).

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

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

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

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

Table 3-5: Typical specifications for offshore support vessels

Parameter	Indicative specification
Draft (max) (m)	eight to nine
Length (m)	110 to 130
Berths (persons)	130 (maximum persons on board)
Gross tonnage (t)	3000
Fuel type	marine diesel oil (MDO)
Total fuel volume (m^3)	500
Volume of largest fuel tank (m^3)	250

3.6.3 Remotely operated vehicles

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

- pre and post activity survey,
- visual inspections/observations,
- seabed and hazard survey,
- anchor hold testing,
- transponder deployment,
- subsea equipment land-out and recovery,
- BOP installation, testing, operation and recovery (including tether deployment and recovery, if required),
- placement of ROV tool baskets and mud mats on the seabed,
- corrosion survey,
- open water tool observation and guidance,

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- marine growth removal and cleaning,
- sediment relocation,
- subsea rigging, handling and cutting,
- manual valve functioning,
- wellhead tooling and cutting, or
- recovery of dropped objects.

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

3.7 Helicopters

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

3.8 Simultaneous operations

Simultaneous operations (SIMOPS) may occur between the Petroleum Activity and other activities occurring in or adjacent the Operational Area of other facilities, vessels, or live infrastructure. Potential SIMOPs include activities conducted under the:

- Chevron Wheatstone Campaign 2A/2B commissioning and start up.
- Julimar Development Phase 3 Drilling and Subsea Installation Environment Plan.
- NWS Phase 1 Plug and Abandonment and TPA-03 Well Intervention Environment Plan.
- NWS and Julimar Exploration Wellhead Decommissioning Environment Plan.

No simultaneous rig-based P&A operations – as in, more than one MODU in the Operational Area conducting P&A activities simultaneously – are planned within the scope of this EP.

It is noted that petroleum activities overlapping the Operational Area are operated by Woodside or its joint ventures, and will be managed under a SIMOPS plan. Relevant adjacent titleholders will be notified of Petroleum Activity commencement and completion as per Section 6.8.1.

3.9 Concurrent operations

There is potential that some concurrent preparatory activities conducted on a project vessel may still be ongoing once the MODU mobilises and commences plugging activities within the Operational Area.

If concurrent operations were to occur, up to three vessels supporting the MODU and one IMR vessel may be in the field at the same time based on:

- MODU (moored, DP or hybrid), or
- up to three MODU support vessels, AHTSVs and general supply/support vessels, and one IMR vessel.

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3.10 Infrastructure overview

All four wells in this scope were drilled as exploration or appraisal wells between 2007 and 2011.

The three wells earmarked for P&A were suspended following exploration activities. P&A activities will be performed to abandon the wells in line with current good practice.

The reservoir in the Balnaves Deep-1 well has already been abandoned, however NWBM is present in one of the annuli. To prevent loss to sea upon wellhead recovery, the NWBM will be remediated/removed and/or isolated.

The details of the infrastructure included in the scope of the Petroleum Activity, including well history and composition are summarised in Table 3-6.

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Table 3-6: Well infrastructure overview

Well	Year drilled	Drilling fluids	Well status	Displacement fluids (above the top cement plug)	Fluids within casing annuli (above the top cement plug)	Wellhead type and associated infrastructure		
						Exploration wellhead	Corrosion cap	Permanent guide base
Julimar East-1	2007	Seawater, high-viscosity pre-hydrated gel sweeps, WBM	Suspended exploration well; P&A activity addressed in this EP. ALARP assessments may be progressed to achieve acceptance of the well as abandoned in its current state. Should the well be accepted as abandoned, no further P&A operations will be performed under this EP.	Brine/Inhibited seawater	KCL polymer WBM	X	X	
Brunello-1 ST1	2007	Seawater, high-viscosity pre-hydrated gel sweeps, WBM	Suspended exploration well; P&A activity addressed in this EP. ALARP assessments may be progressed to achieve acceptance of the well as abandoned in its current state. Should the well be accepted as abandoned, no further P&A operations will be performed under this EP.	Brine/Inhibited seawater	KCL polymer WBM	X	X	X
Brulimar-1	2007	Seawater, high-viscosity pre-hydrated gel sweeps, WBM	Suspended exploration well; P&A activity addressed in this EP. ALARP assessments may be progressed to achieve acceptance of the well as abandoned in its current state. Should the well be accepted as abandoned, no further P&A operations will be performed under this EP.	Brine/Inhibited seawater	KCL polymer WBM	X		X

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Well	Year drilled	Drilling fluids	Well status	Displacement fluids (above the top cement plug)	Fluids within casing annuli (above the top cement plug)	Wellhead type and associated infrastructure		
						Exploration wellhead	Corrosion cap	Permanent guide base
Balnaves Deep-1	2011	Seawater, high-viscosity pre-hydrated gel sweeps, non-water based muds (NWBM)	Exploration well with well barriers within Balnaves Deep-1 were approved for abandonment by NOPSEMA on 26/7/21. Removal or isolation of NWBM in the annulus is required prior to wellhead removal.	Brine/Inhibited seawater and residual water based muds (WBM)	NWBM (Saraline 185V synthetic base oil)	X	X	

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3.10.1 Wellhead infrastructure composition

The wellheads within this EP are comprised of mild steel, with small amounts of elastomeric materials such as Teflon and Viton used within the seal components (up to 750 grams (g), representing, less than 0.1% of the wellhead composition). Surface coatings and paints have been used on the wellheads for corrosion protection and are zinc-oxide based. Steel debris or corrosion caps sit on top of most of the wellheads to protect them from marine growth and corrosion; with the exception of Brulimar-1 which is missing a cap. Wellhead height above the seabed varies between 2.4 m and 3 m from the mudline.

Brunello-1 ST1 and Brulimar-1 wellheads have an associated permanent guide base (PGB) which is comprised of mild steel.

Naturally occurring radioactive materials (NORMs) and mercury are not expected to be present within the wellheads as wellheads were used only for exploration purposes.

3.10.2 Residual chemicals and fluids

Chemicals and fluids within the wells, either above the top suspension plug (displaced fluids) or trapped within the casing annuli, have the potential to immediately exchange with seawater and will be discharged to the marine environment when the wellheads are being removed.

For the Balnaves Deep-1 well, NWBM remains trapped in the casing annuli above the top cement plug which will be addressed by NWBM isolation or removal prior to wellhead cut to prevent discharge to the marine environment.

The volumes of residual chemicals and fluids remaining in the well annuli have been calculated based on the depth of the shallowest plug and diameter of the inner casing and well (Section 6.8.8).

The typical residual displacement chemicals above the top cement plug are presented in Table 3-7. The typical chemicals within the displacement fluids and residual fluids in the casing annuli are presented in Table 3-8, along with their function and Centre for Environment, Fisheries and Aquaculture Science Offshore Chemical Notification Scheme (OCNS) ranking. Woodside's chemical assessment process is further described in Section 7.2.1.

Table 3-7: Typical residual displacement chemicals and fluids above the top cement plug

Chemical	Function	OCNS Ranking
Displacement Fluids		
Corrosion Inhibitor	Prevention of corrosion in the wellhead	Gold
Biocide	Prevent marine growth in wellhead	E

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Table 3-8: Typical residual chemicals and fluids within the casing annuli for WBM and NWBM wells

Chemical	Function	Typical Concentrations	OCNS Ranking
WBM Wells			
Water	Base Fluid	70 to 90 vol%	N/A
Salt (KCl, NaCl)	Inhibition	Up to 15 wt%	E
Caustic Soda	Acidity Control	0.15 ppb	E
Soda Ash	Hardness Control	0.25 ppb	E
Xanthan/Guar Gum	Viscosifier	1 to 2 ppb	E
Flowzan	Viscosifier	1 to 2 ppb	Gold[7]
POLYPAC, Dextrid (Starch)	Fluid Loss Control Agent	2.5 to 3.5 ppb	E
Encapsulating Polymer/s (e.g. PHPA, IDCAP D)	Shale Inhibitor	1.0 to 2.5 ppb	Gold
Polyamine, glycol	Shale Inhibitor	3 to 5 vol%	Gold
Bentonite	Viscosity	Zero to 30 ppb	E
Calcium Carbonate	Loss Circulation Material	Zero to 50 ppb	E
Barite	Density	Zero to 200 ppb (mud weight dependent)	E
NWBM Annulus fluid in Balnaves Deep-1 Well – will be contained or circulated out prior to wellhead cut			
Saraline 185V	Synthetic Base Oil	51 vol%	E
Novatec P	Primary Emulsifier Additive	8 ppb	Gold
Novatec S	Secondary Emulsifier Additive	4 ppb	E
Versagel HT	Viscosifier Additive	4 ppb	E
Versatrol HT	Fluid Loss Control	5.7 to 23 kg/m^3	D
Soltex	Filter Cake Sealing Additive	2 ppb	Gold
Lime	Alkalinity Control	3 ppb	E
Calcium Chlorine (CaCl2)	Salinity Control	210,000 mg/L	E
Barite	Weighting Agent	225 ppb	E

3.10.3 Overview of all property in the Petroleum Title

An overview of all of Woodside's property with the Petroleum Title that this EP relates to, including property conducting activities outside of the scope of this EP, is summarised in Table 3-9. Where infrastructure is outside the scope of this EP, the relevant EP that that infrastructure is managed under has been provided. Where infrastructure is within the scope of this EP, indicative removal dates have been provided.

[7] *Chemicals are considered to 'Pose Little or No Risk to the Environment (PLONAR)*

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Table 3-9: Inventory of other property in the petroleum title

Title	Infrastructure Present	Relevant EP	Indicative Removal Date
WA-49-L	Balnaves Deep-1 wellhead stump Brulimar-1 wellhead and PGB Brunello-1 ST1 wellhead and PGB Julimar East-1 wellhead stump	This EP and the NWS and Julimar Exploration Wellhead Decommissioning Environment Plan.	Activities under this EP are planned to occur in 2026.
	Grange-1-WA wellhead stump Julimar South East -1 wellhead	NWS and Julimar Exploration Wellhead Decommissioning Environment Plan.	Grange-1 well head removed with 50 mm stump remaining and planned to be left in-situ. Julimar South East -1 is planned to be removed in 2026 (Campaign 2).
	Balnaves-5H wellhead stump Balnaves-6H wellhead stump Balnaves-7WI wellhead stump Balnaves-8GI wellhead stump Six disconnectable turret mooring (DTM) anchors	Balnaves Plug and Abandonment EP.	Wellheads removed in 2025, 100-150 mm stumps remain. Six turret anchors approved to be left in-situ.
	Production wells x13 Production manifolds x4 Inline T assembly	Julimar Operations EP.	Not applicable.

3.11 Project vessel-based activities

3.11.1 Support activities

A variety of materials are routinely bulk transferred from general support vessels to the MODU or IMR vessel including equipment, fluids, and cements. A range of bulk transfer stations and equipment is in place to accommodate the bulk transfer of each type of material. There is also a capacity to bulk transfer fluids and waste oil to be undertaken between vessels and between a vessel and the MODU within the Operational Area. Support vessels also undertake transfers of equipment, material and consumables to and from the MODU, or between support vessels.

Loading and back-loading is undertaken using cranes to lift materials in appropriate offshore rated containers (International Organization for Standardization [ISO] tanks, skip bins, containers) or as bundles (tubulars) between the MODU and a support vessel.

There is also capacity for standby duties during P&A activities, which may include but is not limited to periods of helicopter operations and working over the side activities while in the field.

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

The vessels will also discharge deck drainage from open drainage areas, bilge water from closed drainage areas, putrescible waste, treated sewage, and grey water. Volumes of treated sewage, putrescible wastes and grey water to the marine environment are estimated to be approximately 15 m^3 per vessel per day. This is based on average volume of 75 L/person/day and a maximum of 200 persons on board. However, it is noted that vessels such as project vessels will have considerably less persons on board.

AFFF may be discharged where project vessel helideck testing requirements (typically annual) fall within the on-hire period, and/or in the event of an emergency. Hazardous and non-hazardous wastes generated are removed from the vessels and disposed of onshore.

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3.11.2 Mooring installation and anchor holding testing

The MODU mooring system includes chain/wire/fibre and anchors and may be pre-laid before the MODU arrives in the Operational Area, or upon MODU arrival. Prior to the MODU arriving in the permit area a 'Rig Move and Position Plan' will be developed outlining the appropriate mooring configuration necessary to keep the MODU securely on location for the duration of the P&A activity. Mooring may require an eight to 12 point mooring system at each well location, depending on the time of year. Moorings are typically placed in a radius around the well of up to approximately 3 km. A mooring analysis is undertaken to determine the appropriate mooring pattern for the eight to 12 point anchors, which are placed radially around the MODU. The final mooring configuration and design will be dependent on the outcome of this assessment, in alignment with requirements of MODU Vessel Safety Case Revision.

Transponders may be required to inform anchor positioning. The expected frequency (Hz) and source level (dB re 1 µPa @ 1 m) of the signal from transponders is 18 to 26 kHz, 196 dB (ref. 1 µPa @ 1 m).

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

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

Sediment sampling may also be necessary to provide data about composition and rock/substrate strength, as an input into the mooring or conductor design, and verify seabed conditions for anchor hold. Sediment sampling is further described in Section 3.11.8.

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

3.11.3 Blow out preventer tether system installation

To manage wellhead fatigue during P&A activities, a BOP tether system may be required to limit BOP movement. A typical BOP tether system uses four to eight clump weights or similar anchoring system, weighing about 25 to 60 tonnes each, although final number and weight of the clump weights may differ depending on seabed and current conditions. These clump weights are deployed to the seabed about 20 to 40 m away from the wellhead, usually from an AHTSV. A ROV will then connect tethers between the clump weights and the BOP, which are subsequently tensioned to limit BOP movement. A small volume (~40L) of hydraulic fluid may be discharged to marine environment due to actuation of tethering system. Suction piles may be used instead of clump weights, with typically four 160" diameter piles used per tether system. Both types of BOP tether will be removed at the end of the activity along with any moorings. The requirement for BOP tethering will be subject to the outcomes of a well specific wellhead fatigue analysis.

3.11.4 Dynamic positioning

DP uses satellite navigation and radio transponders in conjunction with thrusters to maintain the position of the MODU and offshore support vessels at the required location. Information about the position of the MODU is provided via a number of seabed transponders, which emit signals that are detected by receivers on the MODU and used to calculate position. An array of long base line (LBL) transponders are typically deployed in an array on the seabed for the duration of the P&A at each well, and are recovered at the end, generally by ROV. Transponders may be moored to the seabed either by a clump weight or mounted on a seabed frame. The standard clump weights used, made of cement or steel, are estimated to weigh ~80 kg. A typical seabed frame is 1.5 m × 1.5 m × 1.5 m in dimension and weighs approximately 40 kg. Clump weights and seabed frames will be recovered prior to completion of the Petroleum Activity.

The NWBM removal or isolation at Balnaves Deep-1 may be performed in DP mode rather than employing an anchoring system. Some abandonment activities may also be performed in DP mode, subject to riser and wellhead strength and fatigue analysis.

The offshore support vessels described in Section 3.6 will not anchor within the Operational Area and will use DP to maintain position when working in proximity to the MODU.

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3.11.5 Holding station: rig anchor release MODU

The hybrid MODU scenario is such that the MODU is DP capable though will likely predominantly hold station via the pre-laid mooring system when performing the abandonment operations. If a hybrid MODU is used, it will likely have a rig anchor release (RAR) system integrated. The moorings are typically pre-laid as described in Section 3.11.2, though a RAR device couples the MODU mooring components with the anchor mooring components. The RAR is an acoustic release connecting link that can be installed in a mooring line to enable a rapid disconnection of a MODU from the mooring system. Each mooring leg would have one RAR installed in the mooring line.

The acoustic release process is instigated from a command unit on the MODU that, when activated, transmits a low frequency signal (9 – 11 kHz) that is received by the RAR transducer in the mooring line and activates the primary hydraulic actuator. The hydraulic cylinder then releases the RAR and the mooring line is disconnected. The MODU then recovers the wire/chain ready for transit (under its own propulsion) and the subsea mooring leg remains in place, which may be buoyed if required.

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

3.11.6 Refuelling/bunkering

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

3.11.7 Preparation and support activities

Preparatory activities may be conducted by AHTSV, IMR vessel[8] or similar with ROV capability prior to plug and abandonment being undertaken by a MODU. Some of the activities may also be conducted by the MODU ROV. The purpose being to prepare the wells to facilitate an efficient and informed approach to rig based plug and abandonment activities. IMR activities may require the deployment of frames/baskets which are temporarily placed on the seabed. These typically have a perforated base with a seabed footprint of about 15 m². This temporary equipment is removed from field via recovery at the completion of the Petroleum Activity.

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

The preparatory activities that may be conducted include:

- wellhead inspection and cleaning to remove marine growth using water jetting, brush systems or sulfamic acid soaks,
- if required, in-situ machining to improve seal-face for BOP connection,
- leak and pressure testing.
- installation of new wellhead cap after wellhead cleaning and inspection; oxygen scavenger, biocide and/or corrosion inhibitor may be left in the well,
- pre-lay MODU moorings, and
- tethering installation (clump weight or piles).

[8] *Vessel based IMR activities and wellhead removal may take place within the same campaign as the MODU-based P&A activity, or in a separate campaign prior to the arrival of the MODU and may be managed under the accepted NWS and Julimar Exploration Wellhead Decommissioning Environment Plan.*

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3.11.7.1 Marine growth removal

Excess marine growth and mineral deposits may need to be removed from well infrastructure using an ROV before performing permanent plugging activities. Marine growth removal may also be required for the MODU throughout the campaign. Table 3-10 lists the different cleaning techniques that may be used. Sulfamic (or equivalent) acid may be used to clean any calcium deposits that may have built up over time on the subsea tree interfaces. All additives discharged to the marine environment will have an environmental assessment completed before use.

Table 3-10: Marine growth removal activities

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

3.11.7.2 Fluids and discharges

Planned chemical discharges may occur during preparation and support activities. Chemicals used in the well infrastructure may be released during inspection and maintenance activities; these include but are not limited to chemicals listed in Table 3-11. All chemicals selected for use will be assessed under Woodside's internal guidelines to ensure potential impacts are acceptable, ALARP and are in line with Woodside's internal guidelines (Section 7.2).

3.11.7.3 Sediment relocation

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

Table 3-11: Potential inspection and maintenance fluids and indicative discharge volumes

Chemical	Intended Use	Indicative Discharge Volume
Acid (sulfamic or equivalent)	Removes calcium deposits.	Approximately 250 L per well.
Oxygen scavenger	De-oxygenates the fluid within the wellhead to prevent corrosion and aerobic bacterial growth.	Approximately 100 g per well.
Biocide	Inhibits growth of microorganisms preventing issues such as corrosion.	Approximately 100 g per well.
Corrosion inhibitor	Prevents or minimises corrosion of equipment.	Approximately 300 g per well.

3.11.8 Sediment sampling

Sediment sampling may be undertaken as part of the Petroleum Activity to provide data about composition and rock/substrate strength, as an input into the mooring or conductor design, and verify seabed conditions for anchor hold. Sediment sampling will be undertaken from a support vessel and may include taking a physical sample of the seabed using ROV or drop corer, or a measuring device such as a cone penetrometer.

3.12 Mobile offshore drilling unit based permanent plugging activities

3.12.1 Permanent plugging

The permanent plugging activities at Julimar East-1, Brulimar-1 and Brunello-1 ST1 wells, including designing and installing permanent well barriers, will be completed in accordance with the NOPSEMA-accepted Well Operational Management Plan (WOMP) as required under the OPGGS (Resource Management and Administration) Regulations 2011.

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The planned permanent plugging scope for the Julimar-Brunello wells includes the following steps:

- Position MODU over well and anchor or connect to pre-laid anchors (Section 3.11.2).
- Clean and prepare wellhead connector, if not completed prior to MODU arrival (Section 3.11.7).
- Run pressure control equipment on riser and connect to wellhead as required and test (for some wells this may require connecting and activating the tethering system) (Section 3.11.3).
- Drill out shallow cement plug. This could be done either:
  - using a jointed pipe drill string, or
  - using a coiled tubing unit with a mud motor. This will require running alternative Pressure Control Equipment (PCE) (Section 3.12.1.3).
- If required, kill well/remove hydrocarbons from well (most likely via Lubricate and Bleed operations although bullhead killing may be required) (Section 3.13.2).
- If required, circulate wellbore to brine/WBM.
- If required, install suspension barrier(s) in the well and test.
- If required, verify downhole casing and cement integrity via wireline logging (Section 3.13.3).
- If required, remediate annulus cement with Perf-Wash-Cement or section milling (Section 3.13.4).
- If required, verify moving shales through logging and/or pressure testing.
- Install and verify reservoir permanent abandonment cement plugs across caprock (Section 3.12.1.4).
- If required, install any other additional barriers or wellbore isolations.
- If required, verify annulus pressure/fluids.
- Recover casing hanger (either before or after BOP recovered).
- Recover pressure control equipment (including releasing tethers if used), release anchors and leave Operational Area.
- Repeat for each well.
- Wellheads and any other remaining infrastructure (e.g., guide bases) may be recovered to the MODU at this stage. Alternatively, cut the wellhead but leave in place for a vessel to collect wellheads later.
- Perform as left survey using ROV (Section 3.14).

3.12.1.1 Blowout preventer and subsea control systems

Permanent plugging of the Julimar-Brunello wells commences with the installation of a BOP run on a marine riser. The BOP and marine riser provide a physical connection between the well and MODU. This enables a closed circulation system to be maintained, where fluids can be circulated from the well bore back to the MODU.

An alternative subsea Pressure Control Equipment (PCE) package such as an Intervention Riser System (IRS) or Emergency Disconnect Package/Lower Riser Package (EDP/LRP) may be run to seal, control, and monitor the well during permanent plugging activities instead of the BOP and marine riser.

The operation of the BOP/subsea PCE components uses open hydraulic systems, using water-based BOP control fluids. The BOP is required to be regularly function tested when subsea, as defined by legislative requirements. The BOP is function tested during assembly and maintenance and during operation on the seabed. Each time the BOP is operated (including pressure testing approximately every 21 days and a function test approximately every seven days, excluding the week a pressure test is conducted), the maximum volume of BOP control fluid that will be released to the marine environment per test is up to 3,620 L. All control fluids discharged to the marine environment will have an environmental assessment completed before use. The functioning of subsea controls will discharge control fluid into the marine riser that will be contained and returned to the MODU tanks.

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3.12.1.2 Cement unit test

Upon arrival at the Operational Area, the MODU is typically required to perform a cement unit test to test the functionality of the cement unit and the MODU bulk cement delivery system before performing barrier installation. Proper functioning of the cement system is important for ensuring well barrier integrity. A cement unit test involves mixing a cement slurry in the cementing unit, or associated mixing equipment, onboard the MODU. Once functionality of the cement unit and delivery system has been confirmed, the slurry is discharged through the cement unit discharge line or through drill pipe below sea level. The slurry is usually a mix of cement and water; however, may contain stabilisers or chemical additives, typically in low concentrations.

3.12.1.3 Drilling out shallow cement plug

During the permanent plugging operation, drilling out of the shallow cement plug using WBM will be required so the wellbore can be re-entered, or deep cement plug(s) if required to be installed to meet current legislative requirements. WBM and cement cuttings will be processed through the drilling muds process equipment on board the MODU and discharged overboard. Approximately 25 m^3 of cement cuttings and approximately 250 m^3 of WBM will be processed through the MODU's shakers and mud system before being discharged.

3.12.1.4 Installation of permanent barriers

Installation of the permanent barriers involves downhole casing and annulus cement integrity being verified via wireline logging if required. If determined to be required to remediate a poor or insufficient annulus cement, casing may be perforated, and cement circulated behind the casing. Alternatively, the casing may be cut or milled (refer to Section 3.13). Following this, permanent abandonment cement plugs will be installed and verified.

Cementing operations are undertaken to ensure permanent well integrity during well abandonment. Cement will be pumped into the wellbore at specified depths to act as permanent barriers. These cement plugs are intended to isolate potential flow zones within the formation and will eliminate the possibility of potential hydrocarbon exposure to the marine environment. The characteristics of the cement barrier (e.g., cement specification, barrier length etc.) will be verified in accordance with the accepted WOMP.

Cementing fluids will generally consist of Portland cement with additives (such as inorganic salts, lignins, bentonite, barite, silicates, defoamers and surfactants). Cement will be transported as dry bulk to the MODU by project vessels and mixed with water and chemicals in the cementing unit onboard the MODU to form wet cement slurry immediately prior to use. The cement slurry is then injected down to the well using high pressure pumps. Cementing fluids are not routinely discharged to the marine environment, however, volumes maybe discharged to the environment:

- When testing the cementing unit aboard the MODU (approximately 1–10 m3).
- When abandoning the motherbore of the well (approximately 10 m3).
- When disposing of excess slurry due to a failed cement job (approximately 55 m3 based upon 9-5/8" casing).
- When surplus fluids require disposal after cementing operations at the surface (approximately 5 m3).

Cementing fluid discharges are further discussed in Section 3.12.4.

Cement spacers are used as part of the cementing process to assist with cleaning of the casing sections prior to cement flow through. The spacers may consist of either seawater or a mixture of fresh water with weighting agents and other additives to aid with the cleaning of casing and cement placement. A dye may be added to the spacer where the cement is returned to the seabed surface; it is used to provide a pre-indicator of cement overflow to the seabed surface, to ensure adequate cement height.

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3.12.1.5 Moving between wells

Well suspension barrier installation activities may be conducted as batch operations across all or subset of wells with the MODU in DP mode. Once the well abandonment cement plugs have been set, tested and verified, the MODU riser and BOP will be disconnected from the well and returned to the MODU before moving to next well location. The BOP may be recovered back to the MODU or hung off in the moonpool if batching operations.

3.12.2 Removal and recovery of wellheads

Well infrastructure for all exploration wells will be removed as soon as practicable once wells are permanently abandoned in accordance with applicable regulatory requirements.

Options for removing and recovering of all four wellheads are described in Table 3-12. The wellheads are planned to be cut using mechanical tools, abrasive water jet (ABJ) cutting, or a diamond wire saw. If wellheads will be cut using external cutting methods, the cut will be made as close as reasonable to the mudline (within 0.5 m height above the mudline).

Removal of all four wellheads using the MODU may not be completed as a part of this EP. Whilst the use of the MODU is a feasible option for wellhead infrastructure removal, there are technical, safety, cost and schedule benefits from utilising a support vessel (AHTSV) for these activities. Once the wellheads are cut, the well infrastructure will be recovered to the MODU or support vessel and transported to shore for reuse or disposal in an acceptable manner. If required, wellheads may be cut and wet parked on mud mats within the Operational Area. Wet parked wellheads will then be removed at a later date by a construction support vessel operating under the NWS and Julimar Exploration Wellhead Decommissioning EP[9], which includes assessment for this activity.

Any remaining well infrastructure will be recorded in the Julimar field inventory and managed under the accepted Julimar Operations EP until completion of all decommissioning activities in the Julimar field.

Table 3-12: Wellhead cutting methods

Method	Description
Mechanical internal cutting	Method: method uses mechanical cutting knives that are inserted into the inner well casing and rotated. Uses: suitable for wells with up to two casing strings, where an internal cut can be achieved, and within all water depths. Wells with more than two strings can be cut in stages. Cut at or below the mud line.
Abrasive water jet (AWJ) internal cutting	Method: method uses a system of high-pressure water entrained with grit and flocculant pumped via an umbilical from a vessel to a subsea cutting tool that is inserted into the inner well casing. Uses: suitable where an internal cut can be achieved and within water depths less than approximately 300 to 350 m. Not restricted by number of casing strings. Where possible, cut is made at a sufficient depth below the mudline (more than 3 m) in accordance with international Well standard practice, e.g. Oil and Gas UK Well Decommissioning Guidelines (OGUK 2018).
External cutting using diamond wire saw	Method: method uses a hydraulically driven motor and pulley system to operate an industrial diamond cutting wire via a vessel or ROV. Clamps to the outside of wellhead at the base and cuts externally. Uses: Suitable for wells within all water depths. Cut is made as close to the mudline as reasonably practicable (i.e. within 0.5 m height above the mudline).

[9] *Vessel based IMR activities and wellhead removal may take place within the same campaign as the MODU-based P&A activity, or in a separate campaign prior to the arrival of the MODU and may be managed under the accepted NWS and Julimar Exploration Wellhead Decommissioning Environment Plan.*

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3.12.3 Non-water-based mud remediation

Reservoir abandonment activities were completed on well Balnaves Deep-1 during the initial well construction activity and the reservoir has been accepted as abandoned. At this time, a finite volume (Section 6.8.8) of NWBM (Saraline 185V with constituent paraffin synthetic base oil) was left in the 10-3/4 x 13-3/8" casing annulus, which would be left exposed to sea upon wellhead removal. The activities required to be completed at Balnaves Deep-1 under this EP therefore involve removal and/or isolation of the NWBM within this annulus to allow the removal of the wellhead without a release of the annulus inventory.

Various MODU-based NWBM removal/isolation methods have been identified as potential methods for remediation including:

- conventional riser-based rig intervention,
- open water (riserless) rig intervention, and
- shallow (above plug) rig intervention.

Conventional Riser-based Rig Intervention methods are described in Section 3.12.1, where the MODU is moored, BOP and drilling riser is run, and the shallow plug is drilled out to allow access to the annulus for remediation and/or isolation of the NWBM.

Open Water Rig Intervention methods involve drilling the shallowest cement plug riserless (in either moored or DP mode). This operation would use seawater with sweeps, (pre-hydrated bentonite, guar gum or similar) or drilling fluids to circulate drilled cement from the wellbore (discharge to seabed during riserless drilling). As a contingency, Pump and Dump (PAD) water-based mud may be used if required. This operation is equivalent to riserless top-hole drilling operations in development well constructions. Once a sufficient length of the shallowest cement plug has been removed, NWBM isolation can be performed using Open Water methods.

Riserless operations are considered on the basis the Balnaves Deep-1 well reservoir is already accepted as permanently abandoned and the operations are restricted to remediating a contained annulus volume of NWBM.

Shallow (above plug) Rig Intervention involves remediating the NWBM barrier above the shallowest cement plug. This operation would involve temporarily sealing the annulus (mechanically or using sealants) within the interval above the plug. With the deep annulus isolated, hydraulic access to the upper annulus would be gained, whereby permanent isolations can be installed.

The operation of NWBM remediation can be done in two ways:

- Replace NWBM with water-based fluids similar to those in the annuli of other wells (Section 3.12.3.1).
- Isolate NWBM in the annulus to prevent immediate swap-out of NWBM with the marine environment upon wellhead removal (section 3.12.3.2).

This NWBM remediation operation may be performed in moored or DP mode.

As a result the list below describes the various activities that may be used for NWBM remediation. Activities may not follow the precise sequence outlined below and not all activities may be required.

- Position MODU over well centre and if required, anchor or connect to pre-laid anchors (Section 3.11.2).
- If required, clean and prepare wellhead connector (Section 3.11.7).
- If required, run BOP on riser and connect to wellhead, test as required (Section 3.12.1.1).
- If required, drill out shallow cement plug. This could be done either:
  - using a jointed pipe drill string, or
  - using a coiled tubing unit with a mud motor. This will require running additional Pressure Containing Equipment (PCE) (Section 3.12.1.3).
- If required, isolate deeper annulus fluids using mechanical or hydraulic casing expansion tools/packers.
- If required, perforate (explosive or mechanical) the casing shallow and deeper and circulate out NWBM from the annulus (Section 3.12.3.1).

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- If required, inject or circulate in cement or alternative isolation material into the annulus to isolate any remaining NWBM.
- If required, recover casing hangers (either before or after BOP recovered).
- If required, recover BOP (including releasing tethers if used), release anchors and leave Operational Area (Section 3.12.1.5).
- Wellheads and any other remaining infrastructure (e.g., guide bases) may be recovered to the MODU at this stage. Alternatively,
  - Cut the wellhead.
  - Wet park the cut and pulled wellhead on a mud mat.
  - Perform an as left survey using ROV as per Section 3.14.
  - Wellhead to be collected by a vessel operating under the North West Shelf and Julimar Wellhead Decommissioning10 EP at a later date.

NWBM remediation may also be conducted Open Water (Riserless) from an intervention vessel (IMR vessel) with specialised open water tools managed under the accepted NWS and Julimar Exploration Wellhead Decommissioning Environment Plan[10].

NWBM remediation is performed to the well annulus from inside the wellbore. As a result, there may be a pocket of residual NWBM remaining between the wellhead and the location of the remediation. Consequently, there is the potential for loss of this residual NWBM (up to 5 m^3) to the marine environment during wellhead severance activities.

3.12.3.1 Annulus cleanout

When displacing NWBM from the Balnaves-Deep 1 annulus, a series of fluid pills (high viscosity, surfactants) may be pumped ahead of brine or WBM to improve displacement efficiency, minimise the contamination interface and minimise residual NWBM on the downhole casing. The recovered NWBM and interface fluids are captured in a mud pit and returned to shore. After removal of the NWBM from the annulus, an upper abandonment plug may be installed to contain any remaining NWBM if required.

Any NWBM and clean-out fluids from this operation will be routed via the MODU's mud system. Clean-up brine contaminated with base oil or NWBM, will be discharged if content is less than 1% by volume oil. If discharge specification cannot be met (i.e. is greater than 1% by volume oil content), the fluid will be returned to shore or may be disposed of inside the well and isolated by a containment plug. Up to 160 m^3 of fluid containing greater than 1% oil from NWBM may be returned to the MODU per well and taken to shore for disposal if discharge specifications cannot be met.

3.12.3.2 Isolation of non-water-based mud

Isolation of NWBM consists of circulating a barrier material such as cement, bismuth or resin, into the top section of the annulus to isolate NWBM deeper in the annulus or across the full wellbore after cutting and pulling part of the casing. A flow restriction may be formed prior to circulating in the barrier material or pulling the casing, by expanding the casing string to its adjacent 13-3/8" casing sting. Subsequently, the additional barrier material will be installed to further isolate the NWBM prior to wellhead removal.

[10] Vessel based IMR activities and wellhead removal may take place within the same campaign as the MODU-based P&A activity, or in a separate campaign prior to the arrival of the MODU and may be managed under the accepted NWS and Julimar Exploration Wellhead Decommissioning Environment Plan.

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3.12.4 Cement, barite and bentonite discharge

A number of options for removing excess cement, barite and bentonite (dry bulk) after well operations are completed from the MODU exist. Woodside have developed a process to assess all safe and technically feasible options for the excess product before a decision is made to discharge overboard, this includes the considering the following options:

- Retaining products on the MODU to be used for subsequent Woodside drilling activities where the Petroleum Activity is not the last in the Woodside MODU sequence.
- Retaining products on the MODU to be used by the next titleholder who has the MODU on hire.
- Transferring to another Woodside-contracted MODU operating in the region.
- Transferring to another titleholder-contracted MODU operating in the region.
- Returning to shore for onshore storage and/or disposal if a facility is available that is both safe and technically feasible to transfer to.
- Or if these options are not feasible, discharged to the marine environment.

Towards the end of the campaign, if re-use, transfer or on-sale of the dry bulk stocks becomes not feasible, Woodside will implement stock reduction measures to reduce the volume dry bulk stock requirement, to that necessary for well control, as defined in relevant well control procedures. The maximum conservative discharge estimates for are:

- cement: 150 tonnes
- barite: 150 tonnes
- bentonite: 150 tonnes

3.12.5 Mud pits

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

3.13 Additional potential activities for permanent plugging of wells

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

3.13.1 Marine riser clean out

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

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

- Ensure riser is clean prior to initial deployment for the P&A of the first well.
- Run riser brushes while the riser and BOP or the IRS are suspended (open water).
- Implement a BOP or IRS flushing sequence prior to landing on the wellhead.
- Once the BOP and riser or IRS are landed out, use available cleaning tools to clean the interface surfaces where debris build-up might take place.

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

3.13.2 Well kill

Wells requiring abandonment (i.e. all wells with the exception of the Balnaves Deep-1 well) already have a cement-based suspension plug installed. Therefore, it is unlikely that a connection exists between the reservoir interval and the wellbore, and the most likely fluids contained in the wellbore are suspension fluids rather than hydrocarbons. However, there is a risk of the pre-existing cement plug not forming an effective barrier, and communication with the reservoir, resulting in suspension fluids mixing with hydrocarbons during the extended suspension period. These hydrocarbons would require lubrication and bleeding off or well kill. Although the extended suspension period might have resulted in hydrocarbons in the well via minor permeability in the in-situ cement plug, continued influx at high rates is not considered a credible scenario for the suspended exploration wells.

If well kill is required following removal of the shallow cement plug within the well, well kill fluid will be circulated into the well or pumped into the formation. This is to control the residual pressure from the formation and/or to bullhead well fluids into the reservoir. The well kill fluid will be a weighted brine, mud or seawater which may contain additives to reduce reservoir permeability post well kill. The type of fluid and additives will be assessed and will comply with the approved chemical assessment process outlined in Section 7.2.1.

3.13.2.1 Well kill emissions

Fluids returned to the MODU during well kill operations will pass through the rig well control package or fluid handling bleed-off package (if fitted). The primary method will be though the rig well control package.

The additional fluid handling bleed-off package is designed to take fluids through a choke and into a liquid knock-out vessel or a surge tank (pressure rated). The knock-out vessel includes a separator which allows for gas and liquids to be separated. The gas, dependant on pressures and volumes, will be flared via a burner boom or cold vented from a safe location overboard. Liquids from the knock-out vessel or surge tank may be pumped to the burner head and burned via air atomisation or be diverted to a water treatment package.

During well kill operations, the volumes returned to the MODU will depend on the volume of hydrocarbons present in the well and whether any fluids can be bullheaded into the formation successfully. The maximum volumes that could be returned to the MODU are up to about 1.5 MMscf of gas per well which may be flared or vented from the MODU, and up to 55 bbl (9 m^3) of associated liquid hydrocarbons per well. It is estimated that there would be a maximum of 1,080 minutes (~18 hours) of flaring.

3.13.3 Wireline logging

Logging may be required to inspect and verify downhole casing and cement integrity. Wireline logging activities that may occur for permanent plugging activities include gamma ray and casing collar locator logging for depth correlation, ultrasonic imaging, and cement bond logging to measure cement integrity, pulsed neutron for fluid characterisation, and running of other tools in hole such as drifts, plugs, punch perforators/cutters etc., plug removal and installation. Wireline work may be performed open water without riser, or within the riser or BOP with appropriate isolation barriers in place. If wireline work is required to occur where there is a risk of barrier failure, the operation will be performed with full pressure control equipment at the surface.

3.13.4 Milling

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

Milling operations involve removing steel casing, annulus cement, and formation to expose fresh formation. The methods used include milling tools that create chips or ribbons of steel (swarf), chips of cement and chips of formation. Whilst milling, circulation is performed using a WBM/milling fluids system, which is distributed through the marine riser in a closed loop system. Milling is typically performed at a controlled rate

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(1 to 1.5 m/hr), to enable steel swarf to be removed effectively from the milling site to minimise the risk of 'birds nesting' of steel swarf, which may block fluid returns and jam equipment. Milling tools become worn during milling operations and will require tripping for new/redressing about every 30 to 50 m.

The primary solids control equipment (including shale shakers and ditch magnets, both upstream and downstream of the shakers) will separate swarf from the fluid system, however, any swarf particles which pass through this system will remain. The milling fluids, including up to an additional 2 m^3 of swarf, 3 m^3 of drilled cement and 3.5 m^3 of formation rock, will be discharged overboard per 100 m intervals if milling is required. As a result of restricted milling speeds, the rate of swarf and cement will be generated over several days (the rate is expected to be about 50m per 18 hours).

3.14 As-left survey

Woodside will undertake as-left surveys at completion of P&A activities.

Damage to the seabed from the proposed permanent plugging activities are assessed in Section 6.8.2 and Section 6.9.10. This seabed disturbance is predicted to gradually infill over time, acting as depositional areas for suspended material in the area. As such no sediment sampling and/or seabed remediation is planned for the Petroleum Activity.

3.15 Unplanned contingency activities

3.15.1 Emergency disconnect sequence

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

3.15.2 Temporary well suspension

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

3.16 Project fluids

3.16.1 Drilling fluid system

The base case of the proposed Petroleum Activity includes using WBM, well kill brine, drilling fluids, and wet cement and will produce casing annulus fluids (containing residual brine or WBM/NWBM, residual hydrocarbons and residual produced formation water). For permanent abandonment, these fluids will be returned to the MODU during well bore clean out, installation of permanent abandonment barriers, and washing out of the mud pit. All chemicals selected for use will be assessed under Woodside's internal guidelines to ensure potential impacts are acceptable, ALARP and are in line with Woodside's internal guidelines (Section 7.2).

3.16.1.1 Water-based mud system

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

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

3.17 New technologies

Permanent abandonment plug(s) are typically cement pumped into the well bore at specified interval(s) determined through the well barrier design process. There may also be new material technologies that fulfil permanent well plugging for abandonment requirements that may be considered instead of or in combination with cement. These will be assessed using the management of change assessment described in Section 7.8 and, if required, the chemical selection and assessment process outlined in Section 7.2.1.

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4. DESCRIPTION OF THE EXISTING ENVIRONMENT

4.1 Overview

In accordance with Regulations 21(2) and 21(3) of the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023*, this section describes the existing environment that may be affected by the activity (planned and unplanned, as described in Section 6, including details of the particular relevant values and sensitivities of the environment, which were used for the risk assessment.

The environment that may be affected (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. The ecological impact thresholds used to delineate the EMBA are defined in Section 6.9.1.3. The worst-case credible spill scenario for this EP is a loss of well containment.

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

The EMBA presented does not represent the predicted coverage of any one hydrocarbon spill or a depiction of a slick or plume at any particular point in time. Rather, the areas are a composite of a large number of theoretical paths, integrated over the full duration of the simulations under various metocean conditions.

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Table 4-1: Hydrocarbon spill thresholds used to define environment that may be affected 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/m^2 This represents the minimum oil thickness (0.01 mm) at which ecological impacts (e.g. to birds and marine mammals) are expected to occur.	1 g/m^2 This represents a wider area where a visible sheen may be present on the surface and, therefore, the concentration at which socio-cultural impacts to the visual amenity of the marine environment may occur. However, it is below concentrations at which ecological impacts are expected to occur. This low exposure value also establishes the planning area for scientific monitoring (NOPSEMA 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: Figure 5-1. In the event of a spill, DNP will be notified of AMPs which may be contacted by hydrocarbons at this threshold Table 7-7.
Entrained	100 ppb This represents potential toxic effects, particularly sublethal effects to highly sensitive species (NOPSEMA 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.		
Shoreline	100 g/m^2 This represents the threshold that could impact the survival and reproductive capacity of benthic epifaunal invertebrates living in intertidal habitat.	10 g/m^2 This represents the volume where hydrocarbons may be visible on the shoreline but is below concentrations at which ecological impacts are expected to occur.	N/A

[1] Further details including the source of the thresholds used to define the EMBA in this table are provided in Section 6.9.1.3.

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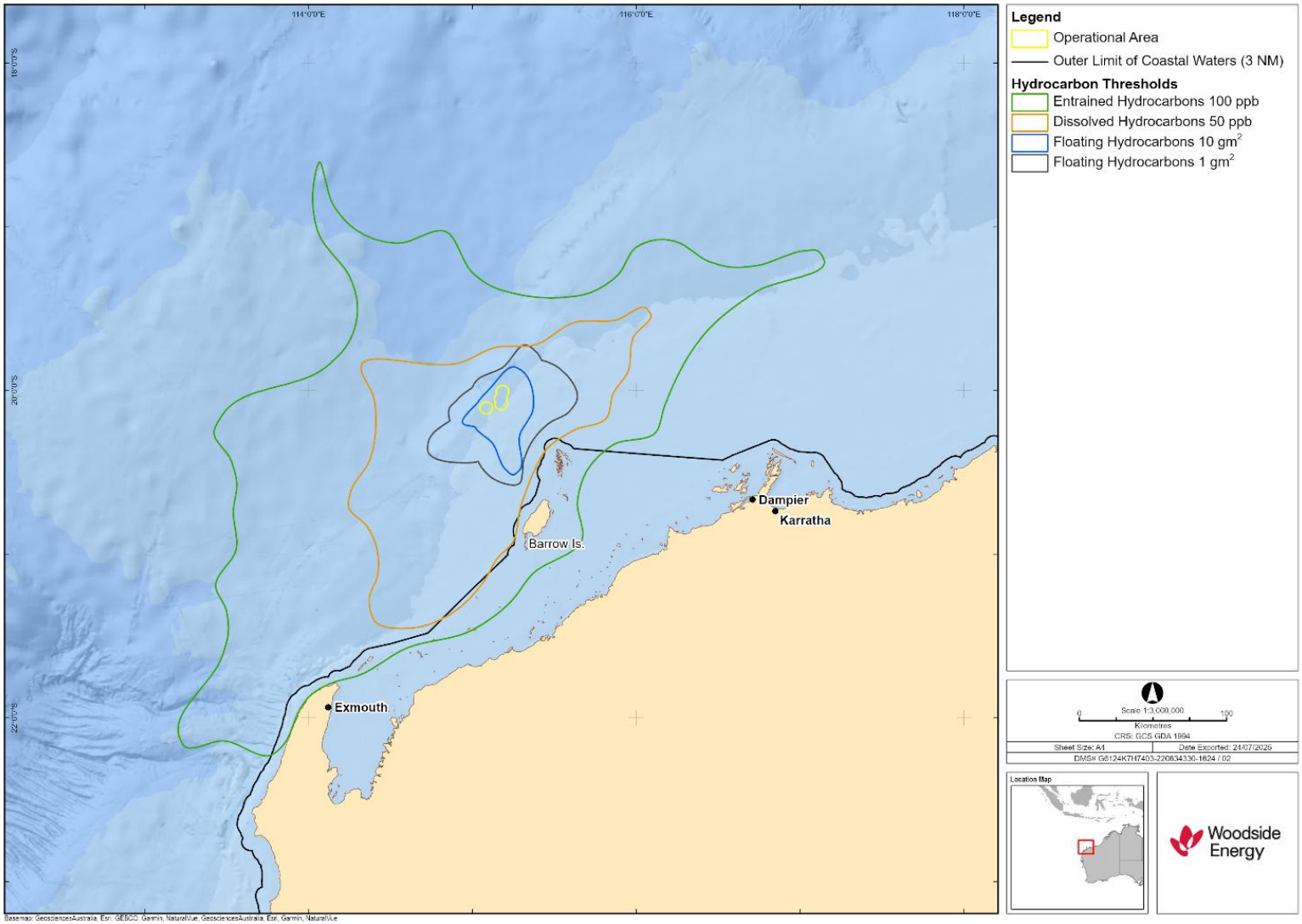

Figure 4-1: Environment that may be affected by the Petroleum Activity

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4.2 Regional context

The Operational Area is located in Commonwealth waters within the North-west marine region (NWMR), as defined under the Integrated Marine and Coastal Regionalisation of Australia (IMCRA v4.0) (Commonwealth of Australia [CoA] 2006), in water depths of approximately 120 m to 210 m. Within the NWMR, the Operational Area lies within the North West (NW) and North West Shelf (NWS) Provinces (Figure 4-2). Woodside's Existing Environment (Appendix C) summarises the characteristics for the relevant marine bioregions.

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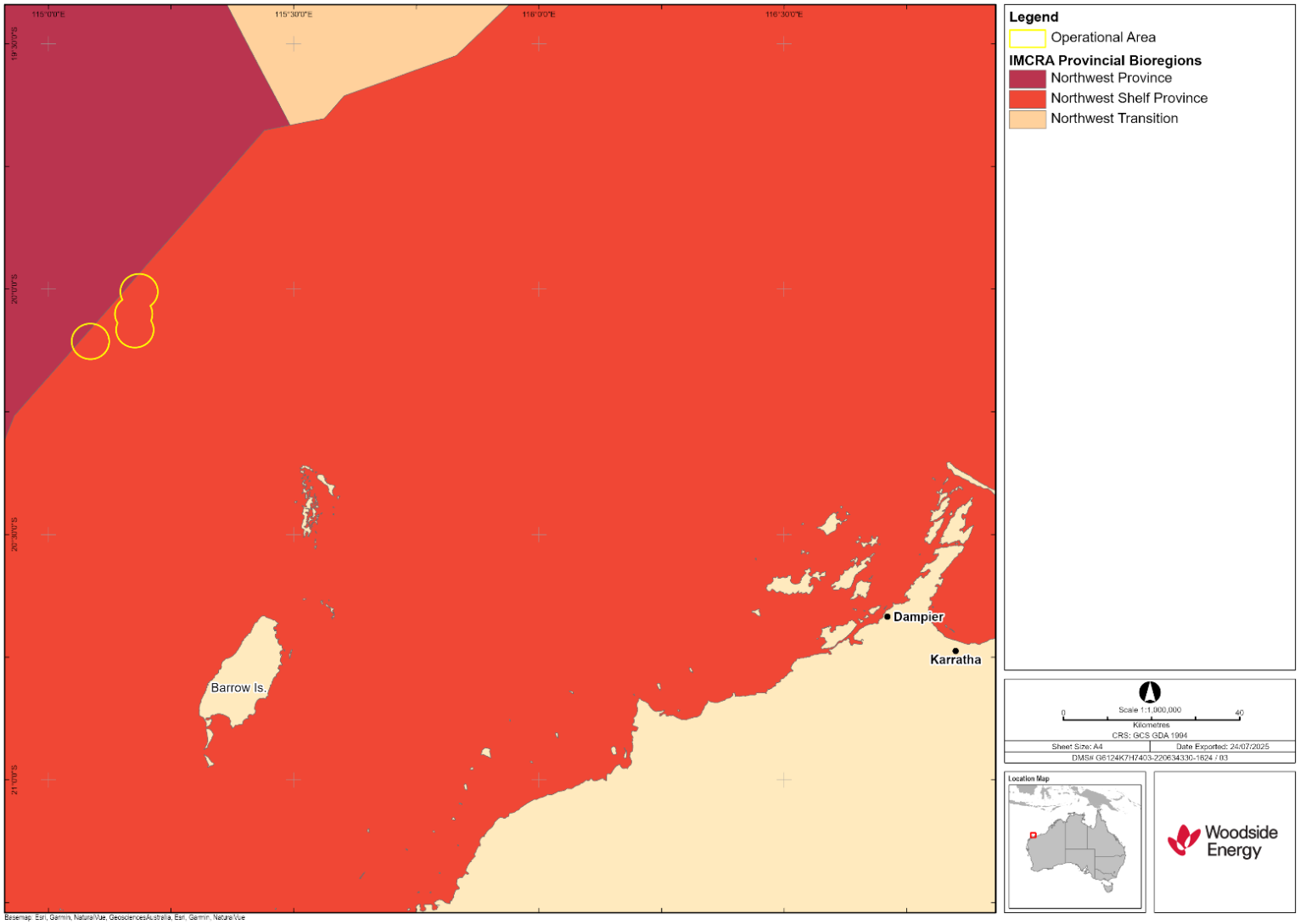

Figure 4-2: Location of the Operational Area and relevant marine bioregions

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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 and Appendix E). 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 and Appendix E) 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 Julimar-Brunello Plug and Abandonment Project on MNES, PMST results have been filtered to exclude species not relevant to the Project area (such as predominantly terrestrial or freshwater species) and shapefiles (provided for by DCCEEW) have been assessed using Geographic Information System software to determine the actual presence/overlap 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 and Appendix E.

Table 4-2: Summary of relevant MNES identified by the EPBC Act Protected Matters Search Tool (PMST) 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 11 of the Master Existing Environment document (Appendix C).
National Heritage Places	0	1	
Wetlands of International Importance (Ramsar)	0	0	
Commonwealth Marine Area	2	2	
Listed Threatened Ecological Communities	0	0	
Listed Threatened Species	26	37	Sections 3 to 8 of the Master Existing Environment document (Appendix C).
Listed Migratory Species	42	65	

4.4 Physical environment

The Operational Area is located on the upper continental slope in waters approximately 120 m to 210 m deep (Figure 4-3 and Figure 4-4). The seabed exhibits a gradual slope in a north-west direction at a gradient of approximately -1% on average. Benthic surveys conducted in the area report the seabed consists of fine silt and mud sediments (RPS 2011). 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). The bathymetry within the Operational Area is generally flat, which is consistent with the broader NWS Province shelf region (Baker et al. 2008).

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

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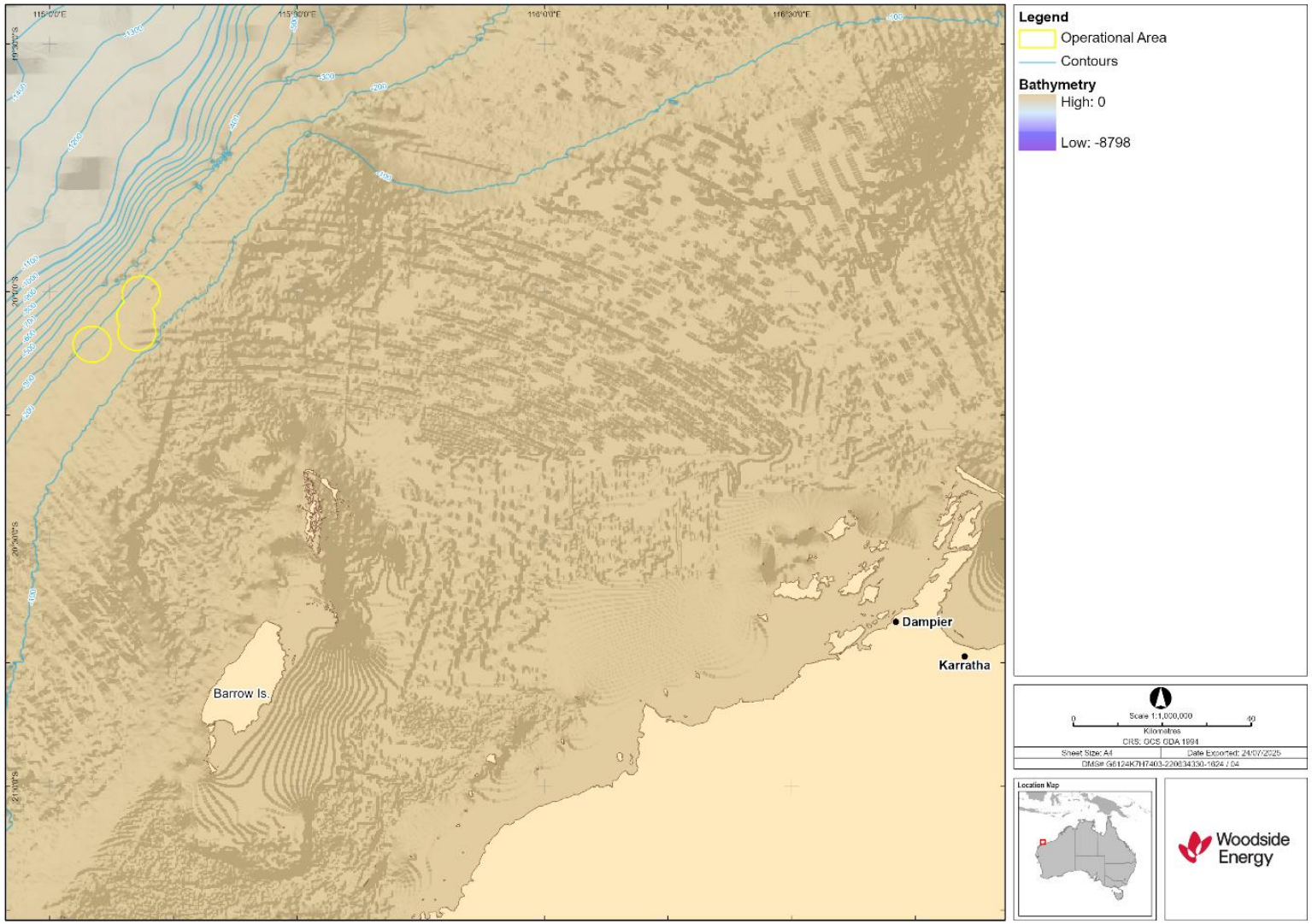

Figure 4-3: Bathymetry of the Operational Area

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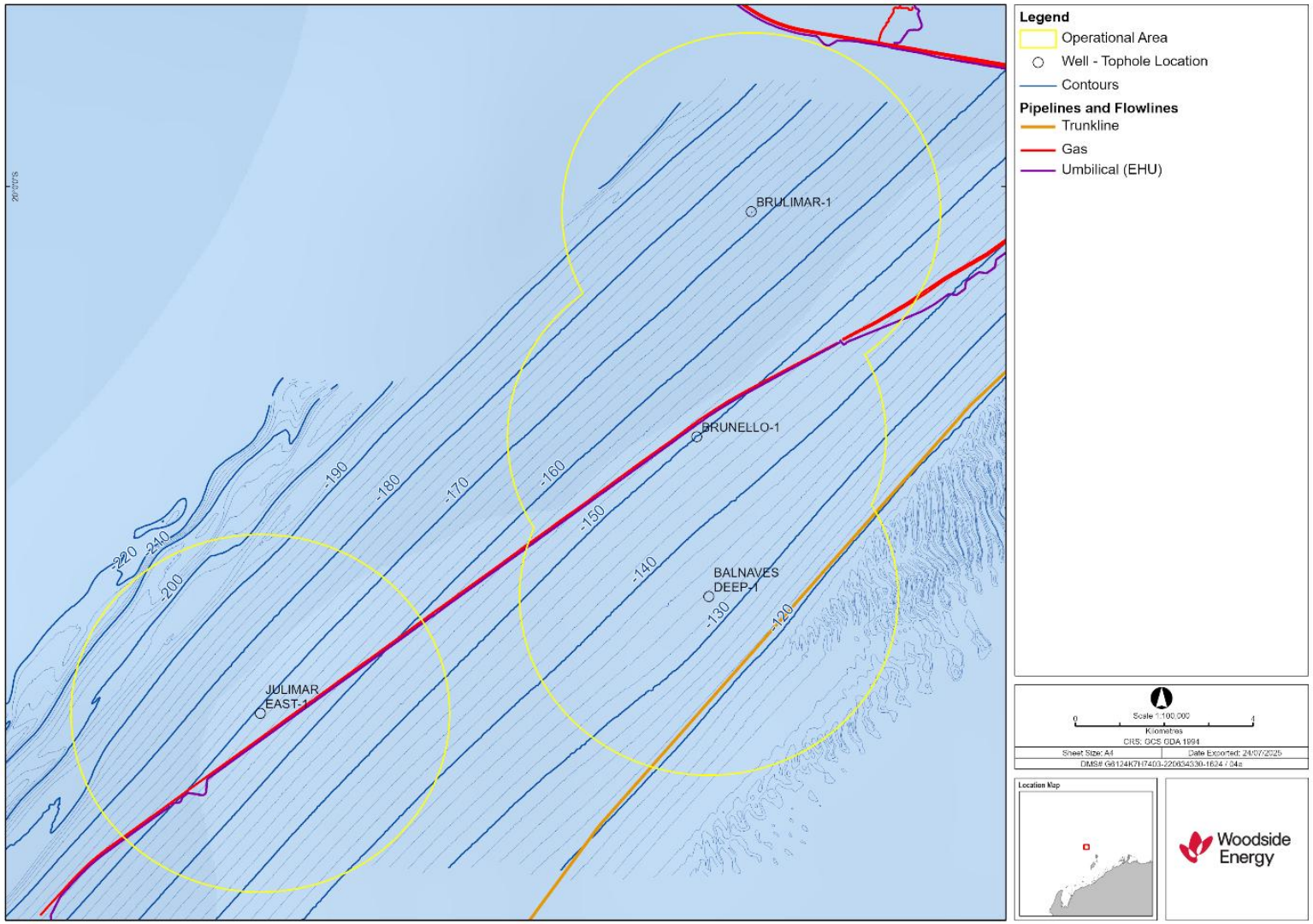

Figure 4-4: Bathymetry of the Operational Area (close-up)

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4.5 Habitats and biological communities

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

The Operational Area overlaps two Key Ecological Features (KEFs) as described in Section 4.7. The Ancient Coastline at 125 m depth contour and the Continental Slope Demersal Fish Communities KEF:

- The Ancient Coastline KEF (Figure 4-13), an ancient, submerged coastline, with areas of hard substrate which provides habitat that supports the KEF's higher diversity and enhanced species richness, relative to the surrounding area. The KEF is relatively poorly understood; however, the following fauna is associated with the escarpment: crinoids, molluscs, echinoderms, sponges, corals, and other benthic invertebrates representative of hard substrate fauna in the region. Within the Ancient Coastline KEF, several discrete areas of hard substrate exist, which play host to sessile filter feeding communities. Although several areas with sensitive habitat and features are present within the EMBA and Operational Area, the majority of the seabed is characterised by relatively expansive areas of featureless sandy substrate.
- The Continental Slope Demersal Fish Communities KEF has a highly diverse fish assemblage with a high degree of endemism (DAWE 2021a). The diversity of demersal fish assemblages on the continental slope in the Timor Province, the NW Transition and the NW 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).

Rankin Bank is on the continental shelf and within the EMBA, approximately 50 km north-east from the Operational Area. While not a KEF, Rankin Bank is one of the only large, complex bathymetrical features on the outer western shelf of the West Pilbara and represents habitat that is likely to play an important role in the productivity of the Pilbara region (AIMS 2014). Rankin Bank consists of three submerged shoals delineated by the 50 m depth contour with water depths of approximately 18 to 30.5 m (AIMS 2014). Rankin Bank represents a diverse marine environment, predominantly composed of consolidated reef and algae habitat (~55% cover), followed by hard corals (~25% cover), unconsolidated sand/silt habitat (~16% cover), and benthic communities composed of macroalgae, soft corals, sponges, and other invertebrates (~3% cover) (AIMS 2014). Hard corals are a significant component of the benthic community of some parts of the bank, with abundance in the upper end of the range observed elsewhere on the submerged shoals and banks of NW Australia (Heyward et al. 2012). Rankin Bank has been shown to support a diverse fish assemblage (AIMS 2014). This is consistent with studies showing a strong correlation between habitat diversity and fish assemblage species richness (Gratwicke and Speight 2005; Last et al. 2005). The habitat surrounding Rankin Bank (<50 m) was mapped by AIMS on behalf of Woodside (AIMS 2014) and hosts filter feeding communities in areas of consolidated substrate interspersed by sand.

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

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Table 4-3: Habitats and communities within the environment that may be affected (distance calculated from Operational Area)

Habitat/community	Description	Key locations within the EMBA
Seabed characteristics		
Bare/unconsolidated sediments	The offshore environment of the NWMR, where the Operational Area is located, comprises predominantly of soft sediments (sandy and muddy substrata with occasional patches of coarser sediments) and sparse benthic biota.	• North West Marine Region (overlapping the Operational Area).
Banks and shoals	Banks and shoals are a significant habitat within the EMBA, and numerous submerged banks and shoals are located throughout the EMBA associated with the Southern Pilbara Island group Rankin Bank. Rankin Bank is a submerged reef system with water depths ranging from 18 to 30.5 m, consisting of a diverse marine environment with reef, algae, and coral habitats. The surrounding area, mapped by AIMS, supports filter-feeding communities in consolidated and sandy substrates.	Key banks and shoals include: • Rankin Bank (approximately 50 km north-east from the Operational Area).
WA coastline communities	The EMBA includes contact with the WA mainland coastline, predominantly along the Ningaloo and Cape Range coastline. Communities within the EMBA include sandy beaches, mangroves and rocky shores.	• The nearshore and coastal environments of Ningaloo on the WA coastline (approximately 210 km south-west of the Operational Area).
Ancient Coastline at 125 m depth contour KEF	The Ancient Coastline at 125 m depth contour is primarily composed of soft sediment habitats interspersed with patchy occurrences of hard substrate such as boulders, rubble, and reef formations. Research has demonstrated that these hard substrates are unevenly distributed along the feature, providing structurally complex habitats in an otherwise predominantly soft-bottom environment (Currey-Randall et al. 2021; AIMS 2020). These hard substrate areas support significantly higher benthic species richness and abundance compared to the surrounding soft sediment habitats, which typically exhibit lower diversity (Currey-Randall et al. 2021; Wakeford et al. 2023). Furthermore, sub-bottom profiling has indicated that much of the Ancient Coastline may be buried beneath sediment, meaning hard substrate is often discontinuous but plays a crucial ecological role by offering refugia that enhance local benthic biodiversity where it occurs (Wakeford et al. 2023).	• The Ancient Coastline at 125 m depth contour KEF (overlapped by the Operational Area).

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Habitat/community	Description	Key locations within the EMBA
Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula KEF	The Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula are defined as a key ecological feature as they are unique seafloor features with ecological properties of regional significance, which apply to both the benthic and pelagic habitats within the feature. The canyons on the slope of the Cuvier Abyssal Plain and Cape Range Peninsula are connected to the Commonwealth waters adjacent to Ningaloo Reef and may also have connections to Exmouth Plateau. Aggregations of whale sharks, manta rays, humpback whales, sea snakes, sharks, large predatory fish and seabirds are known to occur in this area and are related to productivity (Sleeman et al. 2007). Thus, the canyons, Exmouth Plateau and Commonwealth waters adjacent to Ningaloo Reef operate as a system to create the conditions for enhanced productivity seen in this region (Sleeman et al. 2007).	• The Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula KEF (approximately 150 km south-west of the Operational Area).
Commonwealth waters adjacent to Ningaloo Reef	The Commonwealth waters adjacent to Ningaloo Reef, associated canyons, and plateaus are interconnected and support the high productivity and species richness of Ningaloo Reef. The Leeuwin and Ningaloo currents interact on the seaward side of the reef, leading to areas of enhanced productivity which support aggregations and migration pathways of whale sharks, manta rays, humpback whales, sea snakes, sharks, large predatory fish and seabirds (Donovan et al. 2008; Gunn et al. 1999; Waples and Hollander 2008). Detrital input from phytoplankton production in surface waters and from higher-trophic consumers cycles back to the deeper waters of the shelf and slope (Brewer et al. 2007). Deepwater biodiversity includes fish, molluscs, sponges, soft corals and gorgonians. Some of these sponge and filter-feeding communities appear to be significantly different to those of the Dampier Archipelago and Abrolhos Islands, indicating that the Commonwealth waters of Ningaloo Marine Park have some particular areas of potentially high and unique sponge biodiversity (Rees et al. 2004).	• The Commonwealth waters adjacent to Ningaloo Reef KEF (approximately 190 km south-west of the Operational Area).

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Habitat/community	Description	Key locations within the EMBA
Exmouth Plateau	Although the seascapes of this plateau are not unique (Falkner et al. 2009), it is believed that the large size of Exmouth Plateau and its expansive surface may modify deepwater flow and be associated with the generation of internal tides. Both may contribute to the upwelling of deeper, nutrient-rich waters closer to the surface (Brewer et al. 2007). The Exmouth Plateau is generally an area of low habitat heterogeneity; however, it is likely to be an important area of biodiversity as it provides an extended area offshore for communities adapted to depths of around 1000 m. The Exmouth Plateau is defined as a key ecological feature as it is a unique seafloor feature with ecological properties of regional significance, which apply to both the benthic and pelagic habitats within the feature.	• The Exmouth Plateau KEF (approximately 88 km north-west of the Operational Area).
Marine primary producers		
Coral	Coral reef habitats have a high diversity of corals and associated fish and other species of both commercial and conservation importance. Coral reef habitats are an integral part of the marine environment within the NWMR.	• Montebello Islands (approximately 41 km south-east of the Operational Area). • Rankin Bank (approximately 50 km north-east from the Operational Area). • Barrow Island (approximately 66 km south-east of the Operational Area). • Muiron Islands (approximately 179 km south-west of the Operational Area). • Ningaloo Coast (approximately 210 km south-west of the Operational Area).
Seagrass beds and macroalgae	Seagrass beds and macroalgae habitats represent a food source for many marine species and provide key habitats and nursery grounds. Seagrass beds and macroalgae habitats are present in several locations within the NWS Province, where the Operational Area is located.	Key seagrass and macroalgae habitats nearest to the Operational Area, and within the EMBA, are: • Montebello Islands (approximately 41 km south-east of the Operational Area). • Barrow Island (approximately 66 km south-east of the Operational Area). • Thevenard Island (approximately 144 km south of the Operational Area). • Muiron Islands (approximately 179 km south-west of the Operational Area). • Exmouth Gulf (approximately 200 km south-west of the Operational Area). • Ningaloo Coast (approximately 210 km south-west of the Operational Area).

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Habitat/community	Description	Key locations within the EMBA
Mangroves	Mangroves grow in intertidal mud and sand, with specially adapted aerial roots (pneumatophores) that provide for gas exchange during low tide (McClatchie et al. 2006). Mangrove forests can help stabilise coastal sediments, provide a nursery ground for many species of fish and crustacean, and provide shelter or nesting areas for seabirds (McClatchie et al. 2006). Mangroves are confined to shoreline habitats, in nearshore areas of the NWMR.	Mangrove forests can be found in: • Montebello Islands (approximately 41 km south-east of the Operational Area). • Barrow Island (approximately 66 km south-east of the Operational Area). • Exmouth Gulf (approximately 200 km south-west of the Operational Area). • Ningaloo Coast (approximately 210 km south-west of the Operational Area).
Other communities and habitats		
Continental Slope Demersal Fish Communities	The diversity of demersal fish assemblages on the continental slope in the Timor Province, the NWS Transition Province and the NWS Province is high compared to elsewhere along the Australian continental slope. This species assemblage is recognised as a key ecological feature because of its biodiversity values, including high levels of endemism.	• The Continental Slope Demersal Fish Communities KEF (overlapping the Operational Area).
Plankton	Primary productivity of the NWMR 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. There is a tendency for offshore phytoplankton communities in the NWMR to be characterised by smaller taxa (e.g. bacteria), whereas shelf waters are dominated by larger taxa such as diatoms (Hanson et al. 2007). Zooplankton within the Operational Area and EMBA may include organisms that complete their lifecycle as plankton (e.g. copepods, euphausiids) as well as larval stages of other taxa such as fishes, corals and molluscs. Peaks in zooplankton such as mass coral spawning events (typically in March and April) (Rosser and Gilmour 2008; Simpson et al. 1993) and fish larvae abundance can occur throughout the year.	• Phytoplankton within the Operational Area and EMBA are generally expected to reflect the conditions of the NWMR (Appendix C). • Within the EMBA, peak primary productivity occurs in late summer/early autumn along the shelf edge of the Ningaloo Reef. This peak phytoplankton productivity also links to a larger biologically productive period in the area that includes mass coral spawning events, peaks in zooplankton and fish larvae abundance (Marine Parks and Reserves Authority [MPRA] 2005) with periodic upwelling throughout the year.
Pelagic and demersal fish populations	Pelagic and demersal fish populations within the Operational Area and EMBA are expected to be representative of the NWMR. Free swimming pelagic fish within the Operational Area and EMBA are expected to include small pelagic fishes, broadly distributed throughout the tropical pelagic environment. Larger pelagic fish include migratory species (e.g. tunas, sharks etc.) as well as commercially important species.	Particular features within the EMBA that are known to support pelagic and demersal fish populations include: • The Ancient Coastline at 125 m Depth Contour KEF (overlapping the Operational Area). • The Continental Slope Demersal Fish Communities KEF (overlapping the Operational Area). • Rankin Bank (approximately 46 km north-east from the Operational Area).

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Habitat/community	Description	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 (Appendix C), with notable areas of high sponge diversity occurring in the Commonwealth Waters of Ningaloo Marine Park and at banks within the EMBA.	• Filter feeder communities within the Operational Area are likely present on the well infrastructure, which provides hard substrate for attachment (Jacobs 2014). • Discrete areas of hard substrate hosting sessile filter feeding communities may also be associated within the Ancient Coastline at the 125 m Depth Contour KEF, which overlaps the Operational Area. However, it is unlikely that areas of hard substrate characteristic of this KEF are overlapped by the Operational Area (Wakeford et al. 2023).

4.6 Protected species

A total of 75 EPBC Act listed species considered to be MNES were identified as potentially occurring within the EMBA, of which a subset of 48 species were identified as potentially occurring within the Operational Area. The full list of marine species identified from the PMST report is provided in Appendix D and Appendix E, including several MNES that are not considered to be credibly impacted (e.g. terrestrial species within the EMBA). Criteria for determining species to be considered for impact assessment is outlined in Appendix C: Section 3.2. 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 included assessed. The scalloped hammerhead conservation dependent species has also been identified with a potential to occur within the Operational Area and EMBA.

Species identified as potentially occurring within the Operational Area and EMBA and biologically important areas (BIAs) or habitat critical to their survival (habitat critical) which overlap the Operational Area and EMBA are listed in Table 4-4 to Table 4-13, and Figure 4-5 to Figure 4-12. These tables and figures show the spatial overlap between relevant BIAs, habitat critical areas, and the Operational Area and EMBA. Key threatened and migratory species, together with their associated biologically important behaviours, are described in Appendix C, while species not included in Appendix C are described below.

4.6.1 Fish, sharks and rays

A total of 14 EPBC Act listed threatened and migratory fish, shark and ray species (Table 4-4) have been identified to potentially occur within the EMBA, of which all occur in the Operational Area. A full list of EPBC Act listed species identified in the PMST search is provided in Appendix D and Appendix E.

BIAs that overlap the EMBA, including a foraging (northward from Ningaloo along 200 m isobath) BIA for the whale shark which is overlaps the Operational Area, are presented Figure 4-5 and in Table 4-5.

Further description of BIAs is provided in Appendix C.

4.6.1.1 Scalloped hammerhead shark (*Sphyrna lewini*)

The scalloped hammerhead shark (*Sphyrna lewini*) is listed as conservation dependent under Section 179(6) of the *EBPC Act*. This species has a coastal and semi-oceanic distribution and predominantly occurs in warm-temperate and tropical seas, inhabiting continental shelves and adjacent deep water, and has been found from surface waters to a depth of 1042 m (Ebert et al. 2021; Moore and Gates 2015). In Northern Australian waters, adults are generally found in deeper waters on the edge of the continental shelf, whereas juveniles inhabit the shallower inshore environments (Stevens and Lyle 1989). This species is known to move to shallow nursery areas for birth, and it has been suggested that northern Australia may be an important nursery area for the Indo-Pacific stock (Chin et al. 2017; Duncan et al. 2006). The scalloped hammerhead is slow growing and has a late age at maturity compared to other shark species. Reproduction is viviparous, with an annual or biannual reproductive cycle and a gestation period of nine to 10 months in Australian populations (Stevens and Lyle 1989). Litter size has been found to vary between 12 and 41 pups

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(Stevens and Lyle 1989). The national Scalloped Hammerhead Shark Management Strategy 2022 sets out the current management measured for the species.

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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 and Appendix E)			WA *Biodiversity Conservation Act 2016*[11]	IUCN Red List of Threatened Species (non-statutory)[12]	Potential for interaction		EPBC Act Part 13 Statutory Instrument
		Threatened status	*Migratory status*	*Listed*	*Conservation Status*	*Global Status*	*Operational Area*	*EMBA*	
Anoxypristis cuspidata	Narrow sawfish	N/A	Migratory	Marine	Specially Protected – Migratory Species	Critically Endangered	Species or species habitat may occur within area	Species or species habitat known to occur within area	Refer to Master Existing Environment (Appendix C, Table 5-1).
Carcharhinus longimanus	Oceanic whitetip shark	N/A	Migratory	Marine	N/A	Critically Endangered	Species or species habitat likely to occur within area	Species or species habitat likely to occur within area	
Carcharias taurus	Grey nurse shark	N/A	Migratory	Marine	Threatened Species – Vulnerable	Critically Endangered	Species or species habitat likely to occur within area	Congregation or aggregation known to occur within area	
Carcharias taurus (west coast population)	Grey nurse shark	Vulnerable	N/A	Marine	N/A	Near Threatened	Species or species habitat likely to occur within area	Congregation or aggregation known to occur within area	

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

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

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Species name	Common name	*Environment Protection and Biodiversity Conservation Act 1999* (as per PMST report Appendix D and Appendix E)			WA *Biodiversity Conservation Act 2016*[11]	IUCN Red List of Threatened Species (non-statutory)[12]	Potential for interaction		EPBC Act Part 13 Statutory Instrument
		Threatened status	*Migratory status*	*Listed*	*Conservation Status*	*Global Status*	*Operational Area*	*EMBA*	
Carcharodon carcharias	White shark	Vulnerable	Migratory	Marine	Threatened Species – Vulnerable	Vulnerable	Species or species habitat may occur within area	Species or species habitat known to occur within area	
Isurus oxyrinchus	Shortfin mako	N/A	Migratory	Marine	Specially Protected – Migratory Species	Endangered	Species or species habitat likely to occur within area	Species or species habitat likely to occur within area	
Isurus paucus	Longfin mako	N/A	Migratory	Marine	Specially Protected – Migratory Species	Endangered	Species or species habitat likely to occur within area	Species or species habitat likely to occur within area	
Mobula alfredi	Reef manta ray	N/A	Migratory	Marine	Specially Protected – Migratory Species	Vulnerable	Species or species habitat likely to occur within area	Species or species habitat known to occur within area	
Mobula birostris	Giant manta ray	N/A	Migratory	Marine	Specially Protected – Migratory Species	Endangered	Species or species habitat likely to occur within area	Species or species habitat known to occur within area	
Pristis clavata	Dwarf sawfish	Vulnerable	Migratory	Marine	Specially Protected – Migratory Species and Priority 1	Critically Endangered	Species or species habitat known to occur within area	Species or species habitat known to occur within area	

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Species name	Common name	*Environment Protection and Biodiversity Conservation Act 1999* (as per PMST report Appendix D and Appendix E)			WA *Biodiversity Conservation Act 2016*[11]	IUCN Red List of Threatened Species (non-statutory)[12]	Potential for interaction		EPBC Act Part 13 Statutory Instrument
		Threatened status	*Migratory status*	*Listed*	*Conservation Status*	*Global Status*	*Operational Area*	*EMBA*	
Pristis pristis	Freshwater sawfish	Endangered	Migratory	Marine	Specially Protected – Migratory Species and Priority 3	Critically Endangered	Species or species habitat may occur within area	Species or species habitat likely to occur within area	
Pristis zijsron	Green sawfish	Vulnerable	Migratory	Marine	Threatened Species – Vulnerable	Critically Endangered	Species or species habitat known to occur within area	Species or species habitat known to occur within area	
Rhincodon typus	Whale shark	Vulnerable	Migratory	Marine	Threatened Species – Vulnerable Specially Protected – Migratory Species and Priority 3	Endangered	Foraging, feeding or related behaviour known to occur within area	Foraging, feeding or related behaviour known to occur within area	
Sphyrna lewini	Scalloped hammerhead	Conservation Dependant	N/A	Marine	N/A	Critically Endangered	Species or species habitat known to occur within area	Species or species habitat known to occur within area	Listing Advice for *Sphyrna lewini* (scalloped hammerhead) (TSSC 2024).

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Table 4-5: Fish, shark and ray BIAs within the EMBA

Species	BIA type	Approx. distance and direction of BIA from Operational Area
Whale shark	Foraging (northward from Ningaloo along 200 m isobath)	Overlaps
	Foraging (high density prey) (Ningaloo Marine Park and adjacent Commonwealth waters)	214 km south-west

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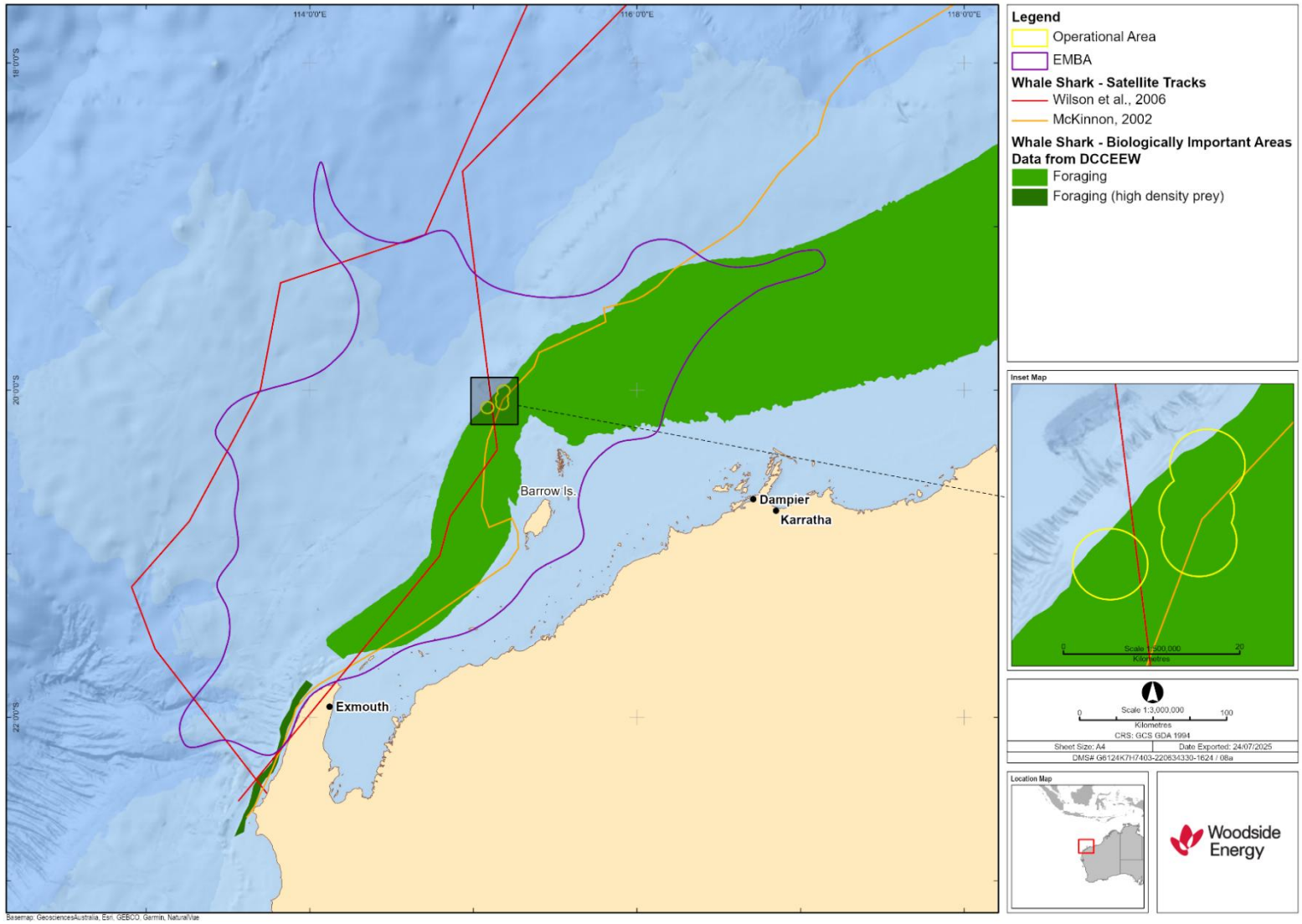

Figure 4-5: Whale shark BIAs overlapping the EMBA and tagged whale shark satellite tracks

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4.6.2 Marine reptiles

A total of eight EPBC Act listed threatened and migratory marine reptile species have been identified to potentially occur within the EMBA, of which seven 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 and Appendix E.

BIAs that overlap the EMBA are presented in Figure 4-6 and Table 4-7. Habitat critical overlapping the EMBA is presented in Figure 4-7 and Table 4-8. The Operational Area overlaps an interesting buffer (Montebello Islands – Hermite Island, NW Island, Trimouille Island) BIA for the flatback turtle and habitat critical for the flatback turtle (Figure 4-6, Table 4-7, Figure 4-7, and Table 4-8).

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 and Appendix E)			WA *Biodiversity Conservation Act 2016*[13]	IUCN Red List of Threatened Species (non-statutory)[14]	Potential for interaction		EPBC Act Part 13 Statutory Instrument
		Threatened status	*Migratory status*	*Listed*	*Conservation Status*	*Global Status*	*Operational Area*	*EMBA*	
Aipysurus apraefrontalis	Short-nosed sea snake	Critically Endangered	N/A	Marine	Threatened Species – Critically Endangered	Data Deficient	Species or species habitat may occur within area	Species or species habitat known to occur within area	Refer to Master Existing Environment (Appendix C, Table 6-1).
Aipysurus foliosquama	Leaf-scaled sea snake	Critically Endangered	N/A	Marine	Threatened Species – Critically Endangered	Data Deficient	N/A	Species or species habitat known to occur within area	
Caretta caretta	Loggerhead turtle	Endangered	Migratory	Marine	Threatened Species – Endangered	Vulnerable	Species or species habitat known to occur within area	Breeding known to occur within area	
Chelonia mydas	Green turtle	Critically endangered	Migratory	Marine	Threatened Species – Vulnerable	Endangered	Species or species habitat known to occur within area	Breeding known to occur within area	
Crocodylus porosus	Salt-water crocodile	N/A	Migratory	Marine	Specially Protected – Migratory Species	Least Concern	Species or species habitat may occur within area	Species or species habitat may occur within area	

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

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

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Species name	Common name	*Environment Protection and Biodiversity Conservation Act 1999* (as per PMST report Appendix D and Appendix E)			WA *Biodiversity Conservation Act 2016*[13]	IUCN Red List of Threatened Species (non-statutory)[14]	Potential for interaction		EPBC Act Part 13 Statutory Instrument
		Threatened status	*Migratory status*	*Listed*	*Conservation Status*	*Global Status*	*Operational Area*	*EMBA*	
Dermochelys coriacea	Leatherback turtle	Endangered	Migratory	Marine	Threatened Species – Vulnerable	Vulnerable	Species or species habitat likely to occur within area	Species or species habitat known to occur within area	
Eretmochelys imbricata	Hawksbill turtle	Vulnerable	Migratory	Marine	Threatened Species – Vulnerable	Critically Endangered	Species or species habitat known to occur within area	Breeding known to occur within area	
Natator depressus	Flatback turtle	Vulnerable	Migratory	Marine	Threatened Species – Vulnerable	Data Deficient	Congregation or aggregation known to occur within area	Breeding known to occur within area	

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Table 4-7: Marine turtle BIAs within the EMBA

Species	BIA type	Approx. distance and direction of BIA from Operational Area
Flatback turtle	Internesting Buffer (Montebello Islands – Hermite Island, NW Island, Trimouille Island).	Overlaps
	Mating (Montebello Islands – Hermite Island, NW Island, Trimouille Island).	41 km south-east
	Foraging (Montebello Islands – Hermite Island, NW Is, Trimouille Island).	42 km south-east
	Nesting (Montebello Islands – Hermite Island, NW Island, Trimouille Island).	42 km south-east
	Internesting (Coral reef habitat west of the Montebello group. Extends the entire length of Montebellos).	44 km south-east
	Foraging (Coral reef habitat west of the Montebello group. Extends the entire length of Montebellos).	44 km south-east
	Aggregation (Coral reef habitat west of the Montebello group. Extends the entire length of Montebellos).	44 km south-east
	Mating (Coral reef habitat west of the Montebello group. Extends the entire length of Montebellos).	44 km south-east
	Internesting buffer (Thevenard Island – South coast).	50 km south-west
	Foraging (Barrow Island).	62 km south
	Mating (Barrow Island).	62 km south
	Nesting (Barrow Island).	67 km south
	Internesting buffer (Dampier Archipelago (islands to the west of the Burrup Peninsula)).	69 km south-east
	Internesting buffer (Intercourse Island).	82 km south-east
	Nesting (Thevenard Island – South coast).	131 km south
Green turtle	Internesting buffer (Montebello Islands).	18 km south-east
	Internesting buffer (Montebello Islands – Hermite Island, NW Island, Trimouille Island).	23 km south-east
	Nesting (Montebello Islands).	37 km south-east
	Mating (Montebello Islands).	37 km south-east
	Internesting (Montebello Islands).	37 km south-east
	Foraging (Montebello Islands).	37 km south-east
	Foraging (Montebello Islands – Hermite Island, NW Island, Trimouille Island).	42 km south-east
	Mating (Montebello Islands – Hermite Island, NW Island, Trimouille Island).	42 km south-east

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Species	BIA type	Approx. distance and direction of BIA from Operational Area
	Nesting (Montebello Islands – Hermite Island, NW Island, Trimouille Island).	42 km south-east
	Internesting buffer (Middle Is. West Coast Barrow Island West Coast and North Coast).	43 km south
	Foraging (Coral reef habitat west of the Montebello group. Extends the entire length of Montebellos).	44 km south-east
	Internesting (Coral reef habitat west of the Montebello group. Extends the entire length of Montebellos).	44 km south-east
	Aggregation (Coral reef habitat west of the Montebello group. Extends the entire length of Montebellos).	44 km south-east
	Mating (Coral reef habitat west of the Montebello group. Extends the entire length of Montebellos).	44 km south-east
	Foraging (Greens – inshore tidal and shallow subtidal areas around Barrow Island Hawksbills – shallow water coral reef and artificial reef (pipeline) habitat).	62 km south
	Internesting (Barrow Island).	63 km south
	Mating (Middle Is. West Coast Barrow Island West Coast and North Coast).	64 km south
	Nesting (Middle Is. West Coast Barrow Island West Coast and North Coast).	64 km south
	Basking (Middle Is. West Coast Barrow Island West Coast and North Coast).	64 km south
	Internesting buffer (North and South Muiron Island).	157 km south-west
	Nesting (North and South Muiron Island).	178 km south-west
	Internesting buffer (North West Cape).	182 km south-west
Hawksbill turtle	Internesting buffer (Montebello Islands – Hermite Island, NW Island, Trimouille Island).	23 km south-east
	Internesting buffer (Ah Chong and South East Island).	34 km south-east
	Internesting buffer (Montebello Island, Trimouille and NW islands).	37 km south-east
	Foraging (Montebello Islands – Hermite Island, NW Island, Trimouille Island).	42 km south-east
	Nesting (Montebello Islands – Hermite Island, NW Island, Trimouille Island).	42 km south-east
	Mating (Montebello Islands – Hermite Island, NW Island, Trimouille Island).	42 km south-east
	Internesting buffer (Lowendal Island Group).	43 km south-east
	Internesting buffer (Barrow Island).	45 km south
	Internesting buffer (Varanus Island).	48 km south-east

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Species	BIA type	Approx. distance and direction of BIA from Operational Area
	Nesting (Montebello Island, Trimouille and NW islands).	56 km south-east
	Nesting (Ah Chong and South East Island).	58 km south-east
	Foraging (Greens – inshore tidal and shallow subtidal areas around Barrow Island Hawksbills – shallow water coral reef and artificial reef (pipeline) habitat).	62 km south
	Nesting (Lowendal Island Group).	63 km south-east
	Internesting (Lowendal Island Group).	63 km south-east
	Mating (Barrow Island).	63 km south
	Nesting (Barrow Island).	63 km south
	Mating (Lowendal Island Group).	63 km south-east
	Foraging (Lowendal Island Group).	63 km south-east
	Nesting (Varanus Island).	70 km south-east
	Internesting buffer (Thevenard Island).	120 km south
	Nesting (Thevenard Island).	142 km south
	Internesting buffer (Ningaloo coast and Jurabi coast).	182 km south-west
	Nesting (Ningaloo coast and Jurabi coast).	203 km south-west
Loggerhead turtle	Internesting buffer (Montebello Islands).	30 km south-east
	Internesting buffer (Lowenthal Island).	48 km south-east
	Nesting (Montebello Islands).	50 km south-east
	Nesting (Lowenthal Island).	67 km south-east
	Internesting buffer (Muiron Island).	156 km south-west
	Nesting (Muiron Island).	176 km south-west
	Internesting buffer (Ningaloo coast and Jurabi coast).	182 km south-west
	Nesting (Ningaloo coast and Jurabi coast).	203 km south-west

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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
Flatback turtle	Pilbara	Barrow Island, Montebello Islands, coastal islands from Cape Preston to Locker Island.	Overlaps	60 km	Oct to Mar (peak: Feb to Mar)	Feb to Mar
		Dampier Archipelago, including Delambre Island and Hauy Island.	79 km south-east			
Green turtle	North West Cape	Barrow Island, Montebello Islands, Serrier Island and Thevenard Island.	24 km south-east	20 km	Nov to Mar (peak Dec to Feb)	Jan to May (peak: Feb to Mar)
		Exmouth Gulf and Ningaloo coast.	185 km south-west			
Hawksbill turtle	Western Australia	Cape Preston to mouth of Exmouth Gulf including Montebello Islands and Lowendal Islands.	23 km south-east	20 km	All year (peak: Oct to Jan)	All year (peak: Dec to Feb)
Loggerhead turtle	Western Australia	Exmouth Gulf and Ningaloo coast.	185 km south-west	20 km	Nov to Mar (peak: Jan)	Jan to May
Leatherback turtle	No overlap – nesting located in Northern Territory and North Queensland					
Olive ridley turtle	No overlap – nesting located in Northern Territory and North Queensland					

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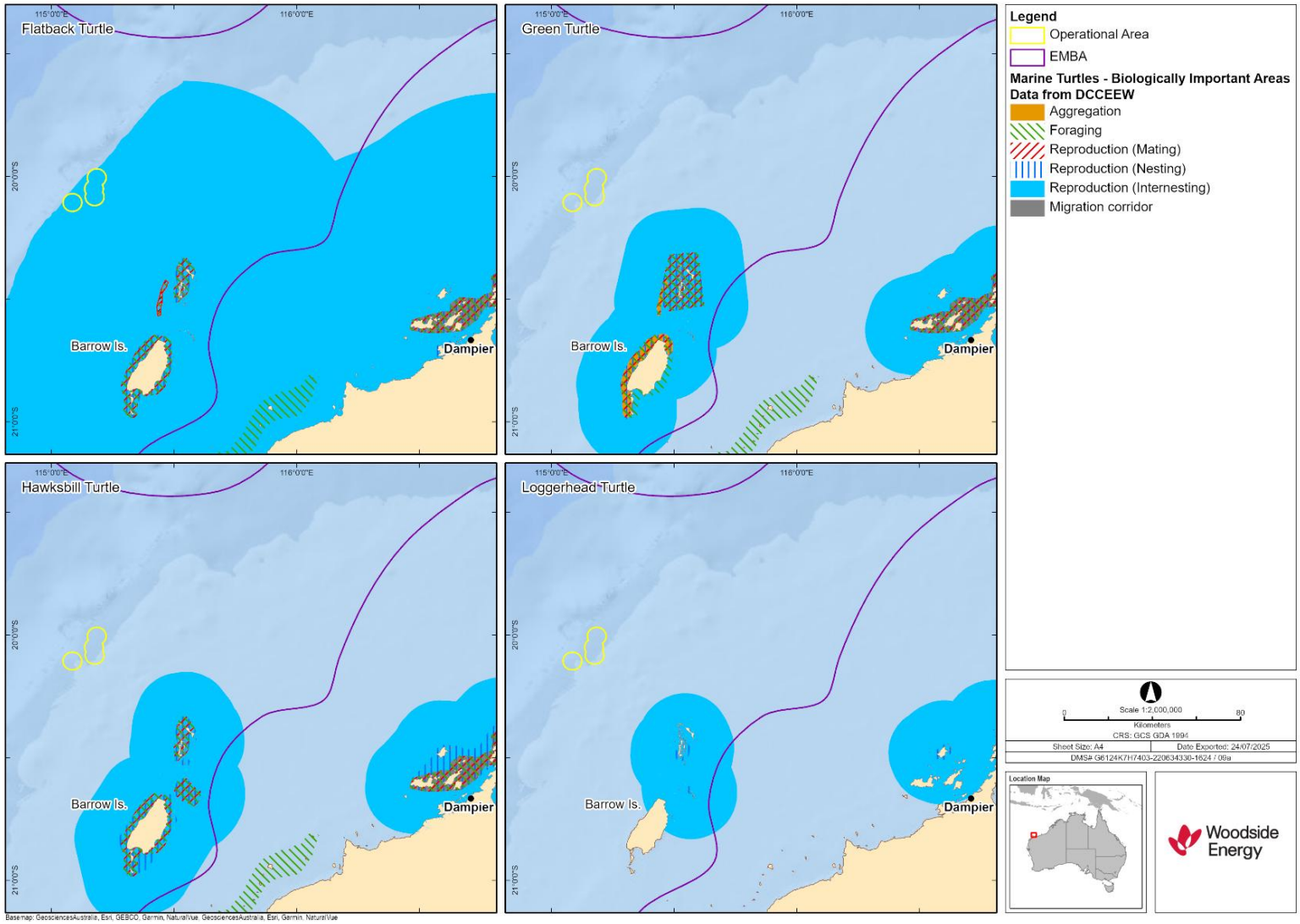

Figure 4-6: Marine reptile BIAs in relation to the Operational Area

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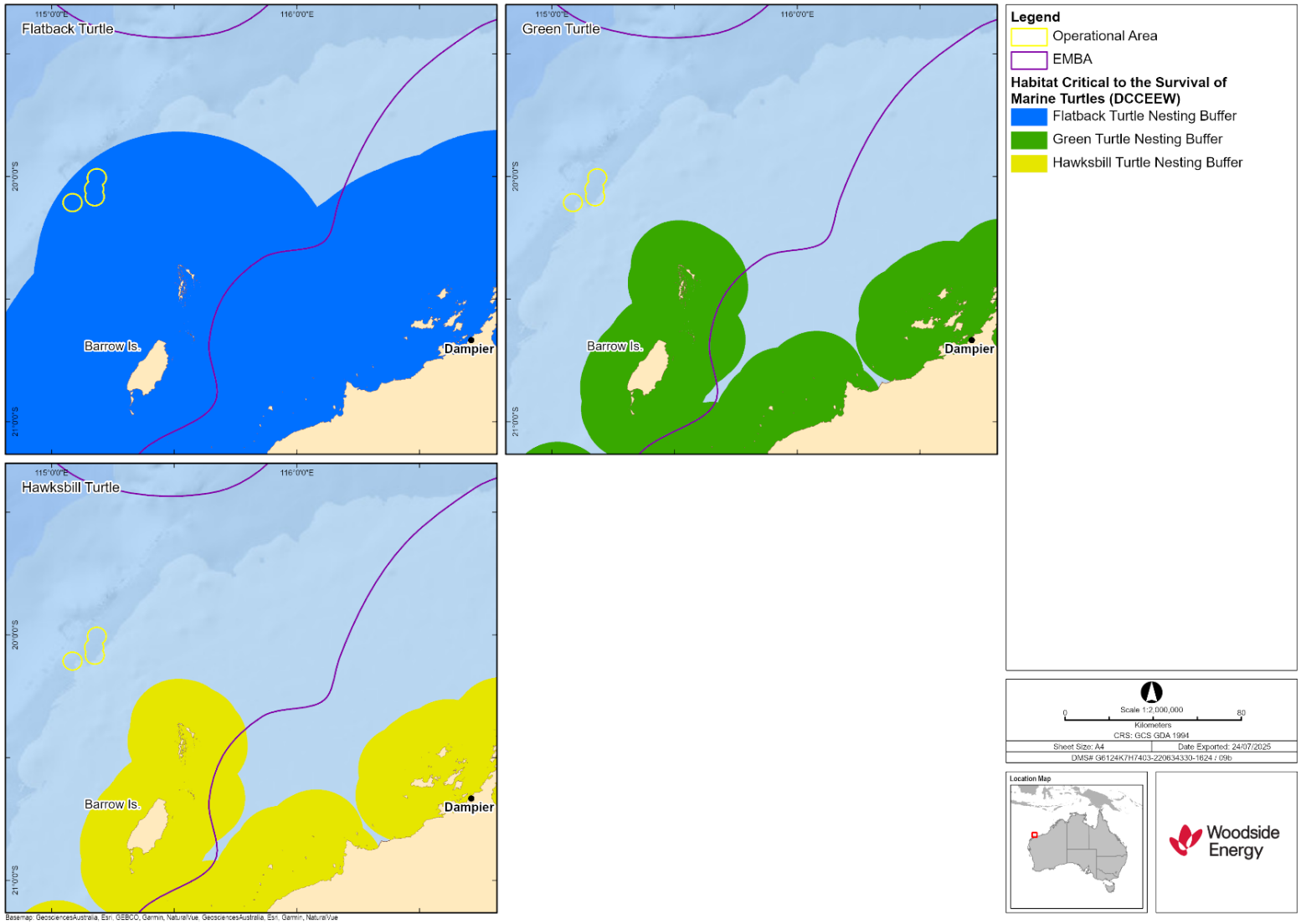

Figure 4-7: Habitat critical to the survival of marine turtles in relation to the Operational Area

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4.6.3 Marine mammals

A total of 14 EPBC Act listed threatened and migratory marine mammal species have been identified to potentially occur within the EMBA, of which 11 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 and Appendix E.

BIAs that overlap the EMBA are presented in Table 4-10 and Figure 4-8 to Figure 4-11. The Operational Area overlaps a migration BIA (Augusta to Derby) for the pygmy blue whale (Table 4-10 and Figure 4-8).

Habitat critical to survival (HCTS) for the southern right whale is identified as all reproductive BIAs across the species range. The identification of HCTS for southern right whales is based on their strong site fidelity to calving areas in Australian coastal waters, observed both within and between years over decadal time spans. These areas are considered HCTS because they support essential life cycle requirements for reproduction, including mating, calving, and nursing, with reproduction known to occur at those locations. They are also characterised by repeated occupancy by individual breeding females for multiple days in a given year and across multiple years, which supports the long-term maintenance of the species. The EMBA overlaps HCTS southern right whale as shown in Table 4-11 and Figure 4-10.

Further description of BIAs is provided in Appendix C.

4.6.3.1 Snubfin dolphin (*Orcaella heinsohni*)

The Australian snubfin dolphin is currently listed as a vulnerable species under the EPBC Act, with this formal listing confirmed in March 2025. The listing was based on an estimated total population of fewer than 10,000 mature individuals, with most local populations likely containing fewer than 1,000. The advice identifies projected population declines of at least 10% over three generations due to ongoing threats including habitat degradation, bycatch, vessel disturbance, and coastal development. It also emphasizes the species' fragmented distribution and the importance of shallow, nearshore habitats near freshwater inputs.

4.6.3.2 Australian humpback dolphin (*Sousa sahulensis*)

The Australian humpback dolphin is currently listed as a vulnerable species under the Environment Protection and Biodiversity Conservation (EPBC) Act, with this formal listing occurring in March 2025. Although taxonomically recognised as *Sousa sahulensis*, the species remains listed under the name *S. chinensis* for legislative purposes. Conservation advice highlights recent aerial survey estimates of 1,546 individuals in 2016 and 2,690 in 2017 (Raudino et al. 2023), and notes emerging threats including bycatch, vessel strikes, coastal development, and pollution. Hybridisation with Australian snubfin dolphins is also identified as a consideration for management.

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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 and Appendix E)			WA *Biodiversity Conservation Act 2016*[15]	IUCN Red List of Threatened Species (non-statutory)[16]	Potential for interaction		EPBC Act Part 13 Statutory Instrument
		Threatened status	*Migratory status*	*Listed*	*Conservation Status*	*Global Status*	*Operational Area*	*EMBA*	
Balaenoptera bonaerensis	Antarctic minke whale	N/A	Migratory	Marine	Specially Protected – Migratory Species	Near Threatened	N/A	Species or species habitat likely to occur within area	Refer to Master Existing Environment (Appendix C, Table 7-1).
Balaenoptera borealis	Sei whale	Vulnerable	Migratory	Marine	Threatened Species – Endangered	Endangered	Species or species habitat likely to occur within area	Species or species habitat likely to occur within area	
Balaenoptera edeni	Bryde's whale	N/A	Migratory	Marine	Specially Protected – Migratory Species	Least Concern	Species or species habitat likely to occur within area	Species or species habitat likely to occur within area	
Balaenoptera musculus	Blue whale	Endangered	Migratory	Marine	Threatened Species – Endangered	Endangered	Migration route known to occur within area	Migration route known to occur within area	
Balaenoptera omurai	Omura's whale	N/A	Migratory	Marine	N/A	Data Deficient	Species or species habitat likely to occur within area	Species or species habitat likely to occur within area	

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

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

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Species name	Common name	*Environment Protection and Biodiversity Conservation Act 1999* (as per PMST report Appendix D and Appendix E)			WA *Biodiversity Conservation Act 2016*[15]	IUCN Red List of Threatened Species (non-statutory)[16]	Potential for interaction		EPBC Act Part 13 Statutory Instrument
		Threatened status	*Migratory status*	*Listed*	*Conservation Status*	*Global Status*	*Operational Area*	*EMBA*	
Balaenoptera physalus	Fin whale	Vulnerable	Migratory	Marine	Threatened Species – Endangered	Vulnerable	Species or species habitat likely to occur within area	Foraging, feeding or related behaviour likely to occur within area	
Dugong dugon	Dugong	N/A	Migratory	Marine	Specially Protected – Migratory Species	Vulnerable	N/A	Breeding known to occur within area	
Eubalaena australis	Southern right whale	Endangered	Migratory	Marine	Vulnerable	Least Concern	N/A	Species or species habitat likely to occur within area	
Megaptera novaeangliae	Humpback whale	N/A	Migratory	Marine	Threatened Species – Conservation Dependant Specially Protected – Migratory Species	Endangered	Breeding known to occur within area	Breeding known to occur within area	
Orcaella heinsohni	Australian snubfin dolphin	Vulnerable	Migratory	Marine	Specially Protected – Migratory Species and Priority 4	Vulnerable	Species or species habitat may occur within area	Species or species habitat known to occur within area	
Orcinus orca	Killer whale	N/A	Migratory	Marine	Specially Protected –	Data Deficient	Species or species	Species or species	

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Species name	Common name	*Environment Protection and Biodiversity Conservation Act 1999* (as per PMST report Appendix D and Appendix E)			WA *Biodiversity Conservation Act 2016*[15]	IUCN Red List of Threatened Species (non-statutory)[16]	Potential for interaction		EPBC Act Part 13 Statutory Instrument
		Threatened status	*Migratory status*	*Listed*	*Conservation Status*	*Global Status*	*Operational Area*	*EMBA*	
					Migratory Species		habitat may occur within area	habitat may occur within area	
Physeter macrocephalus	Sperm whale	N/A	Migratory	Marine	Threatened Species – Vulnerable	Vulnerable	Species or species habitat may occur within area	Species or species habitat may occur within area	
Sousa sahulensis	Australian humpback dolphin	Vulnerable	Migratory	Marine	Specially Protected – Migratory Species and Priority 4	Vulnerable	Species or species habitat may occur within area	Species or species habitat known to occur within area	
Tursiops aduncus	Spotted bottlenose dolphin (Arafura/Timor Sea populations)	N/A	Migratory	Marine	N/A	Near Threatened as Indo-Pacific Bottlenose Dolphin	Species or species habitat likely to occur within area	Species or species habitat known to occur within area	

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Table 4-10: Marine mammal BIAs within the EMBA

Species	BIA type	Approx. distance and direction from Operational Area
Pygmy blue whale	Migration (Augusta to Derby. Tend to pass along the shelf edge at depths of 500m to 1000m; appear close to coast in the Exmouth-Montebello Islands area on southern migration).	Overlaps
	Foraging (Ningaloo Reef).	218 km south-west
Dugong	Foraging (high density seagrass beds) (Exmouth Gulf).	198 km south-west
	Calving (Exmouth Gulf).	
	Nursing (Exmouth Gulf).	
	Breeding (Exmouth Gulf).	
Humpback whale	Migration (north and south) (The migration corridor extends form 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.	20 km south
Southern right whale	Migration south of Ningaloo along Australian coastline between April to October extending up to the Exmouth Gulf reproduction BIA.	200 km south-west
	Reproduction and Habitat critical to the survival (Ningaloo and Exmouth Gulf).	

Table 4-11: Habitat critical to the survival of marine mammal species predicted to occur within the EMBA

Species	Location of habitat critical	Approx. distance and direction from Operational Area
Southern right whale	Exmouth Gulf and Ningaloo coast.	200 km south-west

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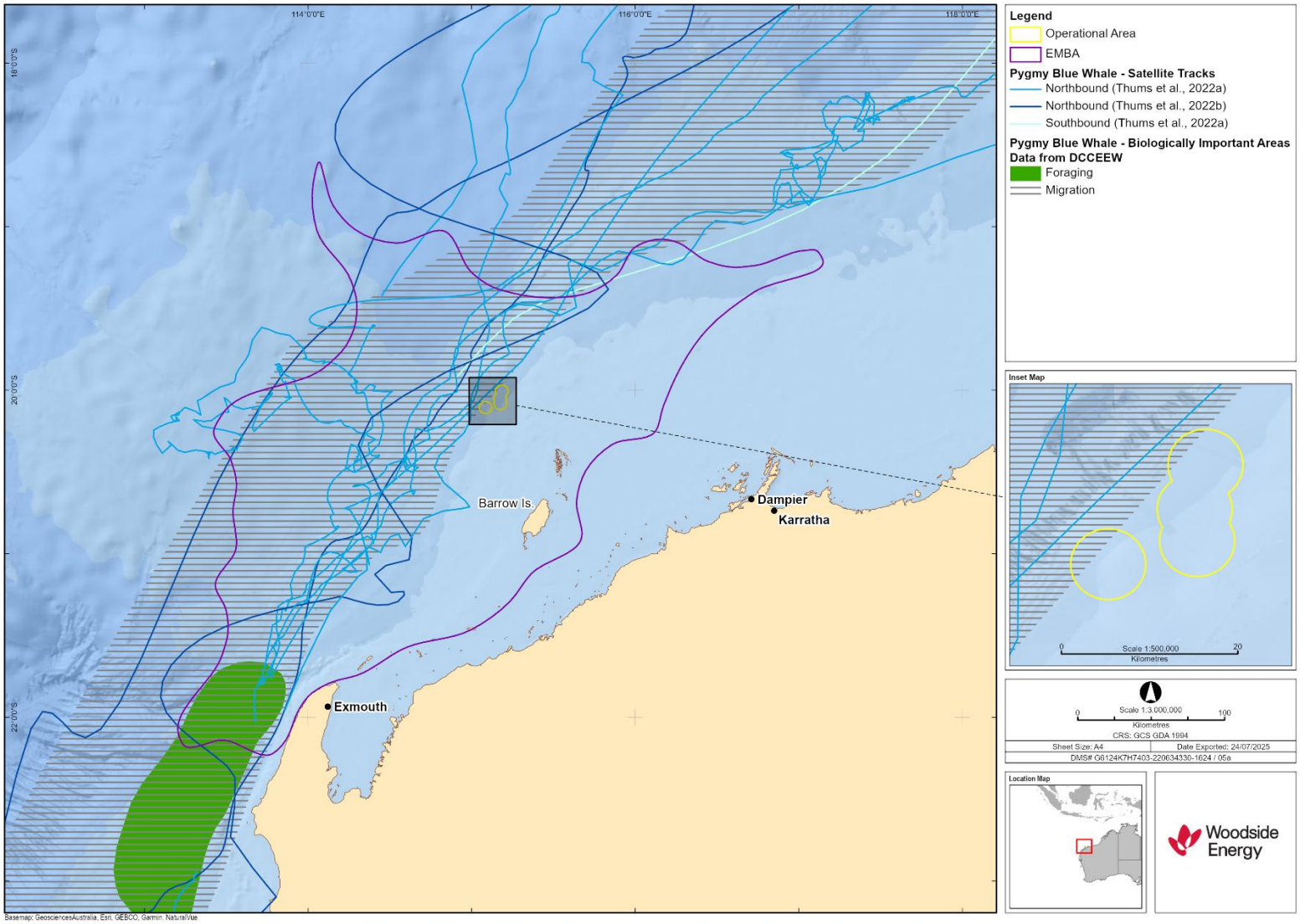

Figure 4-8: Pygmy blue whale BIAs overlapping the EMBA and tagged whale tracks for northbound migration

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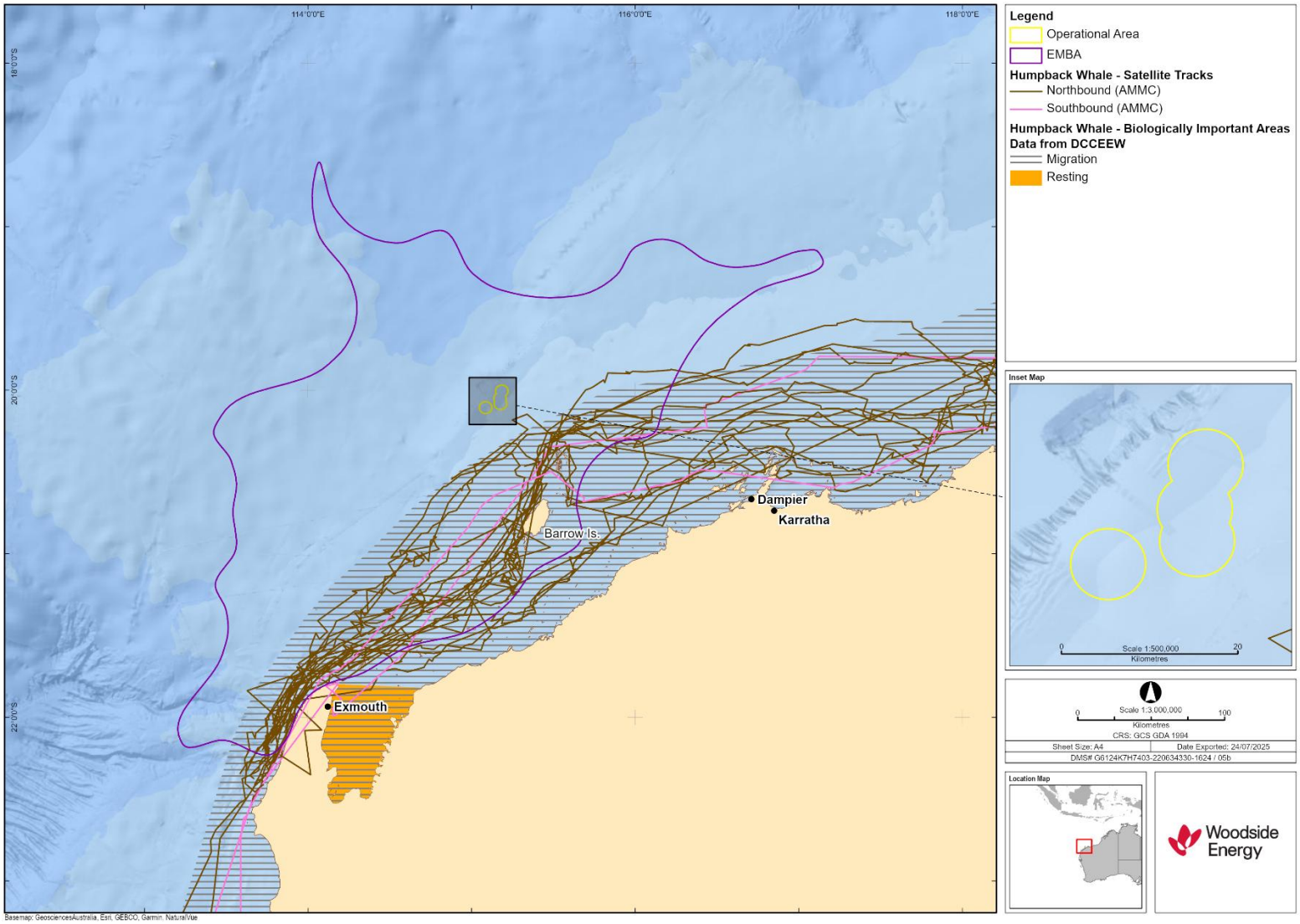

Figure 4-9: Humpback whale BIAs and tagged tracks overlapping the EMBA

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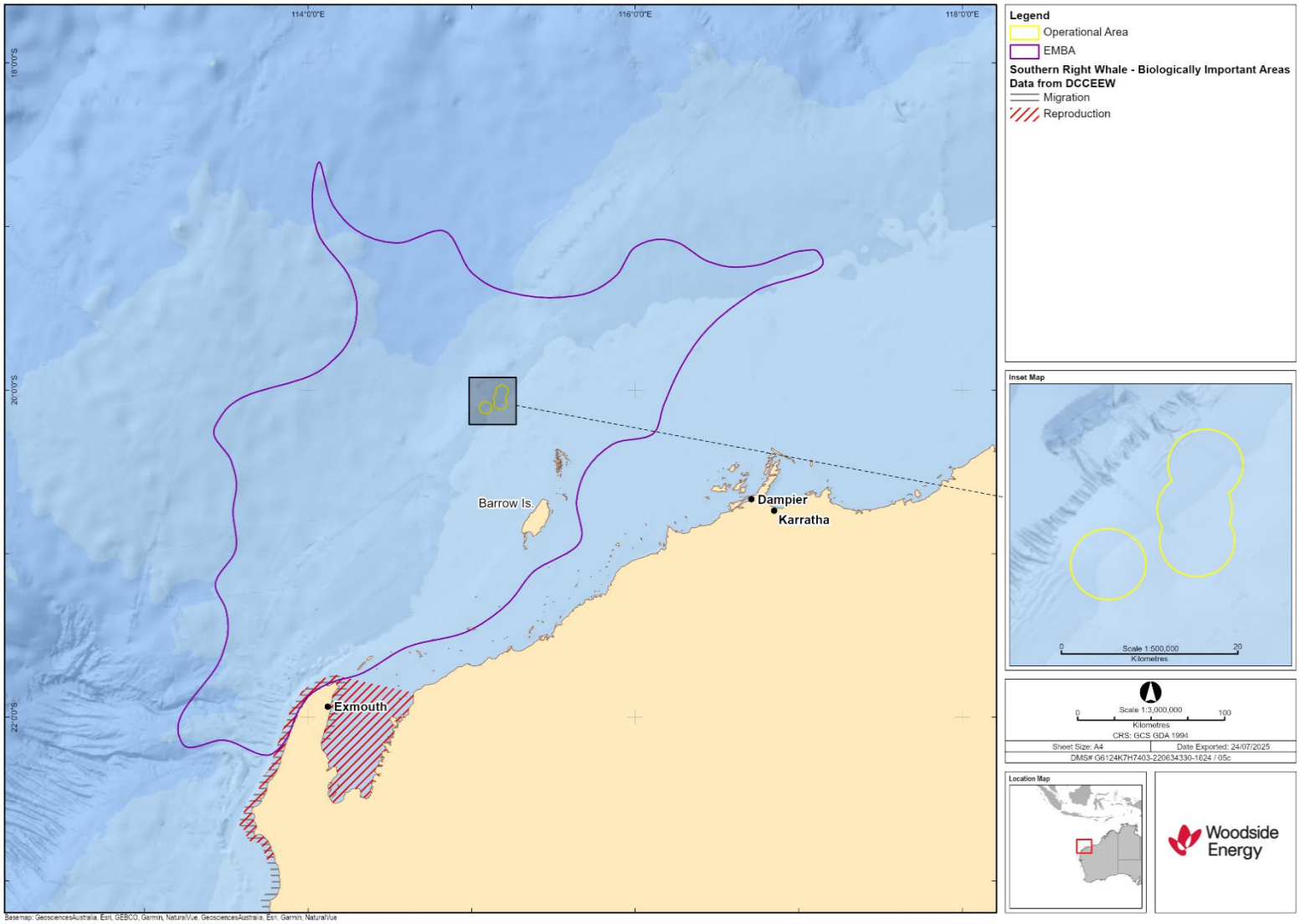

Figure 4-10: Southern right whale BIAs overlapping the EMBA (Migration and reproduction BIAs along the coast extend to 3 nm)

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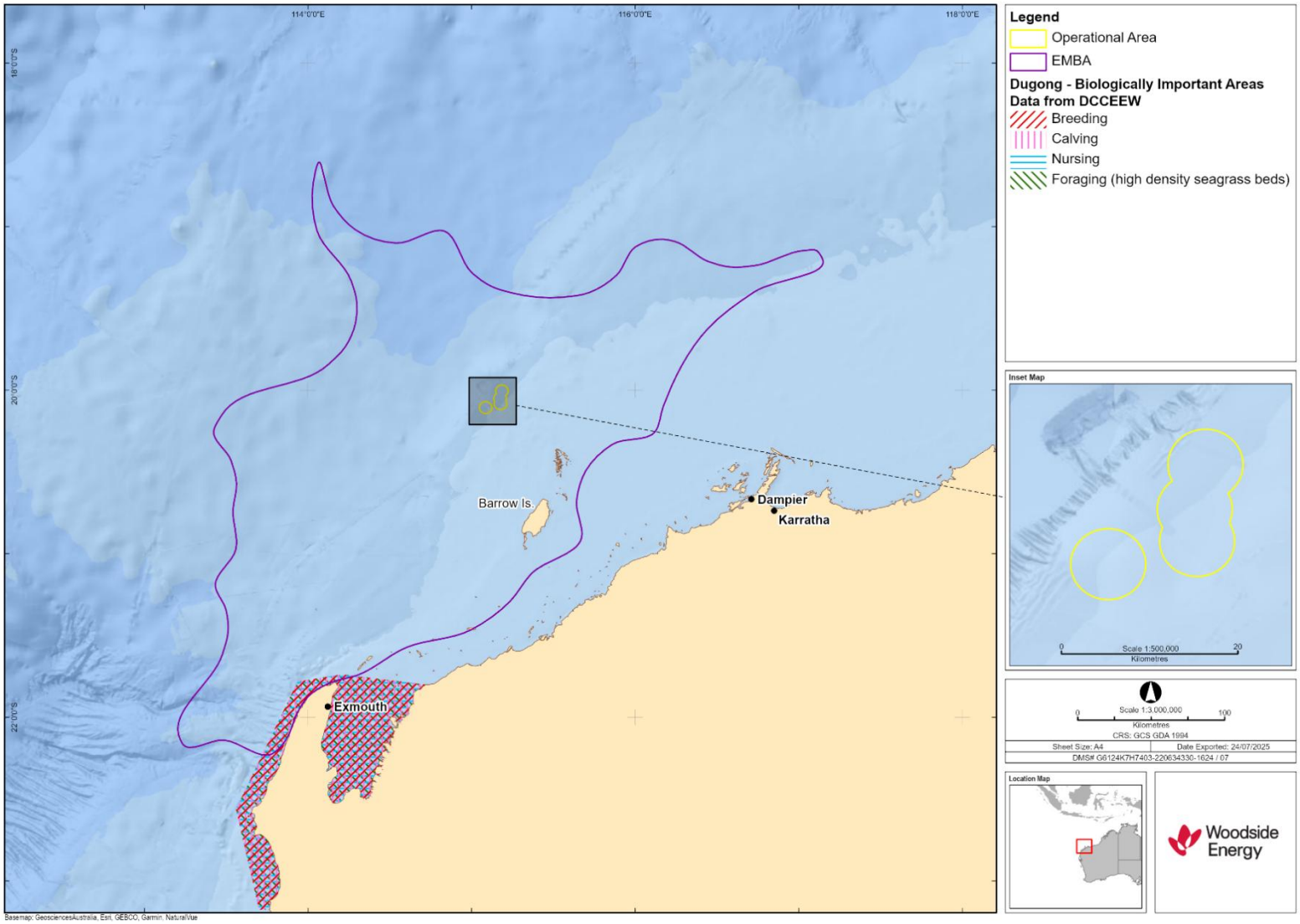

Figure 4-11: Dugong BIAs overlapping the EMBA

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4.6.4 Seabirds and migratory shorebirds

A total of 39 EPBC Act listed threatened seabirds and migratory shorebird species have been identified to potentially occur within the EMBA, of which 16 occur in the Operational Area (Table 4-12). A full list of EPBC Act listed species identified in the PMST search is provided in Appendix D and Appendix E.

BIAs that overlap the EMBA are presented in Table 4-13 and Figure 4-12. The Operational Area overlaps a breeding BIA (Kimberley, Pilbara and Gascoyne coasts and islands including Ashmore Reef) for the wedge-tailed shearwater (Table 4-13, Figure 4-12).

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

4.6.4.1 Southern giant petrel (*Macronectes giganteus*)

The southern giant petrel (*Macronectes giganteus*) is listed as endangered under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and as a migratory species under the *Biodiversity Conservation Act* (DEH 2006). The species may occur in offshore areas of the North-west Marine Region (NWMR), particularly in pelagic zones where they forage during migration or dispersal (DEH 2006). Their presence in the NWMR is likely to be transient and opportunistic, associated with seasonal movements and the availability of food resources such as fisheries waste or natural carrion. Southern giant petrels are opportunistic and generalist feeders. Their diet consists primarily of carrion, particularly the remains of dead marine mammals and seabirds, but they also actively hunt live prey such as fish, squid, and krill (Marchant and Higgins 1990; DEH 2006). Foraging occurs both at sea and along shorelines, however, the lack of known breeding or aggregation sites in the NWMR suggests that the region is primarily a foraging or transit area for the species.

Although this species or species habitat may occur within the EMBA, no BIAs for the Indian yellow-nosed albatross overlap with the Operational Area or EMBA.

4.6.4.2 Indian yellow-nosed albatross (*Thalassarche carteri*)

The Indian yellow-nosed albatross (*Thalassarche carteri*) is listed as vulnerable under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) and as endangered under the Biodiversity Conservation Act (Garnett and Crowley 2000). It is a medium-sized albatross species that occurs widely across the southern Indian Ocean. The species forages extensively in pelagic waters and is particularly abundant off the coast of Western Australia (Marchant and Higgins 1990). Recorded observations confirm its occurrence in offshore waters within the North-west Marine Region (DEH 2006). The Indian yellow-nosed albatross feeds mainly at the ocean surface. Its diet includes squid, fish, and crustaceans, and it is known to consume discards from fishing vessels (Marchant and Higgins 1990). Foraging typically occurs in open ocean habitats, where the species uses dynamic soaring flight to cover large distances in search of prey.

Although this species or species habitat may occur within the EMBA, no BIAs for the Indian yellow-nosed albatross overlap with the Operational Area or EMBA.

4.6.4.3 Campbell albatross (*Thalassarche impavida*)

The Campbell albatross (*Thalassarche impavida*) is listed as vulnerable and migratory under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) and as vulnerable under the Biodiversity Conservation Act (Garnett and Crowley 2000). It inhabits sub-Antarctic and subtropical marine waters, ranging from pelagic to shelf-break habitats (Marchant and Higgins 1990).

The species is most commonly observed over waters off Tasmania, Victoria, and New South Wales, and individuals may move northward following the breeding season (Marchant and Higgins 1990). Observations indicate that Campbell albatrosses also occur in offshore waters of the North-west Marine Region (DEH 2006). Campbell albatrosses are specialised shelf feeders, feeding predominantly on fish and krill (Marchant and Higgins 1990). They often concentrate their foraging efforts around breeding islands or adjacent submarine banks, utilizing shelf and shelf-break habitats (Marchant and Higgins 1990).

Although this species or species habitat may occur within the EMBA, no BIAs for the Campbell albatross overlap with the Operational Area or EMBA.

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

Species name	Common name	*Environment Protection and Biodiversity Conservation Act 1999* (as per PMST report Appendix D and Appendix E)			WA *Biodiversity Conservation Act 2016*[17]	IUCN Red List of Threatened Species (non-statutory)[18]	Potential for interaction		EPBC Act Part 13 Statutory Instrument
		Threatened status	*Migratory status*	*Listed*	*Conservation Status*	*Global Status*	*Operational Area*	*EMBA*	
Anous stolidus	Common noddy	N/A	Migratory	Marine	Specially Protected – Migratory Species	Least Concern	Species or species habitat may occur within area	Species or species habitat likely to occur within area	Refer to Master Existing Environment (Appendix C, Table 8-1).
Actitis hypoleucos	Common sandpiper	N/A	Migratory	Marine	Specially Protected – Migratory Species	Least Concern	Species or species habitat may occur within area	Species or species habitat known to occur within area	
Ardenna carneipes	Flesh-footed shearwater	N/A	Migratory	Listed (as *Puffinus carneipes*)	Threatened Species – Vulnerable	Near Threatened	N/A	Species or species habitat likely to occur within area	
Ardenna pacifica	Wedge-tailed shearwater	N/A	Migratory	Listed (as *Puffinus pacificus*)	Specially Protected – Migratory Species	Least Concern	N/A	Breeding known to occur within area	
Apus pacificus	Fork-tailed swift	N/A	Migratory	Listed – overfly marine area	Specially Protected – Migratory Species	Least Concern	N/A	Species or species habitat likely to occur within area	

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

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

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Species name	Common name	*Environment Protection and Biodiversity Conservation Act 1999* (as per PMST report Appendix D and Appendix E)			WA *Biodiversity Conservation Act 2016*[17]	IUCN Red List of Threatened Species (non-statutory)[18]	Potential for interaction		EPBC Act Part 13 Statutory Instrument
		Threatened status	*Migratory status*	*Listed*	*Conservation Status*	*Global Status*	*Operational Area*	*EMBA*	
Calidris acuminata	Sharp-tailed sandpiper	Vulnerable	Migratory	Marine	Specially Protected – Migratory Species	Vulnerable	Species or species habitat may occur within area	Species or species habitat known to occur within area	
Calidris canutus	Red knot	Vulnerable	Migratory	Marine -overfly marine area	Threatened Species – Endangered	Near Threatened	Species or species habitat may occur within area	Species or species habitat known to occur within area	
Calidris ferruginea	Curlew sandpiper	Critically Endangered	Migratory	Marine -overfly marine area	Threatened Species – Critically Endangered	Vulnerable	Species or species habitat may occur within area	Species or species habitat known to occur within area	
Calidris melanotos	Pectoral sandpiper	N/A	Migratory	Marine -overfly marine area	Specially Protected – Migratory Species	Least Concern	Species or species habitat may occur within area	Species or species habitat may occur within area	
Calonectris leucomelas	Streaked shearwater	N/A	Migratory	Marine	Specially Protected – Migratory Species	Near Threatened	Species or species habitat likely to occur within area	Species or species habitat likely to occur within area	

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Species name	Common name	*Environment Protection and Biodiversity Conservation Act 1999* (as per PMST report Appendix D and Appendix E)			WA *Biodiversity Conservation Act 2016*[17]	IUCN Red List of Threatened Species (non-statutory)[18]	Potential for interaction		EPBC Act Part 13 Statutory Instrument
		Threatened status	*Migratory status*	*Listed*	*Conservation Status*	*Global Status*	*Operational Area*	*EMBA*	
Charadrius veredus	Oriental plover	N/A	Migratory	Listed – overfly marine area	Specially Protected – Migratory Species	Least Concern	N/A	Species or species habitat may occur within area	
Charadrius leschenaultii	Greater sand plover	Vulnerable	Migratory	Marine	Threatened Species – Vulnerable	Least Concern	N/A	Species or species habitat known to occur within area	Refer to Master Existing Environment (Appendix C, Table 8-1).
Fregata ariel	Lesser frigatebird	N/A	Migratory	Marine	Specially Protected – Migratory Species	Least Concern	Species or species habitat likely to occur within area	Species or species habitat likely to occur within area	
Hydroprogne caspia	Caspian tern	N/A	Migratory	Listed (as *Sterna caspia*)	Specially Protected – Migratory Species	Least Concern	N/A	Breeding known to occur within area	
Fregata minor	Great frigatebird, greater frigatebird	N/A	Migratory	Marine	Specially Protected – Migratory Species	Least Concern	N/A	Species or species habitat may occur within area	
Glareola maldivarum	Oriental pratincole	N/A	Migratory	Listed – overfly marine area	Specially Protected – Migratory Species	Least Concern	N/A	Species or species habitat may occur within area	

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Species name	Common name	*Environment Protection and Biodiversity Conservation Act 1999* (as per PMST report Appendix D and Appendix E)			WA *Biodiversity Conservation Act 2016*[17]	IUCN Red List of Threatened Species (non-statutory)[18]	Potential for interaction		EPBC Act Part 13 Statutory Instrument
		Threatened status	*Migratory status*	*Listed*	*Conservation Status*	*Global Status*	*Operational Area*	*EMBA*	
Hirundo rustica	Barn swallow	N/A	Migratory	Listed – overfly marine area	Specially Protected – Migratory Species	Least Concern	N/A	Species or species habitat may occur within area	N/A
Limnodromus semipalmatus	Asian dowitcher	Vulnerable	Migratory	Listed – overfly marine area	Specially Protected – Migratory Species	Near Threatened	N/A	Species or species habitat known to occur within area	Refer to Master Existing Environment (Appendix C, Table 8-1).
Limosa lapponica	Bar-tailed godwit	N/A	Migratory	Marine	Specially Protected – Migratory Species	Near Threatened	N/A	Species or species habitat known to occur within area	
Limosa lapponica menzbieri	Northern Siberian bar-tailed godwit	Endangered	N/A	N/A	Threatened Species – Critically Endangered	Near Threatened (as *Limosa lapponica*)	N/A	Species or species habitat known to occur within area	
Macronectes giganteus	Southern giant-petrel	Endangered	Migratory	Marine	Specially Protected – Migratory Species	Least Concern	Species or species habitat may occur within area	Species or species habitat may occur within area	Commonwealth Listing Advice on *Macronectes giganteus*. (TSSC 2001).

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Species name	Common name	*Environment Protection and Biodiversity Conservation Act 1999* (as per PMST report Appendix D and Appendix E)			WA *Biodiversity Conservation Act 2016*[17]	IUCN Red List of Threatened Species (non-statutory)[18]	Potential for interaction		EPBC Act Part 13 Statutory Instrument
		Threatened status	*Migratory status*	*Listed*	*Conservation Status*	*Global Status*	*Operational Area*	*EMBA*	
Motacilla cinerea	Grey wagtail	N/A	Migratory	Listed – overfly marine area	Specially Protected – Migratory Species	Least Concern	N/A	Species or species habitat may occur within area	N/A
Motacilla flava	Yellow wagtail	N/A	Migratory	Listed – overfly marine area	Specially Protected – Migratory Species	Least Concern	N/A	Species or species habitat may occur within area	N/A
Numenius madagascariensis	Eastern curlew	Critically Endangered	Migratory	Marine	Threatened Species – Critically Endangered	Endangered	Species or species habitat may occur within area	Species or species habitat known to occur within area	Refer to Master Existing Environment (Appendix C, Table 8-1).
Onychoprion anaethetus	Bridled tern	N/A	Migratory	Listed (as *Sterna anaethetus*)	Specially Protected – Migratory Species	Least Concern	N/A	Breeding known to occur within area	
Pandion haliaetus	Osprey	N/A	Migratory	Marine	Specially Protected – Migratory Species	Least Concern	Species or species habitat may occur within area	Breeding known to occur within area	
Phaethon lepturus	White-tailed tropicbird	N/A	Migratory	Marine	Specially Protected – Migratory Species	Least Concern	Species or species habitat may occur within area	Species or species habitat known to occur within area	

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Species name	Common name	*Environment Protection and Biodiversity Conservation Act 1999* (as per PMST report Appendix D and Appendix E)			WA *Biodiversity Conservation Act 2016*[17]	IUCN Red List of Threatened Species (non-statutory)[18]	Potential for interaction		EPBC Act Part 13 Statutory Instrument
		Threatened status	*Migratory status*	*Listed*	*Conservation Status*	*Global Status*	*Operational Area*	*EMBA*	
Phaethon lepturus fulvus	Christmas Island white-tailed tropicbird	Endangered	N/A	Marine	Specially Protected – Migratory Species	Least Concern (as *Phaethon lepturus*)	Species or species habitat may occur within area	Species or species habitat may occur within area	Conservation *Advice Phaethon lepturus fulvus* white-tailed tropicbird (Christmas Island) (DoE 2014).
Phaethon rubricauda	Red-tailed tropicbird	N/A	Migratory	Marine	Specially Protected – Migratory Species and Priority 4	Least Concern	Species or species habitat likely to occur within area	Species or species habitat likely to occur within area	Refer to Master Existing Environment (Appendix C, Table 8-1).
Phaethon rubricauda westralis	Red-tailed tropicbird (Indian Ocean)	Endangered	N/A	N/A	Specially Protected – Migratory Species and Priority 4 (as *Phaethon rubricauda)*	Least Concern (as *Phaethon rubricauda)*	Species or species habitat likely to occur within area	Species or species habitat likely to occur within area	Conservation Advice for *Phaethon rubricauda westralis* (Indian Ocean red-tailed tropicbird) (DCCEEW 2023).
Pterodroma mollis	Soft-plumaged petrel	Vulnerable	N/A	Marine	N/A	Least Concern	N/A	Foraging, feeding or related behaviour likely to occur within area	Refer to Master Existing Environment (Appendix C, Table 8-1).

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Species name	Common name	*Environment Protection and Biodiversity Conservation Act 1999* (as per PMST report Appendix D and Appendix E)			WA *Biodiversity Conservation Act 2016*[17]	IUCN Red List of Threatened Species (non-statutory)[18]	Potential for interaction		EPBC Act Part 13 Statutory Instrument
		Threatened status	*Migratory status*	*Listed*	*Conservation Status*	*Global Status*	*Operational Area*	*EMBA*	
Rostratula australis	Australian painted snipe	Endangered	N/A	Listed – overfly marine area (as *Rostratula benghalensis*)	Threatened Species – Endangered	Endangered	N/A	Species or species habitat likely to occur within area	
Sterna dougallii	Roseate tern	N/A	Migratory	Marine	Specially Protected – Migratory Species	Least Concern	N/A	Breeding known to occur within area	
Sternula albifrons	Little tern	Vulnerable	Migratory	Listed (as *Sterna albifrons*)	Specially Protected – Migratory Species	Least Concern	N/A	Breeding known to occur within area	
Sternula nereis nereis	Australian fairy tern	Vulnerable	N/A	N/A	Threatened Species – Vulnerable	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	Breeding known to occur within area	
Thalassarche carteri	Indian yellow-nosed albatross	Vulnerable	Migratory	Marine	Threatened Species – Endangered	Endangered	N/A	Species or species habitat may occur within area	National Recovery Plan for albatrosses and petrels (DCCEEW 2022).
Thalassarche impavida	Campbell albatross	Vulnerable	Migratory	Marine	Threatened Species – Vulnerable	Vulnerable	N/A	Species or species habitat may occur within area	

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Species name	Common name	*Environment Protection and Biodiversity Conservation Act 1999* (as per PMST report Appendix D and Appendix E)			WA *Biodiversity Conservation Act 2016*[17]	IUCN Red List of Threatened Species (non-statutory)[18]	Potential for interaction		EPBC Act Part 13 Statutory Instrument
		Threatened status	*Migratory status*	*Listed*	*Conservation Status*	*Global Status*	*Operational Area*	*EMBA*	
Thalasseus bergii	Greater crested tern	N/A	Migratory	Listed (as *Sterna bergii*)	Specially Protected – Migratory Species	Least Concern	N/A	Breeding known to occur within area	Refer to Master Existing Environment (Appendix C, Table 8-1).
Tringa nebularia	Common greenshank	Endangered	Migratory	Marine	Specially Protected – Migratory Species	Least Concern	N/A	Species or species habitat likely to occur within area	

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

Species	BIA type	Approx. distance and direction from Operational Area (km)
Wedge-tailed shearwater	Breeding (Kimberley, Pilbara and Gascoyne coasts and islands including Ashmore Reef).	Overlaps
	Breeding (Kimberley, Pilbara and Gascoyne coasts and islands including Ashmore Reef).	35 km south
	Breeding (Kimberley, Pilbara and Gascoyne coasts and islands including Ashmore Reef).	40 km east
	Breeding (Kimberley, Pilbara and Gascoyne coasts and islands including Ashmore Reef).	61 km south-east
	Breeding (Kimberley, Pilbara and Gascoyne coasts and islands including Ashmore Reef).	136 km south-west
Fairy tern	Breeding (Pilbara and Gascoyne coasts and islands).	35 km south-east
	Breeding (Pilbara and Gascoyne coasts and islands).	40 km south-east
	Breeding (Pilbara and Gascoyne coasts and islands).	57 km south
	Breeding (Pilbara and Gascoyne coasts and islands).	64 km south-east
	Breeding (Pilbara and Gascoyne coasts and islands).	124 km south
	Breeding (Pilbara and Gascoyne coasts and islands).	129 km south
	Breeding (Pilbara and Gascoyne coasts and islands).	214 south-west
	Breeding (Pilbara and Gascoyne coasts and islands).	220 south-west
Lesser crested tern	Breeding (Kimberley, Pilbara and Gascoyne coasts and islands including Ashmore Reef).	39 km south-east
	Breeding (Kimberley, Pilbara and Gascoyne coasts and islands including Ashmore Reef).	60 km south-east
	Breeding (Kimberley, Pilbara and Gascoyne coasts and islands including Ashmore Reef).	114 south
	Breeding (Kimberley, Pilbara and Gascoyne coasts and islands including Ashmore Reef).	135 km south
Roseate tern	Breeding (Kimberley, Pilbara and Gascoyne coasts and islands including Ashmore Reef).	41 km south-east
	Breeding (Kimberley, Pilbara and Gascoyne coasts and islands including Ashmore Reef).	60 km south-east
	Breeding (Kimberley, Pilbara and Gascoyne coasts and islands including Ashmore Reef).	88 km south
	Breeding (Kimberley, Pilbara and Gascoyne coasts and islands including Ashmore Reef).	108 km south

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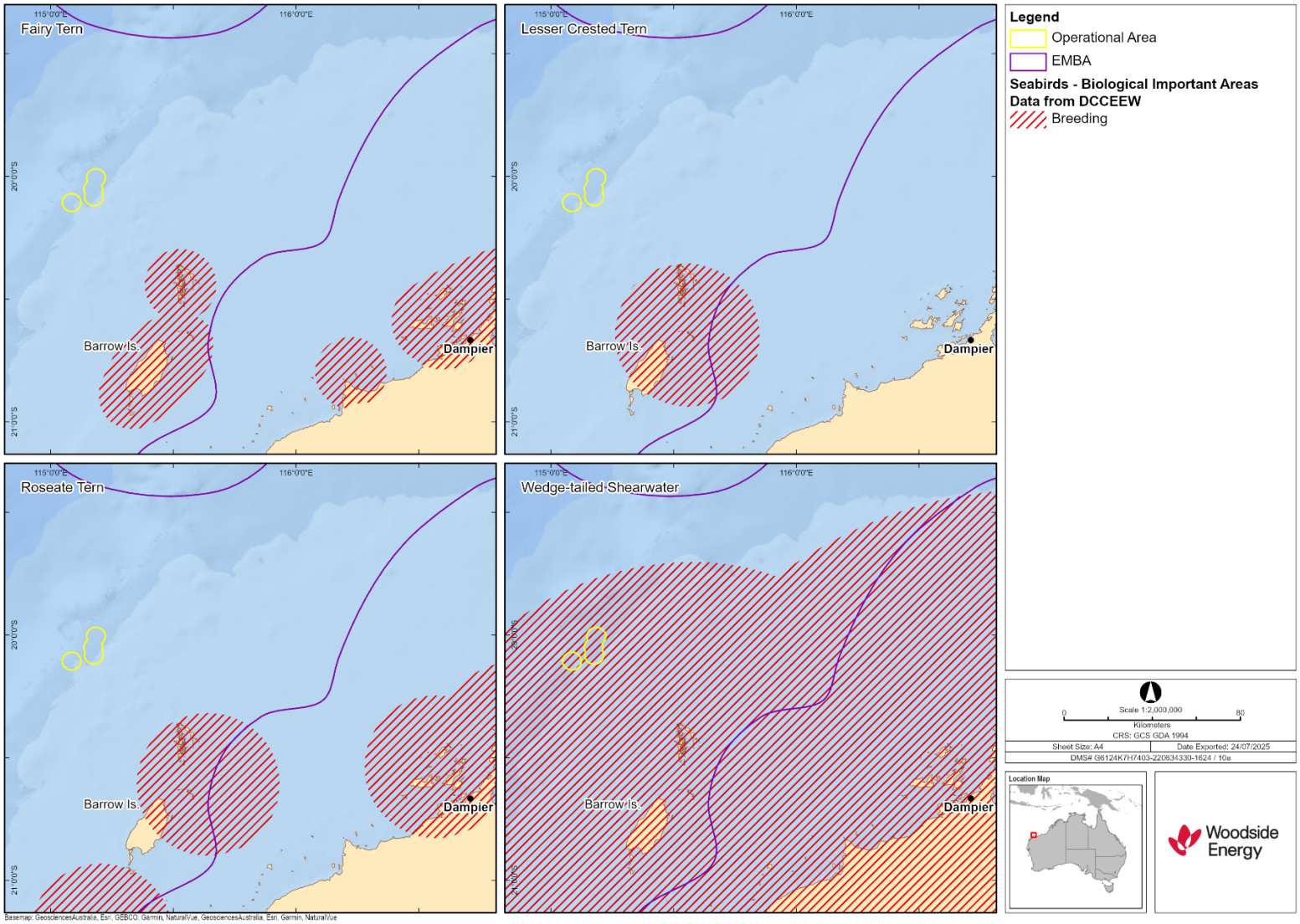

Figure 4-12: Seabird BIAs in relation to the Operational Area and EMBA

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4.6.5 Seasonal sensitivities for protected species

Seasonal sensitivities for protected migratory species with BIAs overlapping the Operational Area are identified in Table 4-14. Movement patterns of all protected species identified in Section 4.6.4 and seasonal sensitivities for species in the wider NWMR are described in Appendix C.

Table 4-14: 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 – Foraging[1] (northward from Ningaloo along 200 m isobath).												
Mammals												
Pygmy blue whale – Northern migration[2] (Augusta to Derby. Tend to pass along the shelf edge at depths of 500m to 1000m.												
Pygmy blue whale – Southern migration (Derby to Augusta. Tend to pass along the shelf edge at depths of 500m to 1000m; appear close to coast in the Exmouth-Montebello Islands area on southern migration).												
Marine reptiles												
Flatback turtle (Pilbara[3]) – (Montebello Islands – Hermite Island, NW Island, Trimouille Island).												
Seabirds and shorebirds												
Wedge-tailed shearwater – breeding[4] (Kimberley, Pilbara and Gascoyne coasts and islands including Ashmore Reef). *Fledgling emergence (first two weeks of April)				*								
	Species may be present in the Operational Area											
	Peak period. Presence of animals is reliable and predictable each year											

1. *Whale shark foraging northward from Ningaloo in Spring (DCCEEW 2024a). Migration along the north coast of WA also known to occur between July–November (TSSC 2015). Potential presence of whale sharks year-round at Ningaloo (Norman et al. 2017).Pygmy blue whale northern migration April–August (DCCEEW 2024b). Peak April–July (Thums et al. 2022) refers to Western Australia from the Perth Canyon (April/May) to the North West Shelf (June/July).*
2. *Pygmy blue whale southern migration October–December, possibly into January (DCCEEW 2024b). Peak November–December (Thums et al. 2022).*
3. *Flatback turtle nesting Pilbara Stock—October–March (CoA 2017).*
4. *Wedge-tailed shearwater various breeding sites (DSEWPaC 2012b; Environment Australia 2002).*

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4.7 Key ecological features (KEFs)

KEFs within the Operational Area and EMBA are identified in Table 4-15 and described in Appendix C.

Figure 4-13 shows the spatial overlap with KEFs and the Operational Area and EMBA.

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

Key ecological feature	Distance and direction from Operational Area to KEF (km)	Description
Ancient coastline at 125 m depth contour	Overlaps	The Ancient Coastline at the 125 m depth contour KEF overlaps approximately 15% of the Operational Area. For further information on KEF features and values that are relevant to or may be impacted by the EP activities, refer to Table 4-3 and the Master Existing Document (Appendix C, Table 10-1).
Continental Slope Demersal Fish Communities	Overlaps	The Continental Slope Demersal Fish Communities KEF overlaps approximately 0.85% of the Operational Area. For further information on KEF features and values that are relevant to or may be impacted by the EP activities, refer to Table 4-3 and the Master Existing Document (Appendix C, Table 10-1).
Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula	148 km south-west	These three KEFs occur within the wider EMBA, however, do not overlap with the Operational Area. For further information on KEF features and values that are relevant to or may be impacted by the EP activities, refer Table 4-3 and the Master Existing Document (Appendix C, Table 10-1).
Commonwealth waters adjacent to Ningaloo Reef	191 km south-west	
Exmouth Plateau	88 km south-west	

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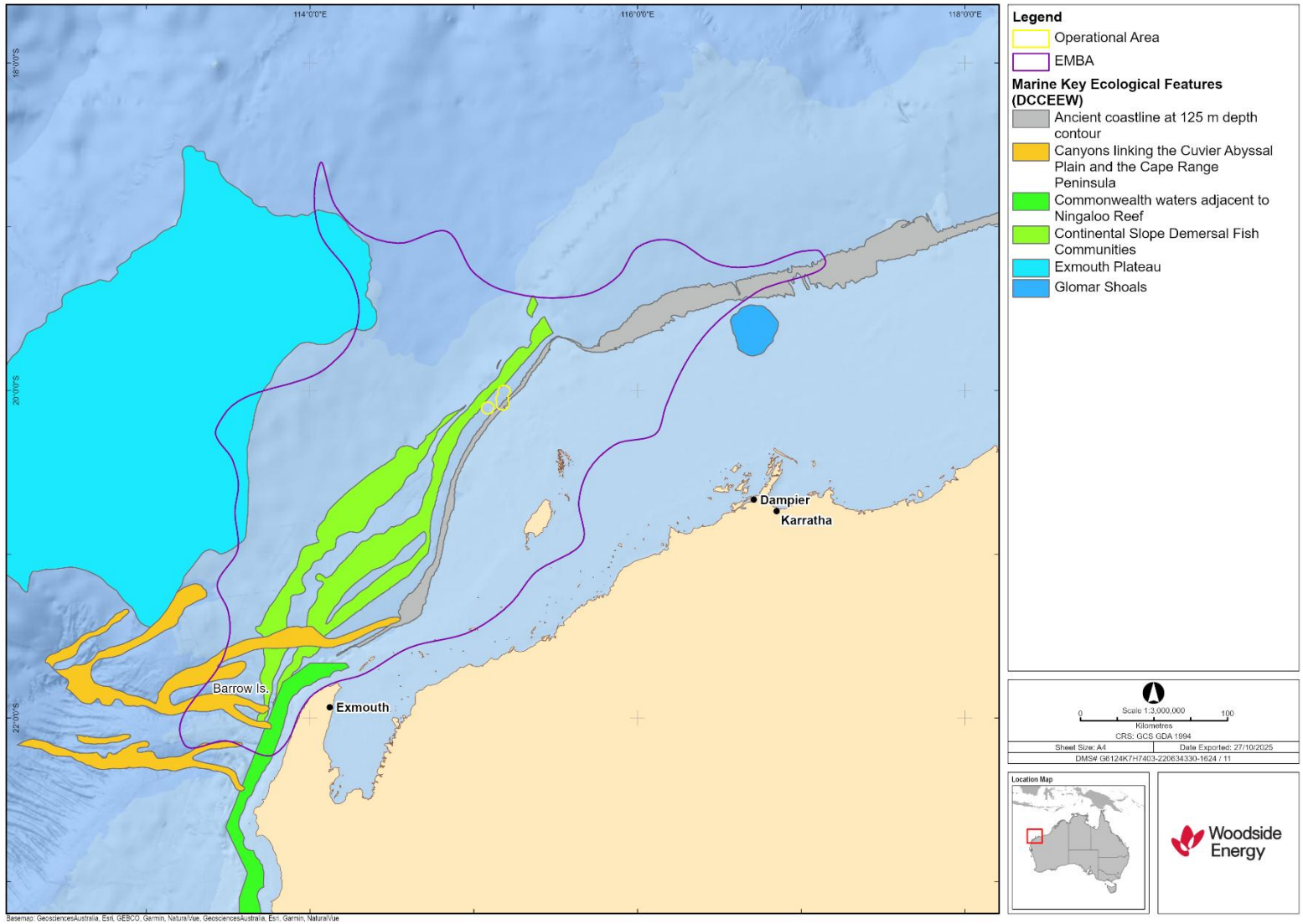

Figure 4-13: KEFs overlapping the Operational Area and EMBA

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4.8 Protected places

Protected places within the Operational Area and EMBA are identified in Table 4-16 and presented in Figure 4-14. Appendix C outlines the values and sensitivities of protected places and other sensitive areas in the Operational Area and EMBA.

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

	Distance and direction from Operational Area to protected place or sensitive area (km)	IUCN category* or relevant park zone overlapping the Operational Area and/or EMBA
AMPs		
NWMR		
Montebello	3 km east	Multiple Use Zone (IUCN VI)
Gascoyne	150 km south-west	Multiple Use Zone (IUCN VI)
Ningaloo	190 km south-west	Recreational Use Zone (IUCN IV)
State Marine Parks and Nature Reserves		
Marine Parks		
Montebello Islands Marine Park	35 km south-east	General Use Zone (IUCN II)
	35 km south-east	Special Purpose Zone (IUCN IV)
	38 km south-east	Sanctuary Zone (IUCN Ia)
	46 km south-east	Special Purpose Zone (IUCN VI)
	55 km south-east	Recreation Zone (IUCN II)
Barrow Island Marine Park	67 km south-east	IUCN Ia
Ningaloo Marine Park	192 km south-east	Special Purpose Zone (IUCN IV)
	192 km south-east	General Use Zone (IUCN II)
	203 km south-east	Recreation Area (IUCN II)
	204 km south-east	Sanctuary Zone (IUCN Ia)
	205 km south-east	Special Purpose Zone (IUCN II)
Marine Management Areas		
Barrow Island Marine Management Area	42 km south-east	IUCN VI
Muiron Islands Marine Management Area	175 km south-west	IUCN VI
	182 km south-west	Conservation Area (IUCN Ia)
National Parks		
Cape Range National Park	250 km south-west	IUCN II
Nature Reserves		
Barrow Island Nature Reserve	66 km south	IUCN Ia
Lowendal Islands Nature Reserve	67 km south-east	IUCN Ia
Boodie, Double Middle Islands Nature Reserve	87 km south	IUCN Ia
Airlie Island Nature Reserve	131 km south	IUCN Ia
Thevenard Island Nature Reserve	144 km south	IUCN Ia
Bessieres Island Nature Reserve	156 km south-west	IUCN Ia

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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
Muiron Islands Nature Reserve	179 km south-west	IUCN Ia
Conservation Parks		
Montebello Islands Conservation Park	43 km south-east	IUCN II
Other sensitive areas		
Section 5(1)(h) Reserve		
Montebello Islands Conservation Park	43 km south-east	IUCN V
Montebello Islands Conservation Park	51 km south-east	IUCN V
Airlie Island Nature Reserve	133 km south	IUCN V
Bessieres Island Nature Reserve	157 km south-west	IUCN V
Jurabi Coastal Park	222 km south-west	IUCN II

**Conservation objectives for IUCN categories include:*
Ia: Strict Nature Reserve

Ib: Wilderness Area

II: national Park

III: Natural Monument or Feature

IV: Habitat/Species Management Area

V: Protected Landscape

VI: Protected area with sustainable use of natural resources – allow 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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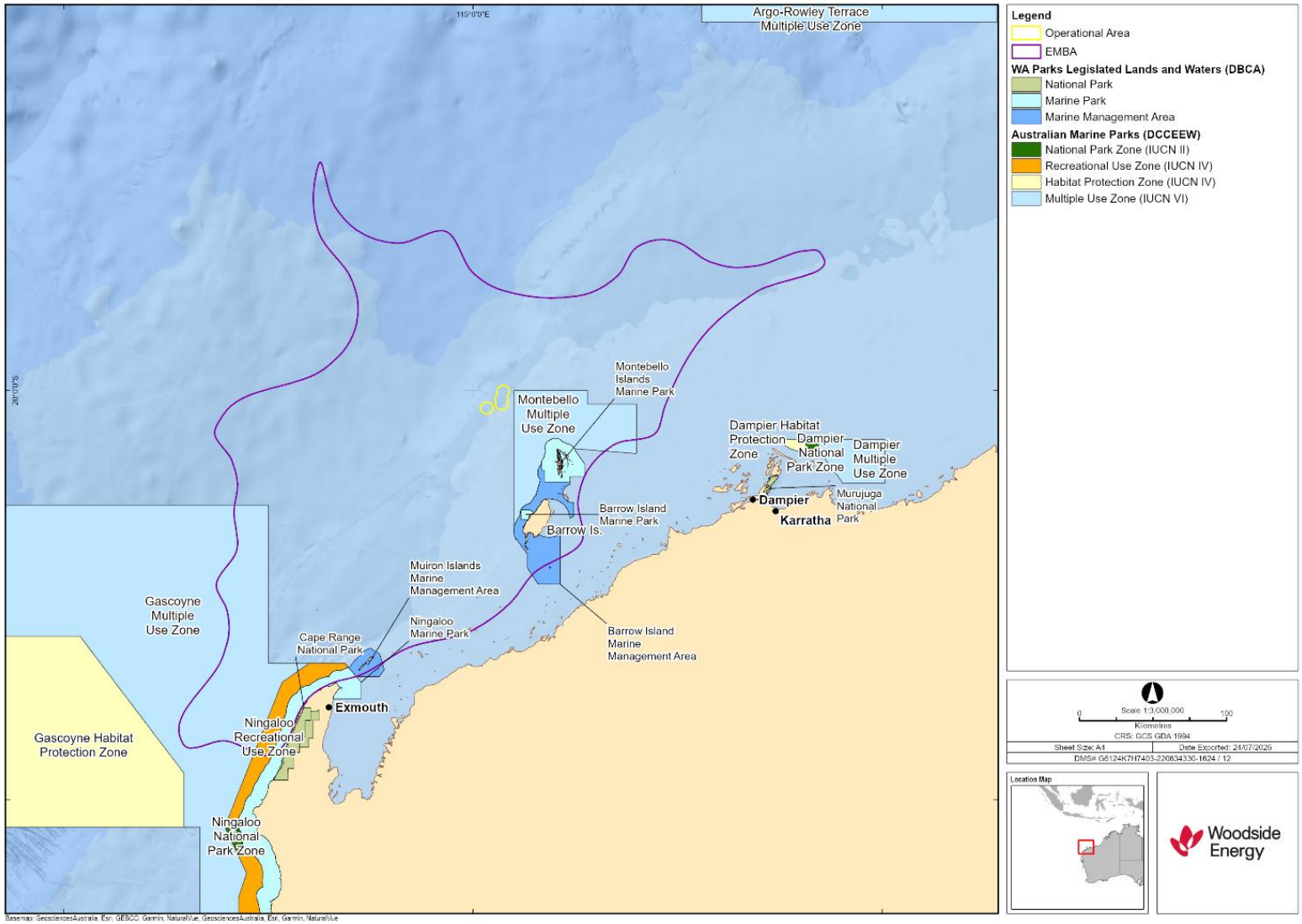

Figure 4-14: Protected areas overlapping the Operational Area and EMBA

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

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

4.9.1.1 Native title

For the activity in this EP, there are no Indigenous Land Use Agreements (ILUAs), native title claims or determinations overlapping the Operational Area. No ILUAs overlap the EMBA, however, there is one native title claim that interacts with the EMBA (Table 4-17).

Claims and determinations have not been differentiated in this table, as it is acknowledged that rights and interest may exist within either of these. Figure 4-15 shows the spatial overlap with native title claims and ILUAs.

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

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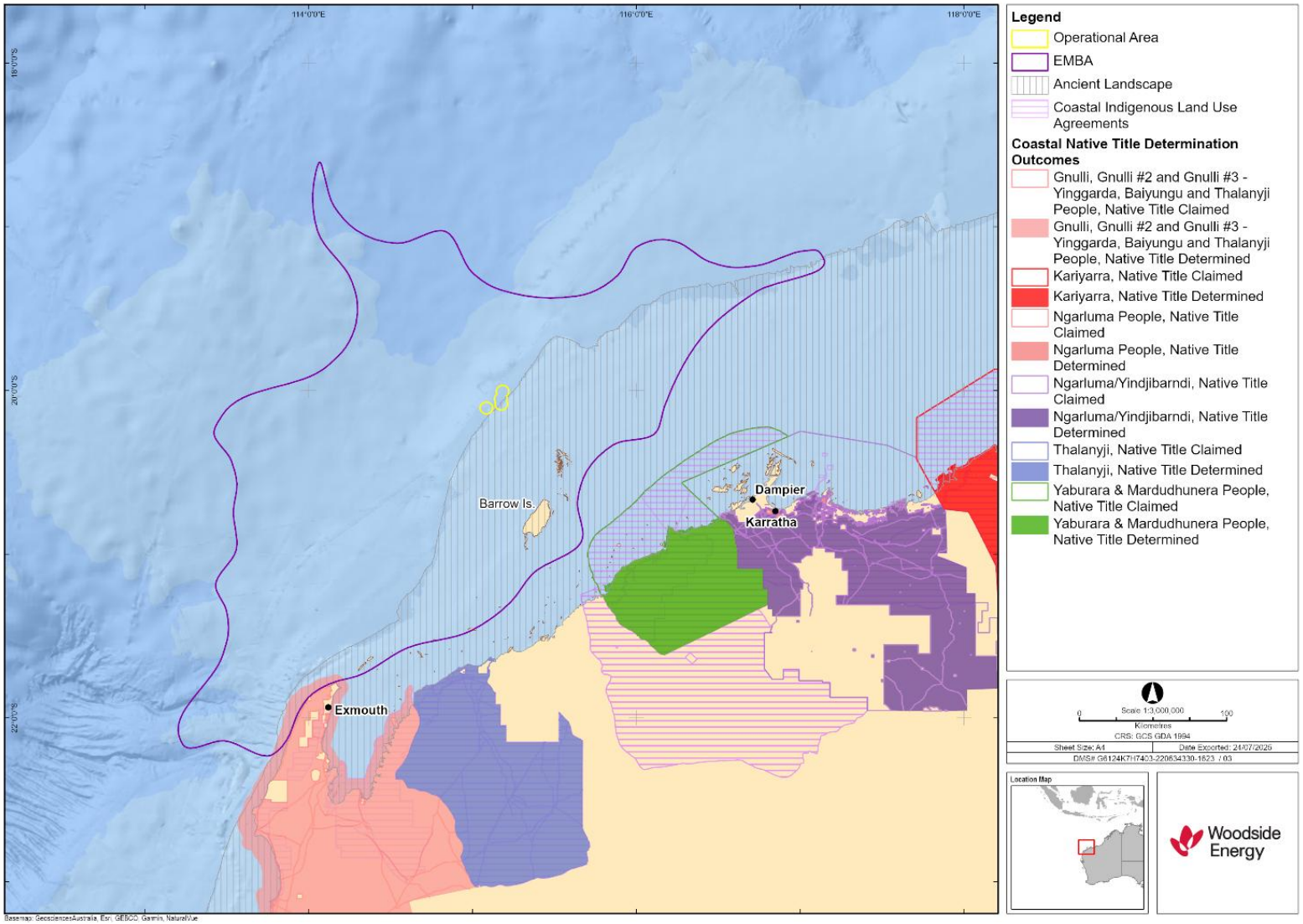

Figure 4-15: Operational Area and socio-economic EMBA in relation to native title claims, determinations and Indigenous Land Use Agreements

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4.9.1.2 Coastally adjacent First Nations groups

To identify cultural features and heritage values which may exist outside of a native title claim, determination and ILUA areas, Woodside considers native title claims, determinations and ILUAs coastally adjacent to the EMBA to be an instructive means of identifying potentially relevant First Nations groups to be consulted (see Section 5).

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

A summary of native title claims, determinations and ILUAs overlapping or coastally adjacent to the EMBA is set out in (Table 4-17).Claims and determinations have not been differentiated in this table, as it is acknowledged that either of these may indicate the existence of rights and interests.

Table 4-17: Summary of Native Title claims, determinations and Indigenous Land Use Agreements which overlap or are coastally adjacent to the EMBA

Claim/determination	Registered Native Title Body Corporate	Overlap with EMBA	Coastally adjacent to the EMBA
Claim/Determination			
Gnulli, Gnulli #2 and Gnulli #3 – Yinggarda, Baiyungu and Thalanyji People	Nganhurra Thanardi Garrbu Aboriginal Corporation. Yinggarda Aboriginal Corporation.	Yes	Yes
Yaburara & Mardudhunera People	Wirrawandi Aboriginal Corporation.	No	Yes
Nhuwala Claim	Yamatji Marlpa Aboriginal Corporation	Yes	Yes
Thalanyji/Nhuwala Peoples	Buurabalayji Thalanyji Aboriginal Corporation	Yes	Yes
Thalanyji	Buurabalayji Thalanyji Aboriginal Corporation.	No	Yes
Ngarluma/Yindjibarndi	Yindjibarndi Aboriginal Corporation. Ngarluma Aboriginal Corporation.	No	Yes
Kariyarra	Kariyarra Aboriginal Corporation.	No	Yes
Ngarluma People	Ngarluma Aboriginal Corporation.	No	Yes
ILUAs			
Alinta-Kariyarra Electricity Infrastructure ILUA	Yamatji Marlpa Aboriginal Corporation (on behalf of Kariyarra People).	No	Yes
Anketell Port, Infrastruture Corridor and Industrial Estates Agreement	Ngarluma Aboriginal Corporation.	No	Yes
Cape Preston Project Deed (YM Mardie ILUA)	Wirrawandi Aboriginal Corporation.	No	Yes
Cape Preston West Export Facility	Wirrawandi Aboriginal Corporation.	No	Yes
FMG – Kariyarra Land Access ILUA	Yamatji Marlpa Aboriginal Corporation (on behalf of Kariyarra People).	No	Yes
Kariyarra and State ILUA	Kariyarra Aboriginal Corporation.	No	Yes
KM & YM Indigenous Land Use Agreement 2018	Wirrawandi Aboriginal Corporation. Robe River Kuruma Aboriginal Corporation.	No	Yes

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Claim/determination	Registered Native Title Body Corporate	Overlap with EMBA	Coastally adjacent to the EMBA
Kuruma Marthudunera and Yaburara and Coastal Mardudhunera Indigenous Land Use Agreement	Wirrawandi Aboriginal Corporation. Robe River Kuruma Aboriginal Corporation.	No	Yes
Macedon ILUA	Buurabalayji Thalanyji Aboriginal Corporation.	No	Yes
Ningaloo Conservation Estate ILUA	Nganhurra Thanardi Garrbu Aboriginal Corporation.	No	Yes
RTIO Kuruma Marthudunera People ILUA	Robe River Kuruma 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 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 overlaps with features of the Gascoyne, Ningaloo and Montebello AMPs managed under the North-west Marine Parks Network Management Plan 2018 (Director of National Parks 2018). The EMBA overlaps a further five Marine Protected Areas. Where these plans specify identifiable representative bodies who may hold knowledge of heritage values or cultural features (including but not limited to Registered Native Title Bodies Corporate) these bodies are consulted (Section 5). Consultation with these groups may identify heritage values and cultural features beyond those addressed in the marine park management plans. Identifiable representative bodies for the marine parks overlapped by the EMBA are specified in Table 4-18.

Management plans for the AMPs note shipwrecks within the AMPs and overlap with World, National and Commonwealth heritage lists. These are addressed in Sections 4.9.1.8 and 4.9.1.9.

The Management Plan for the Ningaloo Marine Park and Muiron Islands Marine Management Area 2005 to 2015: Management Plan Number 52 (Marine Parks and Reserves Authority and Department of Conservation and Land Management 2005) (relating to the Muiron Islands Marine Management Area and Ningaloo Marine Park) notes the aesthetic values of the seascape as a cultural value and that “Panoramic vistas of turquoise lagoon waters, reefs, beaches, breaking surf and the blue open ocean beyond the reef line are major attractions of the reserves.” In particular the plan notes that “Inappropriate structures along the coastline, on the islands and in the surrounding waters have the potential to degrade the aesthetic values of the reserves. Coastal developments and maritime infrastructure projects must therefore be planned with careful consideration of this issue.” As the activity described in this EP does not include the addition of any structures within these parks, no impacts on the aesthetic values of these parks are anticipated. In addition the Nyinggulu (Ningaloo) coast is highly valued by the traditional owners of the area with many significant cultural values, including cultural heritage sites and places of ceremonial and mythological significance. Undertaking customary activities on country is central to maintaining the cultural heritage of the land. Such activities are an important part of traditional owner and wider Aboriginal culture, enabling maintenance of traditional relationships with the land and water; sharing of knowledge; engagement in traditional practices; and accessing and looking after significant places (DBCA, 2022a)

Plants and animals of cultural significance such as sacred totems or animals and plants related to creation stories, ceremonies or that are used as medicine or food. There are also significant Thalu sites along the Ningaloo coast, places for ceremonies and rituals for the increase in numbers of a particular species (see Table 4-19).

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

Marine Park Management Plan	Operational Area Overlap	EMBA Overlap	Specified Bodies
Commonwealth Marine Park Management Plan			
Gascoyne AMP	No	Yes	Yamatji Marlpa Aboriginal Corporation.
Montebello AMP	No	Yes	Yamatji Marlpa Aboriginal Corporation.
Ningaloo AMP	No	Yes	Nganhurra Thanardi Garrbu Aboriginal Corporation. Yamatji Marlpa Aboriginal Corporation.
State Marine Park Management Plan			
Barrow Island Marine Management Area	No	Yes	No identifiable body specified.
Muiron Islands Marine Management Area	No	Yes	No identifiable body specified.
Montebello Islands MP	No	Yes	No identifiable body specified.
Barrow Island MP	No	Yes	No identifiable body specified.
Ningaloo MP	No	Yes	Nganhurra Thanardi Garrbu Aboriginal Corporation.
National Park Management Plan			
Cape Range National Park	No	Yes	Yamatji Marlpa Aboriginal Corporation.

4.9.1.4 Indigenous protected areas

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

No IPAs overlap the Operational Area or EMBA. Australian IPAs are described further in Section 12.1.5 of Appendix C.

4.9.1.5 Sea Country values

Sea country values of marine ecosystems are further described in Appendix C. An impact to marine ecosystems has the potential to impact cultural values where the impact is detectable within Sea Country. Potential impacts to these cultural values is assessed in Section 5.

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

Cultural features or heritage values related to marine species within the Operational Area or EMBA raised by Traditional Custodians in the course of preparing the EP have been outlined in Table 4-20.

4.9.1.5.1 Desktop assessment of Sea Country values

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

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

First Nations group	Features and values	Source	Potential for overlap	
			Operational Area	EMBA
Gnulli (Baiyungu, Thalanyji, Yinggarda)	Feature: resources including marine animals.	FCA (2019)	Possible	Possible
	Value: Traditional Knowledge Value: Access to Country *Traditional knowledge holds that ancestors live on the land and in the water. Therefore, Indigenous people have obligations to access and care for these places (e.g., keeping them clean).*		Possible (unspecified) Access restricted within Operational Area	Possible (unspecified) Access restricted within Operational Area only
	Feature: Archaeological Sites *Heritage sites in the Ningaloo region include shell middens, artefact scatters, skeletal material/burial sites, camps, meeting places, hunting places and water sources.*	DBCA (2020)	No	Possible (Shoreline accumulation only)
	Feature: resources including:		No	No
	• gajalbu (emu),		No	No
	• bundgurdi (kangaroo),		No	No
	• bardurra (bush turkey),		No	No
	• majun (marine turtles),		Possible	Possible
	• turtle eggs,		No	Possible (shoreline accumulation only)
	• fish,		Possible	Possible
	• shellfish, and		Possible	Possible
	• plants.		No	Possible
	Feature: mudflats, mangroves and sand dunes provide a critical breeding ground for marine and terrestrial wildlife.		No	Possible (shoreline accumulation only)

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First Nations group	Features and values	Source	Potential for overlap	
			Operational Area	EMBA
	Value: Ningaloo Region Value: Ceremonial Sites *the Ningaloo region contains cultural heritage dating back at least 32,000 years, including ceremonial Thalu sites.*		No	Possible (shoreline accumulation only)
	Value: connection to Country *Connection to Country is important to the Traditional Owners' spirituality and religion.*		Possible (unspecified)	Possible (unspecified)
	Value: caring for Country *"The southern coastal reserves along the Ningaloo Coast are jointly managed by Traditional Owners and the DBCA. The Joint Management Body ensures that the Traditional Owners have an opportunity to make decisions about environmental management and land use".* *This document also includes information that is marked that cannot be copied, reproduced or used without consent.*		Possible (unspecified)	Possible (unspecified)
	Feature: resources including:	Morse (1993)	No (mangrove crabs) Possible (all other values)	Possible (all)
	• mangrove crabs,			
	• gastropods,			
	• shellfish, and			
	• turtles.			
Kariyarra	Value: traditional knowledge recalls that a salt water serpent lives in the sea and brings fish to shore.	Zaunmayr (2016)	Possible (unspecified)	Possible (unspecified)
Ngarluma	Value: Manggan (creative beings) used supernatural force to shape the hills, rivers, seas and landforms.	DNP (2018)	Possible (unspecified)	Possible (unspecified)
Ngarda-Ngarli (Mardudhunera, Ngarluma,	Value: traditional knowledge recalls that the sea is a source of creation for flying foxes.	DEC (2013)	Possible (unspecified)	Possible (unspecified)

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First Nations group	Features and values	Source	Potential for overlap	
			Operational Area	EMBA
Wong-Goo-Tt-Oo, Yaburara and/or Yindjibarndi)	Value: petroglyphs are understood as permanent signs left by ancestral beings.		No	No
	Value: petroglyphs depict the law.		No	No
	Value: cultural obligations to look after places of special potency.		Possible (unspecified)	Possible (unspecified)
	Value: petroglyphs are important in initiation and education.		No	No
	Value: the sea is acknowledged a starting point for songlines, including the flying fox songline.	MAC (2023a)	Possible (unspecified)	Possible (unspecified)
	Feature: resources including fishes, turtles and dugong.	Water Corporation (2019)	Possible (Fish and Turtles) No (Dugongs)	Possible (All)
	Value: traditional knowledge recalls a sea serpent which travelled from the coast to inland pools.		Possible (unspecified)	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.	Barber and Jackson (2011)	Possible (unspecified)	Possible (unspecified)
	Value: In a separate account a sea serpent punishing people was driven back to the sea by a freshwater serpent.		Possible (unspecified)	Possible (unspecified)
	Value: traditional knowledge recalls Manggan created the seas.	NAC (n.d.)	Possible (unspecified)	Possible (unspecified)
	Value: traditional knowledge recalls Pannawonica Hill being carried from the sea near Barrow Island or Murujuga by a spirit bird.	Hook et al (2004)	No	Possible (unspecified)
	Value: traditional knowledge recalls Murujuga is where ancestral beings emerged from the sea and brought the Law.	Australian Heritage Council (2012)	No	No
	Feature: Submerged First Nations archaeological sites in Cape Bruguieres channel.	Benjamin et al. (2020)	No	No

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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	No
	Value: traditional knowledge recalls Maarga (creation ancestors) lifted the land and sky out of the ocean.	Japingka Aboriginal Art Gallery (2023)	Possible (unspecified)	Possible (unspecified)
	Feature: submerged waterholes related to the Kangaroo songline.	Kearney et al. (2023)	Possible (unspecified)	Possible (unspecified)
	Value; traditional knowledge holds that Songlines continue beyond the current coast and across the submerged landscape.		Possible (unspecified)	Possible (unspecified)
	Value: songlines are captured through storytelling, rock art, songs and dance, and in the landmarks themselves.	Bainger (2021)	No	No
	Value: Murujuga is the start of many songlines, including the Seven Sisters.		No	No
	Value: songlines at Murujuga date back to times when the sea-level was lower.	MAC (2023b)	No	No
	Feature: rock art.	Weerianna Street Media Production (2017)	No	No
	Feature: sacred sites.		No	Possible (Shoreline accumulation only)
	Feature: resources including fish, turtles.	Leach (2020)	Possible (Access restricted)	Possible
	Feature: fish traps exist throughout the archipelago.		No	No
	Feature: shell middens exist on coastal margins.		No	No
	Feature: submerged archaeological sites.		Possible (unlikely)	Possible
	Value: Law emerged from the sea and travelled inland.		Possible (unspecified)	Possible (unspecified)
	Feature: resources including mangrove seeds, turtles, turtle eggs).	Smyth (2007)	No	Possible (Shoreline accumulation only)

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First Nations group	Features and values	Source	Potential for overlap	
			Operational Area	EMBA
	Value: it is recalled that ceremonies were conducted on islands.		No	Possible (Shoreline accumulation only)
	Feature: archaeological sites on Murujuga.	McDonald (2015)	No	No
	Feature: archaeological sites on Murujuga.	McDonald (2023)	No	No
	Feature: archaeological sites on Enderby Island.	McDonald et al. (2023a)	No	No
	Feature: archaeological sites on Rosemary Island.	McDonald et al. (2023b)	No	No
	Feature: petroglyph and other archaeological sites at Murujuga.	Dortch et al. (2019)	No	No
	Feature: archaeological evidence of the use of resources including fish, turtles, marine mammals, crocodiles, crabs and sea urchins.		No	Possible (Shoreline accumulation only)
Ngarluma and Yindjibarndi	Value: Barrow Island and Montebello Islands Feature: Submerged Archaeological Sites. *The main study sites of Barrow Island and the Montebello Islands on the North West Shelf lie in the northern Carnarvon bioregion...The limestone islands provide shelters and caves with excellent preservation for archaeological assemblages.* *Boodie Cave, on the north-western coast of Barrow Island, is optimally positioned near the edge of the Australian continental shelf to infer past use of the drowned coastal plains.* *Early Holocene assemblages are rich and contain marine faunal remains including fish,turtle, marine mammal, crocodile, crab and sea urchin. p34.* *We conclude that the JWCR record represents a continuation of a much older coastal economy ...on the now drowned continental shelf. p35.*	Dortch et al. (2019)	No	Possible (Shoreline accumulation only)

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First Nations group	Features and values	Source	Potential for overlap	
			Operational Area	EMBA
	Value: Murujuga Cultural Landscape *The Dampier Archipelago now generally known as Murujuga is a significant rock art province in northwestern Australia that documents the Pleistocene– Holocene arid-maritime transition in the cultural landscape (McDonald & Veth 2009).* *The region today is within the jurisdiction of Murujuga Aboriginal Corporation who co-manage the Murujuga National Park on behalf of the Ngarluma Yinddarbarndi, the Yaburara Mardudhunera and Wonggg-tt-tto peoples p35.*		No	No
	Value: Archaeological Sites/Material Feature: Cape Range and Montebello Islands *...rock art, shell middens, tools, stone artefacts that continue to demonstrate the use of the islands well before the inundation of the last Ice Age. Example of coastal people's patterns ....report on ,sea urchin spines as evidence of intertidal zone exploitation by groups during low tide, faunal remains of species found in other archaeological assemblages from Cape Range and Montebello Islands.*	McDonald et al. (2022)	No	Possible (Shoreline accumulation only)
	Feature: Submerged Fish Traps *…evidence from Traditional Owners that submerged fish traps are present along drowned waterways throughout the archipelago.*		No	Possible (Shoreline accumulation only)
	Value: Archaeological sites Feature: Shell midden sites on coast.		No	Possible (Shoreline accumulation only)
	Value: Sea Country Value: Rights and responsibilities over sea country *"Sea country is valued for Indigenous cultural identity, health and wellbeing".*	Australian Marine Parks (2018)	Possible (unspecified)	Possible (unspecified)
	Value: Songlines *It is recognised that spiritual corridors extend from terrestrial areas into nearshore and offshore waters, a number of marine animals are totems for Indigenous people, and that songlines pass through marine parks.*		Possible (unspecified)	Possible (unspecified)

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First Nations group	Features and values	Source	Potential for overlap	
			Operational Area	EMBA
	Value: Creation Spirits *"In our Law it is said that in the beginning the sky was very low. When the creation spirits got up from the ground, they lifted the sky and the world out of the sea".*	Rijavec (2004)	Possible (unspecified)	Possible (unspecified)
	Value: Submerged Landscape "sea as an inseparable extension of the land".	Ward et al. (2022)	Yes	Yes
	Value: Songlines Features: Rock Art *“Songlines are like historical events captured in a few different ways, through storytelling, rock art, songs and dance, and in the landmarks themselves,” says Clinton Walker, a Ngarluma and Yindjibarndi man who calls Western Australia’s sun-baked Pilbara home. “Aboriginal people use songlines as a means of navigation, following all the landmarks they sing about. You may not have been there, but the songs give you enough information to find your way. Our people learn hundreds of songs”.* *Like point zero in a capital city, Walker says the Burrup, as it’s commonly known, marks the origin of many songlines. Some stretch across the nation, as far as Alice Springs, Cape York and even Tasmania. “A lot of the east coast Aboriginal people have lost connection with their songlines, but when they find them and they follow them back, they trace to here – the Burrup,” he says. “People come from all over to see the origins of the songlines”.* *Meanwhile, the well-known Seven Sisters Dreaming story traces a songline that originates on one of the Dampier Archipelago’s islands and finishes at the Three Sisters in NSW’s Blue Mountains.*	Weerianna Street Media Production (2017)	Possible (unspecified) No (Rock Art)	Possible (unspecified) No (Rock Art)

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First Nations group	Features and values	Source	Potential for overlap	
			Operational Area	EMBA
	Value Mackerel Islands Value: Songlines *From here I depart for the Mackerel Islands, a cluster of isles and atolls that lie 22 kilometres off the coast. Aboriginal people followed songlines here until about 8000 years ago, when the landforms were separated from the mainland.* *The Warlu Way, which leads to Karijini, follows a songline created by a Dreamtime sea serpent, or warlu.*		No (Mackerel Islands) Possible (unspecified)	No (Mackerel Islands) Possible (unspecified)
	Value: Built heritage		No	No
Ngarda-Ngarli (Mardudhunera, Ngarluma, Wong-Goo-Tt-Oo, Yaburara and/or Yindjibarndi)	Value: Murujuga *Comments by MAC Deputy Chairperson Vince Adams:* *"Everything you see at Murujuga – the hills and creeks, the trees, the spiritual places, the rock art and the camping places – it is all part of our story here.* *"Our ancestors have been looking after this country since the world was soft, and everything you see here – that is all here because we have been keeping it strong with our Lore that was put in place for country and the Law that was given to Aboriginal people to do. "From when it was a desert, all the way to what it looks like now. Country has been made strong because we had the knowledge in our Lore and Law of how to look after it all along, even when it changed. "Our ancestors gave us this knowledge of country. They taught us everything is connected. "They gave us the responsibility to care for it and to pass on that knowledge to our children. "Murujuga is a significant place for Aboriginal people across the Pilbara and beyond. It is the starting place for some of our song lines.*	ICOMOS (2023)	No	No

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First Nations group	Features and values	Source	Potential for overlap	
			Operational Area	EMBA
	Value: Songlines Feature: Submerged Landscapes "The songlines describe landmarks and events that occurred during ngurra nyujunggamu (when the world was 'soft'). They connect to important inland sites, such as Uluru and some of them extend across to the east coast of Australia. "There are songlines that our Elders share today that date back to the time before sea levels rose and turned the hills and valleys of Murujuga into submerged landscapes and the islands of the Dampier Archipelago today.		Possible (unspecified)	Possible (unspecified)
	Value: Intergenerational Knowledge *"For us, as Ngarda-Ngarli, we hope by sharing knowledge and educating people, we can fulfil our responsibilities to care for our country going into the future".*		Possible (unspecified)	Possible (unspecified)
	Value: Archaeological Sites *Archaeological sites around Shark Bay tend to be close to the shoreline. Edel Land was a particularly important place for early Aboriginal people with a stone quarry at Crayfish Bay, fresh water at Willyah Mia on Heirisson Prong, and numerous middens and camp sites. There is also a burial site at Heirisson Prong.*		No (based on specific locations)	No (based on specific locations)
	Value: Creation Stories Value: Murujuga *Murujuga as 'where the Law came up out of the sea and travelled inland'. The following story explains the origin of Murujuga Sea Country:* *It was the Marrga and Minkala/Mangunyba (Skygod) that named and shaped the country, then all the birds and the animals, and finally the Ngardangali (Aboriginal people) came from Marrga themselves. In other places they call this the 'dreaming', but here we call it Ngurra Nyunjunggamu—'when the world was soft'.*	Leach (2021)	No (based on specific locations)	No (based on specific locations)

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First Nations group	Features and values	Source	Potential for overlap	
			Operational Area	EMBA
	Value: Marine subsistence resources *...marine resources were favoured by the occurrence of discarded turtle and fish bones near old fireplaces throughout the archipelago...spears for fishing and hunting turtles were made from hard woods sharpened to a point. Turtle shells were utilised for carrying and bathing babies and for cooking.*		Possible	Possible
	Feature: Cape Bruguieres Island. Feature: Submerged and Terrestrial Archaeological Sites *Cape Bruguieres Island has high potential to reveal how Ngardangali adapted to marine transgression through the identification and analysis of submerged and terrestrial sites.* *The identification of an ephemeral waterway associated with engravings, grinding patches and lithics demonstrates that water would have been available to the Ngardangali during the wet season.*		No (based on specific locations)	No (based on specific locations)
Thalanyji	Feature: resources including:	Commonwealth of Australia (2002)	Possible	Possible (All)
	• fish			
	• shellfish			
	• crabs			
	• crustaceans			
	• sea urchins, and			
	• turtles			
	Dugong		No	
	Flora and fauna associated with mangrove communities			
	Feature: archaeological sites on Barrow Island.	Commonwealth of Australia (2002)	No	Possible (Shoreline accumulation only)

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First Nations group	Features and values	Source	Potential for overlap	
			Operational Area	EMBA
	Value: connection to Country.		Possible (unspecified)	Possible (unspecified)
	Feature: resources include turtles, eggs, fish, shellfish and plants.	DBCA (2002)	Possible (turtles, shellfish and fish) No (eggs and plants)	Possible (turtles, shellfish and fish) Shoreline accumulation only (eggs and plants)
	Value: connection to Country.	DBCA (2022)	Possible (unspecified)	Possible (unspecified)
	Value: transfer of knowledge.		Possible (unspecified)	Possible (unspecified)
	Value: access to Country.		Possible (access restricted within Operational Area)	Possible (No access limitations outside of Operational Area)
	Value: access to Barrow and possibly Montebello Islands.	Hook et al. (2004)	No	Possible
	Feature: artefact scatters are located in coastal sand dunes.	Hook (2020)	No	No
	Feature: burials are located in coastal sand dunes.		No	No
	Feature: archaeological sites are located on Barrow Island.	McDonald et al. (2018)	No	Possible (shoreline accumulation only)
	Feature: archaeological sites are located at Barrow and Montebello Islands.	Dortch et al. (2019).	No	Possible (shoreline accumulation only)
	Feature: archaeological evidence of the use of resources including fish, turtles, marine mammals, crocodiles, crabs and sea urchins.		No	Possible (all other values) No (crocodiles)
	Feature: Thalu ceremonial sites for the increase of turtle, shark, ray, fish, squid, octopus, hill kangaroo and emu.	DBCA (2022)	No	Possible (unspecified)
	Feature: ceremonies.		No	Possible (unspecified)

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First Nations group	Features and values	Source	Potential for overlap	
			Operational Area	EMBA
	Value: connection to Country.		Possible (unspecified)	Possible (unspecified)
	Value: transfer of knowledge.		Possible (unspecified)	Possible (unspecified)
	Value: access to Country.		Possible (access restricted within Operational Area)	Possible (No access limitations outside of Operational Area)
Yinggarda	Value: Ongoing connection to Country *"We still take care of those ... places. We still have to go and keep them clean, make sure they haven't been disturbed. If we didn't do this, we'd get sick, because the Old People, the spirits would think we weren't taking care of the country. They're watching all the time, if we don't do the right thing, we'll get sick. I take my boys onto country to show them where these places are, so they'll know".*	FCA (2019)	Possible (unspecified)	Possible (unspecified)
	Value: Right and responsibility to speak and care for Country.		Possible (unspecified)	Possible (unspecified)
	Value: Contemporary use of Country for cultural activities (camp, fish, hunt and gather on their country) "The native title holders hunt native game and collect numerous edible or otherwise useful plants. The knowledge of finding, acquiring, preparing and using their natural resources has been passed down through generations. For example, for Baiyungu and Thalanyji families, this includes catching and collecting the marine animals along the coastline, and a specific ritual for consuming emu".		No	Possible (shoreline accumulation only)

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4.9.1.5.2 First Nations archaeological heritage assessment

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

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

4.9.1.5.3 Underwater Cultural Heritage

Actions involving seabed contact, and most actions undertaken in proximity to the seabed, have potential to cause adverse impact to located or unlocated UCH (DCCEEW 2024c). Planned activities include seabed contact. Woodside engages a consultant to undertake a desktop review based on geophysical and bathymetric data, for the potential of submerged archaeological material, in any areas subject to new seabed disturbance. This approach is consistent with Assessing and Managing Impacts to Underwater Cultural Heritage in Australian Waters (DCCEEW 2024c).

The Operational area has been partially assessed for potential UCH. This desktop assessment (Comber Consultants, 2024) has not identified any archaeological sites on the Ancient Landscape. Further assessment of potential impacts on archaeological material by the proposed activity is discussed in Section 6.8 and 6.9

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

4.9.1.5.4 Feedback received via consultation to inform the description of 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 2021). Dhawura Ngilan also specifically notes that “Aboriginal and Torres Strait Islander...intangible knowledge systems, which are held in songlines and language, are endangered. This knowledge is held by Elders and the community...” Through consultation with relevant persons, Registered Native Title Bodies Corporate have identified or raised topics relating to environmental values of cultural interest. These include a broad interest in the marine fauna, including whales and turtles (Table 1 in Appendix F).

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

Woodside has committed to ongoing engagement to further understand these values. Should feedback be received (including any relevant new information on cultural values), it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8).

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Table 4-20: Summary of feedback received via consultation to inform the description of the existing environment

Relevant First Nations group/individuals	Consultation context	Description of value/feature/interest	Potential for overlap	
			Operational Area	EMBA
Buurabalayji Thalanyji Aboriginal Corporation	Raised during the course of consultation for another EP.	Value: Connection to Sea Country Enduring deep connection to sea country north of Onslow, extending out to Islands off the Pilbara coast such as the Montebello islands, Barrow Island and the Mackerel Islands.	Possible	Possible
Kariyarra Aboriginal Corporation	Raised during the course of consultation for another EP.	Value: Whales (Connection to Songlines) Impacts to whale migration.	Possible	Possible
		Value: Sea Turtle Nesting	No	Possible (shoreline accumulation only)
		Value: Food Resources	Possible	Possible
		Value: Turtles	Possible	Possible
		Value: Access to Sea Country (1) Accessing Sea Country for fishing, trapping, crabbing catching turtle, hunting dugong, using stingray barbs for spears and collecting shellfish. (2) Visiting offshore islands at low tide.	No (all)	Possible (all)
		Value: Marine species resources Resource species of cultural interest to Kariyarra people include marine mammals, fish, molluscs including bivalves, gastropods and cephalopods.	Possible	Possible
		Value: The existence of intangible cultural heritage including the Yinta (associated with Sea Country). From Kariyarra Native Title documents it is clear that Yinta are significant cultural/spiritual sites, often a pool or water source but possibly a hill or other feature. These are, at least generally, associated with creation beings and are a core part of cultural rights to land in determining who can use or speak for an area.	Possible	Possible

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Relevant First Nations group/individuals	Consultation context	Description of value/feature/interest	Potential for overlap	
			Operational Area	EMBA
		Interest: Coastal Landforms (Cultural interest)	No	Possible
		Interest: Coastal Native Vegetation (Cultural interest)	No	Possible
		Feature: Cultural interest in cultural heritage sites associated with the coast and the ocean.	Possible	Possible
		Value: Traditional fishing and gathering rights in the ocean	Possible	Possible
		Value: Cultural interest in intangible cultural heritage associated with the coast and the ocean. (1) Presence of mythic snakes.	Possible	Possible
		Value: Intergenerational Knowledge *In addition to their immediate value as sustenance, the gathering and preparation of these resources are informed by cultural knowledge, and an inability to use these resources may result in a loss of ability to transfer that knowledge to future generations. Direct impact to communities using these resources will inherently occur when the resource disappears, is displaced or suffers a reduction in population. Therefore, these communities may be impacted where there is an impact at the species/population level. Impacts to resource collection would be limited to temporary exclusion in areas where there are hydrocarbons present, including shoreline accumulation. Relevant cultural authorities will be engaged in the event of a spill that may affect them...*	Possible	Possible
		Value: Cultural obligations to care for Country, including Sea Country. Value: Secret Habitat Totems associated with Sea Country	Possible (unspecified)	Possible (unspecified)
		Interest: Assertion of sea rights in native title claim area Interpreted as general connection to country, assertion of rights to access country and cultural obligation to care for environmental values of sea country. (1) Having duties to look after and protect all KACs Sea Country.	No (based on NT determined area)	Possible
		Value: Marine resources Concern raised about the potential for diseases due to adverse event (hydrocarbon spill).	Possible	Possible

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Relevant First Nations group/individuals	Consultation context	Description of value/feature/interest	Potential for overlap	
			Operational Area	EMBA
		Value: Responsibility to care for Sea Country Value: Marine Resources Kariyarra explained the most important thing is the preservation of sea life and coastal areas. The ocean provides critical food sources to their community and Kariyarra Traditional Owners are coastal people, so they have a strong connection to the area and a responsibility to preserve the area for future generations.	Possible (both)	Possible (both)
		Value: Nearshore Islands Islands off Port Hedland-Little Turtle, North turtle and Bedout.	No	Possible (shoreline accumulation only)
		Value: River systems are important to the food chain.	No	No
		Value: Marine Resources: • shellfish, • cockles, • oysters, • clam shells, • con shells, • mullets, and • sea cow (dugong)	Possible (all)	Possible (all)
Murujuga Aboriginal Corporation	Raised during the course of consultation for another EP.	Value: Mermaid Sound (1) The ecosystem health of Mermaid Sound.	No	No
		Value: Whales (1) Whales and other species of totemic importance need to be protected, including their populations, biodiversity, and migration patterns. (2) A whale Thalu is an increase at the totemic site that brings whales into the beach.	Possible (all)	Possible (all)

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Relevant First Nations group/individuals	Consultation context	Description of value/feature/interest	Potential for overlap	
			Operational Area	EMBA
		Value: Dolphins There are cultural ceremonies associated with communicating with dolphins.	Possible	Possible
		Value: Dugongs Dugongs are a food source associated with seagrasses near Gidley Island.	No	Possible
		Value: Fish Specific mentions of fish included There are Thalu ceremonies associated with increasing fish stocks.	Possible	Possible
		Value: Sea Snakes Sea snakes were specifically mentioned as culturally important species.	Possible	Possible
		Value: Turtles (1) Flatback, green, hawksbill, loggerhead and leatherback turtles; Songline The Songline associated with the turtle comes from Fortescue to Withnell Bay. This song is sung by four or five tribes for day and night without consuming food or water. (2) Flatback, green, hawksbill, loggerhead and leatherback turtles: They are culturally important species that moves through Mermaid Sound. Turtles are most often seen in shallower areas and where there are seagrasses. (3) Most beaches are nesting sites for turtles, including those on Gidley and Legendre Islands... which also identifies Rosemary Island as the most important hawksbill turtle nesting site in Western Australia.	Possible (1,2) No (3)	Possible (1,2) No (3)

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Relevant First Nations group/individuals	Consultation context	Description of value/feature/interest	Potential for overlap	
			Operational Area	EMBA
		Feature: Coral Concerned about coral bleaching because corals are important. Beautiful colours. They also attract a lot of other things. Fish carry coral spawn like bees pollinate flowers. If fish were looked after, the corals would get brighter and brighter (by transmitting nutrients and performing other ecosystem services, fish can be symbiotic with corals). Locations identified during consultation include Withnell Bay; Conzinc Bay; south west of Legendre Island.	No	Possible
		Feature: Seagrass (1) Seagrasses provide protection for animals. (2)Locations identified during consultation include Conzinc Island; between Angel and Gidley Islands.	No	No (based on specific location)
		Feature: Mangroves (1) Mangroves would have provided shelter, crabbing, digging for shellfish, could be turtle nurseries. Locations identified during consultation include Conzinc Bay north end; Flying Foam Passage; Searipple Passage; north-east bay of West Lewis Island.	No	No (based on specific location)
		Feature: Macroalgal communities Are important primary production sites, habitats, and food sources (not explicitly identified by elders).	No	Possible
		Feature: Subtidal soft-bottom communities Support invertebrate diversity (not explicitly identified by elders).	No	Possible

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Relevant First Nations group/individuals	Consultation context	Description of value/feature/interest	Potential for overlap	
			Operational Area	EMBA
		Feature: Intertidal sand and mudflat communities Important primary production sites, support invertebrate diversity and provide food for shorebirds (not explicitly identified by elders).	No	Possible
		Feature: Rocky shores Habitats for intertidal organisms and provide food for shorebirds (not explicitly identified by elders).	No	Possible
		Feature: Other areas of Mermaid Sound of importance (including Conzinc Bay) (1) Fish traps: There are known fish traps in Conzinc Bay, and others would have or do exist in coastal areas of islands, such as Angel and Gidley Islands. People still use the Conzinc Bay fish traps regularly for catching mangrove jack, trevally and other fish.	No	No (based on specific location)
		Value: Squid (1) Squidding (harvesting of squid from the ocean) around Conzinc Bay.	No (based on specific location)	No (based on specific location)
		Value: Appropriate cultural authority for Murujuga.	No	No
		Interest: Management of onshore heritage sites.	No	No
		Interest: Submerged Heritage Engage with researchers on options to identify potential submerged heritage.	Possible (Unlikely)	Possible (No impact to submerged values expected)
		Value: Songlines The potential impact on Jinna (Songlines) due to the lack of broader-scale bathymetric information for the submerged landscape.	Possible (unspecified)	Possible (unspecified)
	Raised during the course of	Value/s: Stingrays	Possible (all)	Possible (all)
		Value/s: Sharks		

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Relevant First Nations group/individuals	Consultation context	Description of value/feature/interest	Potential for overlap	
			Operational Area	EMBA
	consultation for another EP.	Value/s: Crustaceans		
		Value/s: Octopus		
		Value/s: Sea stars		
		Value/s: Sea urchins		
		Value/s: Sponges		
		Value/s: Molluscs		
		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 (Unlikely)	Possible (No impact to submerged values expected)
		Murujuga seasonal calendar: Any change to the feeding, breeding or migratory behaviour of culturally significant species would impact significantly on subsistence, cultural and ceremonial activities.	Possible (Unspecified)	Possible (Unspecified)
Nganhurra Thanardi Garrbu Aboriginal Corporation representing Baiyungu and Thalanyji people	Raised during the course of consultation for another EP.	Value: Whales and Whale Sharks	Possible (both)	Possible (both)
		Feature: Marine parks	No	Possible
Ngarluma Aboriginal Corporation	Raised during the course of consultation for another EP.	Interest: Management of onshore heritage sites	No	No
		Interest: Submerged Heritage Engage with researchers on options to identify potential submerged heritage.	Possible	Possible

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Relevant First Nations group/individuals	Consultation context	Description of value/feature/interest	Potential for overlap	
			Operational Area	EMBA
Robe River Kuruma Aboriginal Corporation	Raised during the course of consultation for another EP.	Feature: Coastline	No	Possible
		Feature: Underwater heritage	Possible (Unlikely)	Possible (No impact to submerged values expected)
Wirrawandi Aboriginal Corporation	Raised during the course of consultation for another EP.	Value: Whales (General interest around management of impacts to whales)	Possible	Possible
		Value: Turtles (General interest around management) Wirrawandi asked whether turtle monitoring programs are still in place.	Possible	Possible
		Feature: Rock art Wirrawandi asked whether air emissions from activities impacts rock art & what Woodside does to minimise impacts to rock art. Wirrawandi also asked for more community information on rock art.	No	Possible
		Interest: Submerged heritage *(1) Wirrawandi asked where sites of underwater heritage have been recently found* *(2) Wirrawandi asked about impacts to the seabed from planned activities, and what is considered in relation to submerged cultural heritage, particularly given the recent finding of artefacts.*	Possible	Possible
Yindjibarndi Aboriginal Corporation	Consultation for this EP.	*No values raised.*	-	-
Yinggarda Aboriginal Corporation	Raised during the course of consultation for another EP	Value: Coastal Fishing Local communities enjoy fishing along the coast, including for (1) Shark Bay Mullet that is an important resource.	No	Possible
		Value: Ecosystem Health *Plants, animals and the environment are inexorably linked to their culture*	Possible	Possible

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Relevant First Nations group/individuals	Consultation context	Description of value/feature/interest	Potential for overlap	
			Operational Area	EMBA
		Value: Dugongs	No	Possible
		Feature: Seagrass Important food source for dugongs (Shark Bay)	No	No (based on specific location)
		Value: Whales	Possible	Possible
Self-identified first nation representative groups				
Kimberly Land Council	Consultation for this EP	*No values raised*	-	-
Ngarluma Yindjibarndi Foundation Ltd	Consultation for this EP.	*No values raised.*	-	-
Save Our Songlines	Consultation for this EP.	*No new values raised (See below).*	-	-
	Raised specific to Petroleum Activities Program Raised in context of general Scarborough Project activities.	Feature: Songlines, dreaming and energy lines (unspecified)	Possible (unspecified)	Possible (unspecified)
		Feature: Whales – including migratory patterns	Possible	Possible
		Interest: Turtles – including migration patterns	Possible	Possible
		Interest: Dugongs-unspecified	Possible	Possible
		Interest: Plankton-unspecified	Possible	Possible
		Interest: Seagrass-unspecified	No	Possible
		Interest: where saltwater and freshwater meet	No	Possible
	Raised in Concise	Value: Caring for Country	Possible (unspecified)	Possible (unspecified)

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Relevant First Nations group/individuals	Consultation context	Description of value/feature/interest	Potential for overlap	
			Operational Area	EMBA
	Statement and Affidavit in context of Scarborough seismic activities.	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, understand and raise awareness of the environment and everything humans are connected to.” "In their own families, female whales have a caretaker or midwife role, and those who are connected to the Whale Dreaming and carry the women's lore also have obligations as caretakers of the earth". "Because each animal uses songlines for migration, breeding and feeding, the disruption or distortion to the songlines causes the animals to become disoriented, confused or lost”.	Possible (whales) Possible (songlines, unspecified)	Possible (whales) Possible (songlines, unspecified)
		Interest: Whales Interest: Pygmy Blue whales “Potential impacts on marine species and natural environment, relevant to the natural environment, relevant to the Applicant's interests, including but not limited to: ii. behavioural changes (leaving or avoiding the area where the Activity occurs) to turtles, pelagic fish (such as tuna and billfish), sharks, pygmy blue whales iii. whales' sonar communications systems, particularly between mothers and calves, from sound and vibrations emitted by the Activity v. potential impacts on water quality and consequent potential impacts on marine fauna such as whales, dugongs, sharks, rays, and seabirds from the risk of unplanned chemical discharges (non-hydrocarbon); and vi. vehicle collision and/or entanglement with marine fauna".	Possible (whales)	Possible (whales)

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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
		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

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Relevant First Nations group/individuals	Consultation context	Description of value/feature/interest	Potential for overlap	
			Operational Area	EMBA
		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[19] 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 (unlikely – submerged)
		Value: Bungarra, Eagle, Kangaroo Identified totemic species	No	No
		Feature: Murujuga Interest: Climate Change Potential damage to Murujuga rock art due to “acid gas emissions from operations on the Burrup” and climate change.	No	No (based on specific location)
Yamatji Marlpa Aboriginal Corporation	Consultation for this EP	*No values raised*	-	-

[19] *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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4.9.1.6 Summary of cultural features and heritage values

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

The cultural features and heritage values identified in Section 4.9.1.5. A summary of cultural features and heritage values identified through both consultation and desktop assessment is provided in Table 4-21.

As previously described, topics which have been raised in the context of an interest linked to the natural environment are impact and risk assessed in Section 6.

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Table 4-21 Summary of cultural features and heritage values

Identified cultural features and heritage values	Context	EP source		Potential for overlap	
		Consultation feedback	Desktop literature assessment	Operational Area	EMBA
Archaeological heritage and landscapes					
Coastal/island archaeological sites	Coastal archaeological sites include shell middens, artefact scatters, skeletal material/burial sites, camps, meeting places, hunting places and water sources.	✓	✓	No	Possible (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.	✓	✓	No	Possible (submerged)
Submerged archaeological sites	The Ancient Landscape extends between 125m and 130m below current sea level. Ancient occupation of this area may have left traces through now submerged archaeological sites.	✓	✓	No	Possible
Rivers, waterholes, tidal channels and seeps	Water sources on the Ancient Landscape which may be culturally significant or archeologically prospective.	✓	✓	No	Possible
Submerged hills	Hills on the Ancient Landscape which may be culturally significant or archeologically prospective. As sea level rose these hills would have become islands and eventually submerged.	x	✓	No	Possible

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Identified cultural features and heritage values	Context	EP source		Potential for overlap	
		Consultation feedback	Desktop literature assessment	Operational Area	EMBA
Intangible values					
Songlines	Publicly available literature talks to Songlines associated with ancestral beings that travelled Sea Country.	✓	✓	Possible (unspecified)	Possible (unspecified)
Creation/Dreaming sites, sacred sites and ancestral beings	Publicly available literature talks to creation/dreaming and ancestral beings, including water serpents, connected to or originating from the sea generally.	✓	✓	Possible (unspecified)	Possible (unspecified)
Ceremonial sites	Places where ceremony (e.g. Thalu ceremonies) are performed. All identified ceremonial sites are located onshore.	✓	✓	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)

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Identified cultural features and heritage values	Context	EP source		Potential for overlap	
		Consultation feedback	Desktop literature assessment	Operational Area	EMBA
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
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 dolphins. Culturally important species.	✓	✓	Possible	Possible
Marine mammals: Dugongs	Culturally important species. Used as a resource.	✓	✓	No	Possible

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Identified cultural features and heritage values	Context	EP source		Potential for overlap	
		Consultation feedback	Desktop literature assessment	Operational Area	EMBA
Marine reptiles: Marine turtles	Culturally important species and migration. There are Thalu ceremonies associated with turtles. Turtles and turtle eggs as a resource.	✓	✓	Possible	Possible
Fish: Fish, whale sharks, sharks and rays	Culturally important species . Used as a resource. Law run through the sea, including fish. There are Thalu ceremonies associated with increasing fish stocks. Fish, including bream and sting rays are totemic species. Fish, including sharks and rays raised as a natural environment interest.	✓	✓	Possible	Possible
Cephalopods: Squid and Octopus	Thalu species of totemic importance. Resource.	✓	✓	Possible	Possible
Intertidal communities: Bivalves, gastropods, echinoderms (sea urchins), crustaceans	Resource.	✓	✓	No	Possible
Seabirds	Culturally important species . Birds (including shags, seagulls and osprey) and bird eggs as a resource.	✓	✓	Possible	Possible
Benthic habitats: Macroalgal communities	Interest only, raised as a natural environment interest.	✓	✓	No	Possible

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Identified cultural features and heritage values	Context	EP source		Potential for overlap	
		Consultation feedback	Desktop literature assessment	Operational Area	EMBA
Shoreline habitats: Mangroves	Critical breeding ground for marine and terrestrial wildlife. Mangroves would have provided shelter, crabbing, digging for shellfish, could be turtle nurseries. Mangrove seeds as resource.	✓	✓	No	Possible
Shoreline habitats: Intertidal sand/mudflat communities	Interest only, raised as a natural environment interest.	✓	✓	No	Possible
Shorelines	Interest only, raised as a natural environment interest.	✓	✓	No	Possible
Marine Park/coastal reserves	Interest and responsibility.	✓	✓	No	Possible

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4.9.1.7 Historic sites of significance

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

There are no known sites of historic cultural heritage significance within the Operational Area. Within the EMBA, the North West Cape and the adjacent coastline has a long history of occupancy by Aboriginal communities. The longstanding relationship between Aboriginal people and the land and sea is prevalent in Indigenous culture today and Indigenous heritage places including archaeological sites which are protected under the *Aboriginal Heritage Act 1972* (WA) or *EPBC Act*. The Department of Aboriginal Affairs (DAA) Heritage Inquiry System was searched for the EMBA, which indicated five registered Indigenous heritage places (Appendix I).

4.9.1.8 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 four sites within the Operational Area; and 36 (shipwrecks) exist within the EMBA. Table 4-22 lists sites identified within 10 km of the Operational Area.

Table 4-22: 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)
Curlew	1911	Onslow, Montebello Group	20°0’0”	115°10’0”	Overlaps Operational Area
Marietta	1905	Barrow Island	20°0’0”	115°10’0”	Overlaps Operational Area
Vianen	1628	Barrow Island Area	20°0’0”	115°10’0”	Overlaps Operational Area
Wild Wave (China)	1873	Montebello Island	20°0’0”	115°10’0”	Overlaps Operational Area

4.9.1.9 World, National and Commonwealth heritage listed places

No listed heritage places overlap the Operational Area. The EMBA overlaps the Ningaloo Coast World Heritage Place and National Heritage Place. World, National and Commonwealth Heritage Places within the EMBA are identified in Table 4-23. Appendix C outlines the values and sensitivities of these places. Credible risks and impacts as a result of unplanned events from the Petroleum Activity are considered in Section 6.9.

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

Listed Place	Distance and direction from Operational Area to Listed Place
World Heritage Properties (WHP)	
The Ningaloo Coast	192 km south-west
Murujuga Cultural Landscape	142 km south-east
National Heritage Places (NHP)	
Barrow Island and the Montebello-Barrow Islands Marine Conservation Reserves	35 km south-east
The Ningaloo Coast	192 km south-west
Commonwealth Heritage Places (CHP)	
Ningaloo Marine Area – Commonwealth Waters	190 km south-west

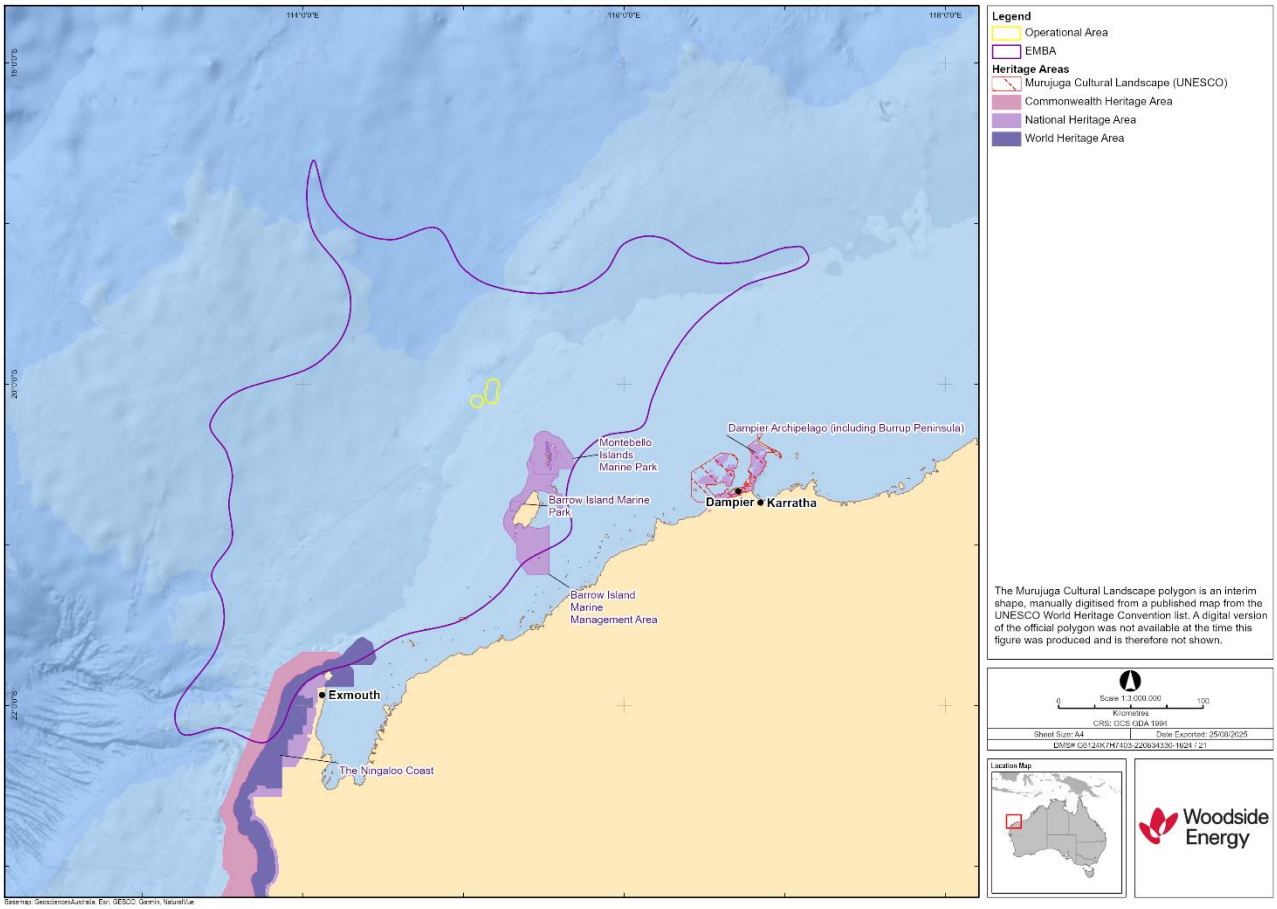

Figure 4-16: Relevant World, National and Commonwealth Heritage listed places

4.9.1.9.1 Murujuga Cultural Landscape

The Murujuga Cultural Landscape (MCL) WHP, located approximately 142 km south-east of the Operational Area on the Burrup Peninsula in Western Australia, was officially inscribed on the UNESCO World Heritage List in July 2025. Despite not occurring in the EMBA, the MCL holds immense cultural and spiritual significance to Traditional Owners and is relevant to heritage values in the broader region. The WHP encompasses approximately 100,000 hectares and includes 42 islands, islets, and rocky outcrops within the Dampier Archipelago, as well as parts of the adjacent mainland (DCCEEW 2025). Murujuga is internationally recognised for its outstanding cultural heritage, particularly as home to the most extensive and dense concentration of petroglyphs (rock engravings) known globally.

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The MCL is inscribed under Cultural Criterion i, iii and v which are reflective of the OUV. The Outstanding Universal Values (OUV) of the Murujuga Cultural Landscape World Heritage Property include:

- Petroglyphs which 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.

Estimates suggest there are up to two million individual petroglyphs across the landscape, many of which are believed to be tens of thousands of years old, representing one of the world's longest continuous records of human artistic and cultural expression (DCCEEW 2025). The petroglyphs depict a wide range of subjects, including human figures, animals, marine life, and symbolic motifs. Murujuga is also deeply significant to the Traditional Owners, including the Ngarda-Ngarli peoples, and forms part of an ongoing cultural connection to Country through language, law, ceremony, and custodianship.

Further information on the MCL can be found on the publicly available UNESCO World Heritage Listing[20].

Woodside supports the ongoing management of heritage values under listings including Murujuga Cultural Landscape World Heritage Listing, Murujuga National Park and Dampier Archipelago (Including Burrup Peninsula) National Heritage Place.

Safeguarding the MCL and its relevant outstanding universal values are considered under a number of relevant management plans including:

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

As part of its commitment to supporting World Heritage, where relevant, Woodside provides the necessary research and support information required by MAC and the State for the protection and conversation of the OUV of MCL. 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.

Woodside 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.

There is no overlap between the Operational Area and the boundary of the Murujuga Cultural Landscape World Heritage Area. As there is no planned or unplanned impact pathway identified for the MCL its OUV are expected to be maintained.

4.9.2 Commercial fisheries

A number of Commonwealth and State fishery management areas are located within the Operational Area and EMBA. FishCube data was requested from the WA Department of Primary Industries and Regional Development (DPIRD) for the most recently available five year period of fishery catch and effort data (2019 to 2024) to analyse the potential for interaction of fisheries with the Operational Area. Data was reviewed from the last five years as a subset of past fishing effort. This was deemed an appropriate period to represent potential future fishing effort over the lifecycle of this EP.

This information was used to determine relevant fisheries for consultation who may be impacted by the proposed Petroleum Activity. Table 4-24 provides an assessment of the potential interaction and Appendix C

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

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provides further detail on the fisheries that have been identified through desk-based assessment and consultation (Section 5).

No Commonwealth managed fisheries were identified as having a potential for interaction with the Petroleum Activity within the Operational Area, however, two commonwealth fisheries were identified as having a potential for interaction with the Petroleum Activity within the EMBA (see Table 4-24 and Figure 4-17). Three State managed fisheries were identified as having a potential for interaction with the Petroleum Activity within the Operational Area and 12 State managed fisheries within the EMBA. Tour operators were also identified as having a potential interaction with the Petroleum Activity within the Operational Area and EMBA (see Table 4-24 and Figure 4-18).

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

Fishery	Fishery potential for interaction[21]		Description
	Operational Area	EMBA	
Commonwealth managed fisheries			
North West Slope Trawl Fishery (NWSTF)	X	✓	The NWSTF operates off north-western Australia from 114°E to 125°E, roughly between the 200 m isobath and the outer boundary of the Australian Fishing Zone. The NWSTF is predominantly a scampi fishery, utilising demersal trawl gear to catch a number of species, primarily Australian scampi (*Matenphrops australiensis*), velvet scampi (*M. velutinus*) and Boschma's scampi (*M. boschmai*) (Butler et al. 2024). The NWSTF management area overlaps with the EMBA but not the Operational Area, and fishing effort was recorded in the EMBA, within the last five years (Butler et al. 2024). Accordingly, Woodside considers there to be a potential for interaction with this fishery and the Petroleum Activity within the EMBA.
Southern Bluefin Tuna Fishery (SBTF)	✓	✓	The SBFT spans the Australian Fishing Zone, however since 1992, the majority of Australian catch has concentrated in south-eastern Australia. (Butler et al. 2024). This fishery utilises purse seine and longline gear to target southern bluefin tuna (*Thunnus maccoyii*). The SBFT management area overlaps with the Operational Area and the EMBA, however, has not been active in the Operational Area or EMBA within the last five years (Butler et al. 2024). Therefore, Woodside considers there to be no potential for interaction with this fishery and the Petroleum Activity given the current distribution of fishing effort.
Western Skipjack Tuna Fishery (WSTF)	✓	✓	The SKTF spans the Australian Fishing Zone west of Victoria and the Torres Strait. Most fishing effort has been from purse seine gear, targeting skipjack tuna (*Katsuwonus pelamis*). The SKTF management area overlaps both the Operational Area and the EMBA, however, this fishery is not currently active, and no fishing has occurred since 2009 (Butler et al. 2024). Accordingly, Woodside considers there to be no potential for interaction with this fishery and the Petroleum Activity.

[21] *x indicates no spatial overlap with management area and 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	Fishery potential for interaction[21]		Description
	Operational Area	EMBA	
Western Deepwater Trawl Fishery (WDTF)	X	✓	The WDTF operates in Commonwealth waters off the coast of Western Australia between the western boundary of the Southern and Eastern Scalefish and Shark Fishery in the south and the western boundary of the NWSTF in the north. The WDTF predominantly targets ruby snapper (*Etelis* spp.) and deepwater bugs (*Ibacus* spp.) using demersal trawl gear (Butler et al. 2024). The WDTF management area does not overlap with the Operational Area, however, overlaps with the EMBA. No fishing effort in the EMBA was recorded in the 2022 to 2023 season, but two vessels were active in the 2020 to 2022 seasons (Butler et al. 2024). Therefore, Woodside considers it a possibility that interactions with this fishery may occur within the EMBA.
Western Tuna and Billfish Fishery (WTBF)	✓	✓	The WTBF spans the Australian Fishing Zone west of Victoria and the Torres Strait, but in recent years fishing effort has concentrated off south-west Western Australia (Butler et al. 2024). Key species caught by pelagic longline, minor line and purse seine gear include bigeye tuna (*T. obesus*), yellowfin tuna (*T. albacares*), swordfish (*Xiphias gladius*) and striped marlin (*Kajika audax*). The WTBF management area overlaps the Operational Area and EMBA. However, in the last ten years (2014 to 2024) no fishing data has been recorded, as fishing effort has concentrated south of Carnarvon (Butler et al. 2024). Accordingly, Woodside considers there to be no potential for interaction with this fishery and the Petroleum Activity within the Operational Area and EMBA.
State managed fisheries			
Abalone Managed Fishery	✓	✓	The Abalone Managed Fishery spans along the coast of Western Australia from the Northern Territory border to the South Australian border. This dive and wade fishery targets Roe's abalone (*Haliotis roei*), greenlip abalone (*H. laevigata*) and brownlip abalone (*H. conicopora*) (Newman et al. 2024). Whilst the Abalone Managed Fishery overlaps the Operational Area and EMBA, no fishing effort in this area has been recorded since its closure in the 2011 season due to catastrophic mortality following the marine heatwave (Strain et al. 2024). Accordingly, Woodside considers there to be no potential for interaction with this fishery and the Petroleum Activity within the Operational Area and EMBA.
Exmouth Gulf Prawn Managed Fishery (EGPMF)	X	✓	The EGPMF uses low opening, otter prawn trawl systems within the waters of Exmouth Gulf (Kangas et al. 2015). The primary species targeted include western king prawn (*Penaeus latisulcatus*), brown tiger prawn (*P. esculentus*), blue endeavour prawns (*Metapenaeus endeavouri*) and banana prawns (*P. merguiensis*). The EGPMF management area has a slight overlap with the EMBA in the Exmouth Gulf. Fishing effort was reported in two 10 nm CAES blocks, which reported up to seven vessels for each season across the 2019 to 2024 seasons (DPIRD 2024a). Accordingly, Woodside considers it a possibility that interactions with this fishery may occur within the EMBA.

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Fishery	Fishery potential for interaction[21]		Description
	Operational Area	EMBA	
Mackerel Managed Fishery (MMF)	✓	✓	The MMF spans up to 200 nm from the coast of Western Australia from the Northern Territory border down to Augusta. Three species of mackerel are targeted using surface trolling, including Spanish mackerel (*Scomberomorus commerson*), grey mackerel (*S. semifasciatus*) and Samson fish (*Seriola hippos*) (Newman et al. 2024). The MMF management area overlaps both the EMBA and Operational Area. FishCube data reported fishing effort in two 60 nm CAES blocks overlapping the Operational Area, each reporting up to four vessels per season across the 2019 to 2024 seasons (DPIRD 2024a). Fishing effort was also reported in one 10 nm CAES block overlapping the Operational Area, in the 2020 to 2021 season, which reported less than three vessels active (DPIRD 2024a). Accordingly, Woodside considers it a possibility that interactions with this fishery may occur within the EMBA and Operational Area.
Marine Aquarium Fish Managed Fishery (MAFMF)	✓	✓	The MAFMF operates in all State waters from the Northern Territory border to the South Australian border, but most active south of Broome in waters around Perth, Geraldton and Exmouth, and also in waters towards the Northern Territory border (Newman et al. 2024). Species targeted include but are not limited to coral, live rock, marine plants, aquarium fish, gastropods, anemone and crabs, collected by hand typically in depths of less than 30 m. The MAFMF management area overlaps the Operational Area and EMBA. The fishery is active in the EMBA within four 60 nm CAES blocks, each reporting up to seven vessels per season across the 2019 to 2024 seasons (DPIRD 2024a). No fishing effort occurred in any 10 nm CAES blocks overlapping the Operational Area. Accordingly, Woodside considers it a possibility that interactions with this fishery may occur within the EMBA.
Nickol Bay Prawn Managed Fishery (NBPMF)	X	✓	The NBPMF spans from 120°E near Broome to Barrow Island in north-west Western Australia. Otter trawling methods are used to target Banana prawns (*P. merguiensis*), western king prawns (*P. letisulcatus*), brown tiger prawns (*P. esculentus*) and blue endeavour prawns (*M. endeavouri*) Newman et al. 2024). The NBPMF management area overlaps the EMBA only. The fishery was active in the EMBA across all fishing seasons between 2019 to 2024 within three 60 nm CAES block with the number of vessels varying across seasons between less than three and up to eight (DPIRD 2024a). Fishing effort was recorded in one 10 nm CAES block overlapping the EMBA reporting less than three vessels during the 2020 to 2021 season. Fishing effort was recorded in one 60 nm CAES block overlapping the Operational Area within the 2020 to 2021 season, reporting less than three vessels (noting this effort is outside the fishery management area). No fishing effort was recorded in any 10 nm CAES blocks overlapping the Operational Area. Accordingly, Woodside considers it a possibility (although highly unlikely) that interactions with this fishery may occur within the EMBA only.

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Fishery	Fishery potential for interaction[21]		Description
	Operational Area	EMBA	
Onslow Prawn Managed Fishery (OPMF)	✓	✓	The OPMF utilises otter trawling methods to target Banana prawns (*P. merguiensis*), western king prawns (*P. letisulcatus*) and brown tiger prawns (*P. esculentus*). The OPMF management area overlaps the Operational Area and EMBA. The fishery is active in the EMBA, within four 60 nm CAES blocks (20150, 20160, 21140 and 21150), each reporting up to three vessels per season across the 2019 to 2024 seasons (DPIRD 2024a). The fishery is active in the Operational Area, within one 60 nm CAES block (20150), reporting less than three vessels between the 2021 to 2022 season (DPIRD 2024a). No fishing effort occurred in any 10 nm CAES blocks overlapping the Operational Area. Accordingly, Woodside considers it a possibility that interactions with this fishery may occur within the EMBA.
Pearl Oyster Managed Fishery (POMF)	✓	✓	Currently, the POMF operates in shallow coastal waters along the North Coast Bioregion of WA from Exmouth Gulf to the Northern Territory border. The harvesting of wild stock occurs mainly along Eighty Mile Beach and is a dive-based hand collection fishery operating at depths between 10 and 35 m. The POMF management area overlaps the Operational Area and EMBA. FishCube data reported no fishing effort within the Operational Area or EMBA in the last five years (2019 to 2024) (DPIRD 2023). Accordingly, Woodside considers there to be no potential for interaction with this fishery and the Petroleum Activity within the Operational Area and EMBA.
Pilbara Crab Managed Fishery (PCMF)	✓	✓	THE PCMF operates in the north coast of Western Australia from Onslow to just past Port Headland. Blue swimmer crabs (*Portunus pelagicus*) are targeted using hourglass traps, predominantly in and around Nikol Bay (Newman et al. 2024) Figure 1-1. The PCMF management area overlaps the Operational Area and EMBA, and is active in the EMBA, within one 60 nm CAES block which reported up to three vessels per season across the 2019 to 2024 seasons (DPIRD 2024a). No fishing effort was recorded in 60 nm blocks overlapping the Operational Area. Accordingly, Woodside considers there to be potential for interaction with this fishery and the Petroleum Activity within the EMBA.
Pilbara Fish Trawl Managed Fishery (PFTMF)	✓	✓	The PFTMF operates within the Pilbara Demersal Scalefish Fisheries (PDSF) using standard stern trawling gear within an area previously trawled by vessels and targets mainly blue spotted emperor (*Lethrinus nebulosus*), red emperor (*Lutjanus sebae*), and Rankin cod (*Epinephelus multinotatus*) (Newman et al. 2024). The PFTMF management area overlaps the Operational Area and EMBA. However, no fishing effort has been recorded within the 10 nm CAES blocks overlapping the Operational Area in the last five years (2019 to 2024) (DPIRD 2024a). The fishery is active in the EMBA, within three 60 nm CAES blocks, each reporting up to four vessels per season across the 2019 to 2024 seasons (DPIRD 2024a). Accordingly, Woodside considers there to be potential for interaction with this fishery and the Petroleum Activity within the EMBA.

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Fishery	Fishery potential for interaction[21]		Description
	Operational Area	EMBA	
Pilbara Line Fishery (Condition) (PLF)	✓	✓	TPLF licensees are permitted to operate anywhere within Pilbara waters and operates under WA's management regime (Fish Resources Management Act etc.). It is one of three commercial sectors targeting demersal scalefish in the Pilbara —alongside the Trap and Trawl fisheries targeting mainly blue spotted emperor (*Lethrinus nebulosus*), red emperor (*Lutjanus sebae*), and Rankin cod (*Epinephelus multinotatus*) (Newman et al. 2024). The PLF management area overlaps the Operational Area and EMBA. FishCube data for the PLF is not provided at the 10 nm scale, however the Operational Area is located within two 60 nm CAES blocks (19150 and 20150) that has reported up to five vessels across the 2019 to 2024 seasons (DPIRD 2024a). The fishery is active in the EMBA, within six 60 nm CAES blocks, each reporting up to five vessels per season across the 2019 to 2024 seasons (DPIRD 2024a). Accordingly, Woodside considers it a possibility that interactions with this fishery may occur within the EMBA and Operational Area.
Pilbara Trap Managed Fishery (PTMF)	✓	✓	The PTMF operates within the PDSF, and uses trap gear to target mainly blue spotted emperor (*Lethrinus nebulosus*), red emperor (*Lutjanus sebae*), and Rankin cod (*Epinephelus multinotatus*) (Newman et al. 2024). The PTMF management area overlaps the Operational Area and EMBA. FishCube data for the PTMF is not provided at the 10 nm scale, however the Operational Area is located within two 60 nm CAES blocks that have reported up to three vessels across the 2019 to 2024 seasons (DPIRD 2024).The fishery is active in the EMBA, within eight 60 nm CAES blocks, each reporting up to three vessels across the 2019 to 2024 seasons (DPIRD 2024a). Therefore, Woodside considers it a possibility that interactions with this fishery may occur in Operational Area and the EMBA.
South West Coast Salmon Managed Fishery (SWCSMF)	✓	✓	The SWCSMF operates within the West Coast Nearshore and Estuarine Finfish Resource in the west coast bioregion, and spans from the Northern Territory border to Black Point on the south-west coast (DPIRD 2024b). West Australian salmon (*Arripis truttaceus*) is the primary target of this fishery and is caught using beach seine netting. The SWCSMF management area overlaps the Operational Area and EMBA, however, most fishing effort occurs within 800 m from shore (DPIRD 2024b). FishCube data reported no fishing effort within the Operational Area or EMBA in the last five years (2019 to 2024) (DPIRD 2024a). Accordingly, Woodside considers there to be no potential for interaction with this fishery within the Operational Area and EMBA.

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Fishery	Fishery potential for interaction[21]		Description
	Operational Area	EMBA	
Specimen Shell managed Fishery (SSMF)	✓	✓	The SSMF covers the Western Australian coastline, with concentrated efforts in areas near population centres, including Broome, Exmouth, Shark Bay, Geraldton, Perth, Mandurah and Esperance. The SSMF uses a variety of methods, including hand collection and by the use of remotely operated vehicles (ROVs) to target up to 200 species of specimen shell (Newman et al. 2024). The SSMF management area overlaps the Operational Area and the EMBA, however no fishing effort was recorded in any 10 nm CAES blocks overlapping the Operational Area within the last five years (DPIRD 2024a). The fishery is active in the EMBA, within two 60 nm CAES blocks, each reporting up to three vessels per season across the 2019 to 2024 seasons (DPIRD 2024a). Accordingly, Woodside considers it a possibility that interactions with this fishery may occur within the EMBA.
Western Australian North Coast Shark Fishery (WANCSF)	✓	✓	The WANCSF spans the north WA coastline from north-west Cape to the Northern Territory border, targetting various shark species. Due to overfishing, this fishery is now closed and has not operated commercially since the 2011/2012 season (Fletcher and Santoro 2013). The WANCSF management area overlaps with the Operational Area and EMBA, however no fishing effort has been reported in the past five-years. Accordingly, Woodside considers there to be no potential for interaction with this fishery and the Petroleum Activity within the EMBA.
Western Australian Sea Cucumber Fishery (WASCF)	✓	✓	The WASCF is permitted to operate throughout all Western Australian waters, but fishing effort occurs mostly from Exmouth Gulf to the Northern Territory border. The main target species are sandfish (*Holothuria scabra*) and the deep-water redfish (*Actinopyga echinites*) caught principally by diving and wading. The WASCF fishery is active in the Operational Area and EMBA. Within the EMBA two 60 nm CAES blocks, each reported less than three vessels across the 2023 to 2024 season. Fishing effort was also recorded in three 10 nm CAES blocks overlapping the EMBA in this season. The fishery was active in the Operational Area within one 60 nm block reporting less than three vessels across the 2023 to 2024 season. FishCube data reports no fishing effort in any 10 nm CAES blocks overlapping the Operational Area across the 2019 to 2024 seasons (DPIRD 2024a). Accordingly, Woodside considers it a possibility that interactions with this fishery may occur within the EMBA.

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Fishery	Fishery potential for interaction[21]		Description
	Operational Area	EMBA	
West Coast Deep Sea Crustacean Managed Fishery (WCDSCMF)	✓	✓	The WCDSCMF spans from Augusta to the Northern Territory Border. The WCDSCMF is a pot-based fishery, utilising baited pots in shelf edge waters greater than 150 m in depth to target crystal snow crab (*Chaceon albus*), champagne crab (*Hypothalassia acerba*) and giant crab (*Pseudocarcinus gigas*) (Newman et al. 2024). The WCDSCMF management area overlaps the Operational Area and EMBA, however, FishCube data reported no fishing effort within the Operational Area in the last five years (2019 to 2024) (DPIRD 2024). The fishery has been active in the EMBA within the past five years, within two 60 nm CAES blocks, each reporting up to three vessels per season across the 2021 to 2023 seasons (DPIRD 2024a). No fishing effort was recorded overlapping the EMBA in the 2023-2024 season. Accordingly, Woodside considers it a possibility that interactions with this fishery may occur within the EMBA.
West Coast Rock Lobster Managed Fishery (WCRLMF)	X	✓	The WCRLMF targets western rock lobster (*Panulirus cygnus*) off the west-coast of Western Australia between Cape Leeuwin and North West Cape, using baited pots or traps (Newman et al. 2024). The WCRLMF management area overlaps the EMBA at the north-west Cape but does not overlap the Operational Area. This fishery does not appear to be active within the EMBA, with no 60 nm CAES blocks reporting fishing effort within the past 5-years (DPIRD 2024a). Accordingly, Woodside considers there to be no potential for interaction with this fishery and the Petroleum Activity within the EMBA.
Charter based commercial operators			
Tour Operators	✓	✓	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 reported fishing effort in four 5 nm CAES blocks, each with up to three licenses, overlapping the Operational Area across the 2021 to 2024 seasons (DPIRD 2024). Consistent fishing effort across nine 60 nm CAES blocks that overlap the EMBA (DPIRD 2024). Fishing effort was reported by up to 10 licences across the 2019 to 2024 seasons (DPIRD 2024). Accordingly, Woodside considers it a possibility that interactions with tour operators may occur within the Operational Area and EMBA.

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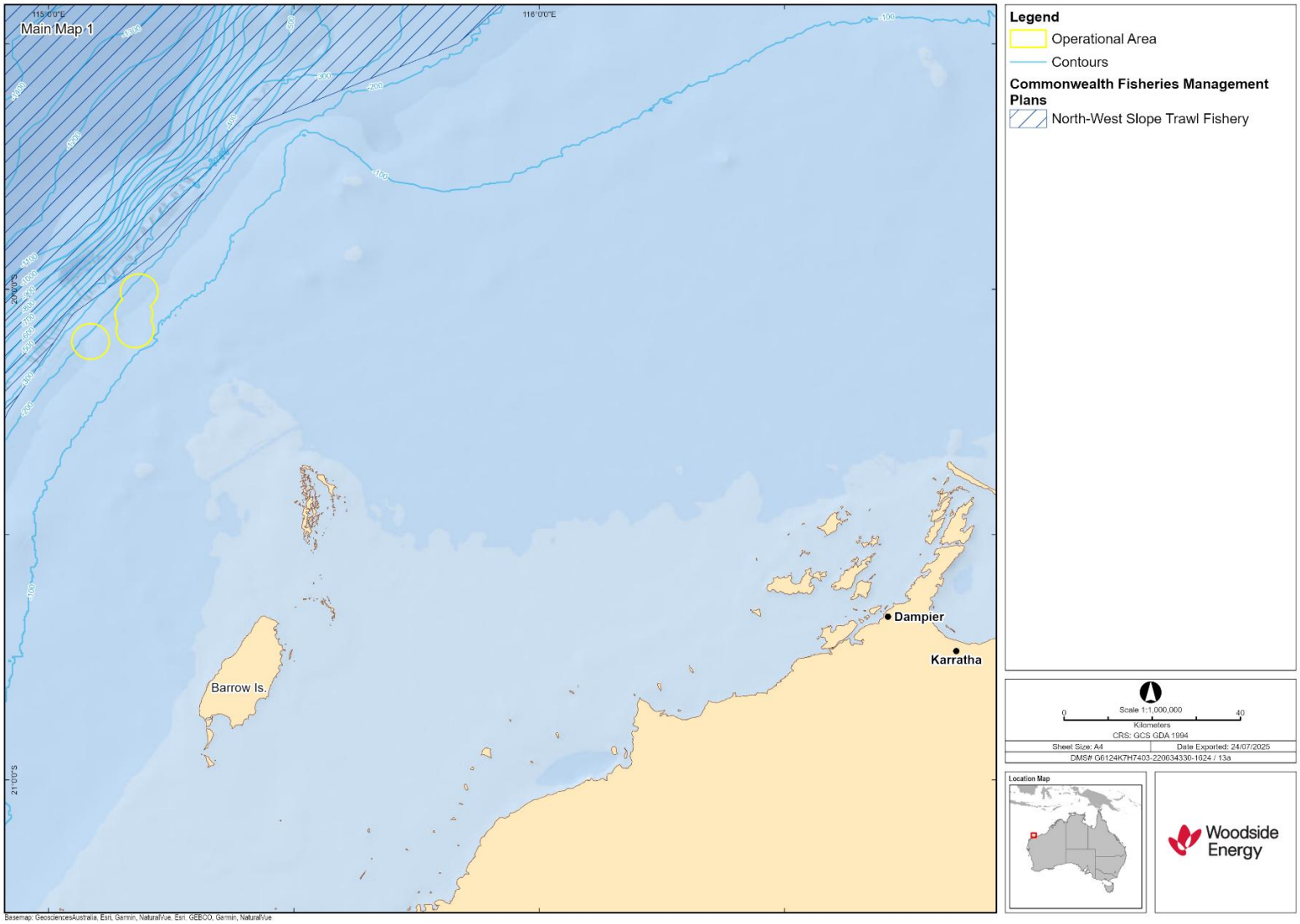

Figure 4-17: Commonwealth managed fisheries with a potential for interaction with the Petroleum Activity

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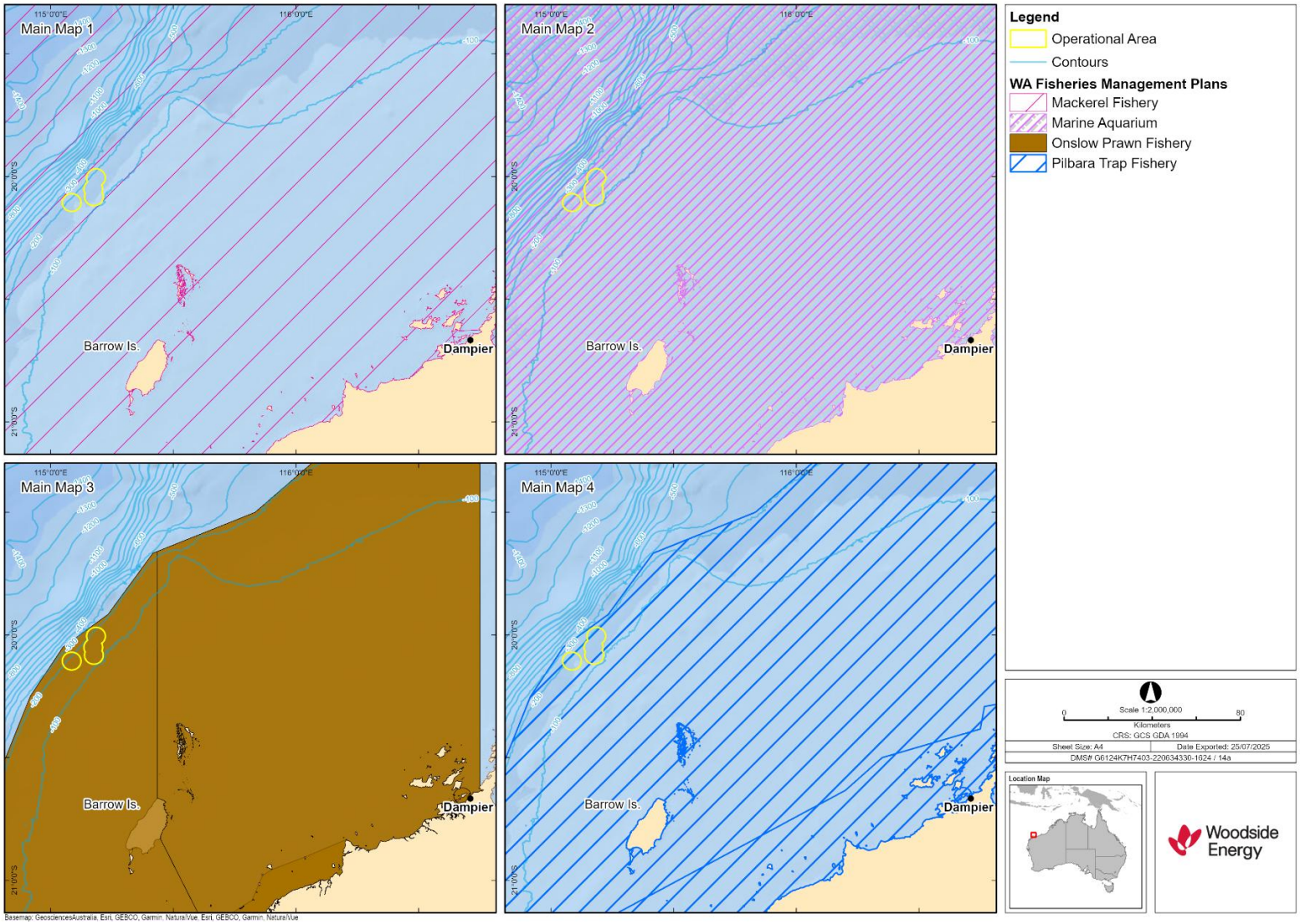

Figure 4-18: State-managed fisheries with a potential for interaction with the Petroleum Activity

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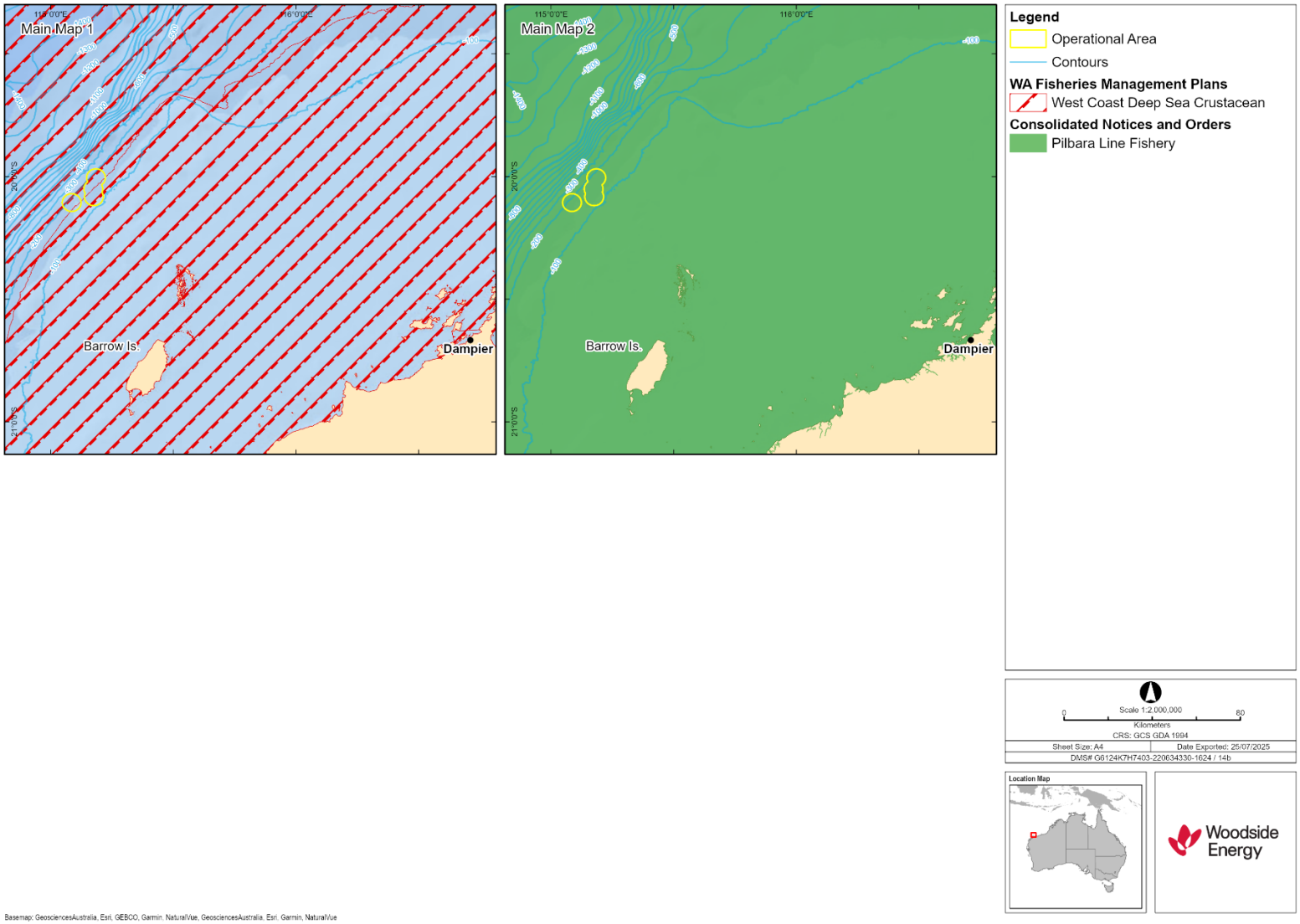

Figure 4-19: State-managed fisheries with a potential for interaction with the Petroleum Activity (continued)

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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. However, it is recognised that Barrow Island, Montebello Islands, Exmouth, Ningaloo Reef and the adjacent foreshores have a known history of fishing when areas were occupied (as from historical records). Areas that are covered by registered Native Title claims are likely to practice Aboriginal fishing techniques at various sections of the Western Australia coastline.

Refer to Section 4.9.1.2 for coastally adjacent first nations groups which may undertake traditional fishing within the EMBA.

Indonesian fishers can fish within designated areas under the Australia-Indonesia Memorandum of Understanding (MoU) 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, a 50,000 km^2 area located adjacent to Ashmore Reef, Cartier Island, Scott Reef, Seringapatam Reef and Browse Island. The MoU does not overlap the Operational Area and is approximately 700 km north-east of the EMBA.

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

4.9.4 Tourism and recreation

Tour operators have reported fishing effort within the Operational Area in the last five years (refer to Section 4.9.2), and it is acknowledged that there are growing tourism and recreational sectors in WA and these sectors have expanded over the last couple of decades. Growth and the potential for further expansion in tourism and recreational activities is recognised for the Pilbara and Gascoyne regions, with the development of regional centres and a workforce associated with the resources sector (SGS Economics and Planning 2012).

Tourism is one of the major industries of the Gascoyne region and contributes significantly to the local economy in terms of both income and employment. The main marine nature-based tourist activities are concentrated around and within the Ningaloo Coast World Heritage Area (210 km south-west of the Operational Area). Activities include recreational fishing, snorkelling and scuba diving, whale shark encounters (April to August) and manta rays (September to November), whale watching (July to October) and turtle watching (all year round) (Shire of Exmouth) (Schianetz et al. 2009). Recreational use of the Ningaloo Marine Park varies in intensity throughout the year, depending on school holidays and seasonal peaks of marine fauna being observed. Coral Bay is documented as one of the most heavily used areas (MPRA 2005). The Montebello Islands (41 km south-east of the Operational Area) are the closest location for tourism with some charter boat operators taking visitors to these islands (Department of Environment and Conservation 2007).

Recreational fishing in the Pilbara and Gascoyne regions is mainly concentrated around the coastal waters and islands (including Dampier Archipelago, Ningaloo Marine Park, North West Cape area, the Montebello Islands, and other islands and reefs in the region) (DoF 2011). It has grown considerably with the expanding regional centres, seasonal tourism and increasing residential and fly in/fly out work force, particularly in the Pilbara region (Fletcher et al. 2017). Some recreational fishing has historically taken place at Glomar Shoal (148 km north-east of the Operational Area). However, due to the distance from access nodes, such as Dampier (approximately 165 km south-east of the Operational Area) and Onslow (approximately 166 km south from the Operational Area), recreational fishing effort is expected to be restricted to relatively large vessels and hence is considered to be low.

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

4.9.5 Commercial shipping

The Australian Maritime Safety Authority (AMSA) has introduced a network of marine fairways across the NWMR to reduce the risk of vessel collisions with offshore infrastructure. It is noted that none of these

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fairways intersect with the Operational Area; the nearest fairway is ~30 km north-west of the Operational Area (Figure 4-20). Vessel tracking data suggest shipping is concentrated to the north-west and east of the Operational Area, which is likely associated with ports.

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

- Barrow Island (~80 km south-east of the Operational Area),
- Dampier (~165 km south-east of the Operational Area), and
- Onslow (~166 km south of the Operational Area).

Shipping activities in the region may include:

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

4.9.6 Oil and gas facilities, infrastructure and other industries

The Operational Area is situated within an area of established oil and gas operations, with additional infrastructure in the broader North West Shelf region. Table 4-25 details other oil and gas facilities, assets and infrastructure located within 50 km of the Operational Area. Appendix C describes current oil and gas development within the EMBA, also shown in Figure 4-21. Figure 4-22 shows submarine communication cables within the region.

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

Facility or asset	Operator	Distance and direction from Operational Area (km)
Oil and Gas Facilities		
John Brookes	Santos (BOL) Pty Ltd	34 km south
Wonnich	Santos (BOL) Pty Ltd	49 km south-east
Pluto	Woodside	15 km east
Wheatstone	Chevron (TAPL) Pty Ltd	19 km north-east
Pipelines		
Wheatstone Trunkline	Chevron (TAPL) Pty Ltd	Overlaps Operational Area
Julimar Brunello Pipeline	Woodside	Overlaps Operational Area
Pluto LNG Gas Export Pipeline (Commonwealth)	Woodside	Directly adjacent to Operational Area (30 m north)
Jansz-Io to Barrow Island	Chevron (TAPL) Pty Ltd	24 km west
John Brookes (Commonwealth)	Santos (BOL) Pty Ltd	34 km south
Gorgon to Barrow Island	Chevron (TAPL) Pty Ltd	43 km south
Wonnich Pipeline (Terr Sea)	Santos WA Northwest Pty Ltd	49 km south-east

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Facility or asset	Operator	Distance and direction from Operational Area (km)
Submarine Communication Cables		
Darwin-Jakarta-Singapore Cable (DJSC)	Vocus Communications	~13 km north[22]
Woodside Fibre Optic Cable Route	Woodside (Woodside)	67 km east-north-east
Proposed Woodside Fibre Optic Cable Route	Woodside (Woodside)	83 km north-east
Scarborough Fibre Optic Cable	Woodside (Woodside)	43 km north
Chevron Fibre Optic Cable Route	Chevron	18 km north-east

[22] The Darwin-Jakarta-Singapore Cable is not included in available geographic information system dataset. The distance to this cable has therefore been estimated using nearby islands as an indicator of location.

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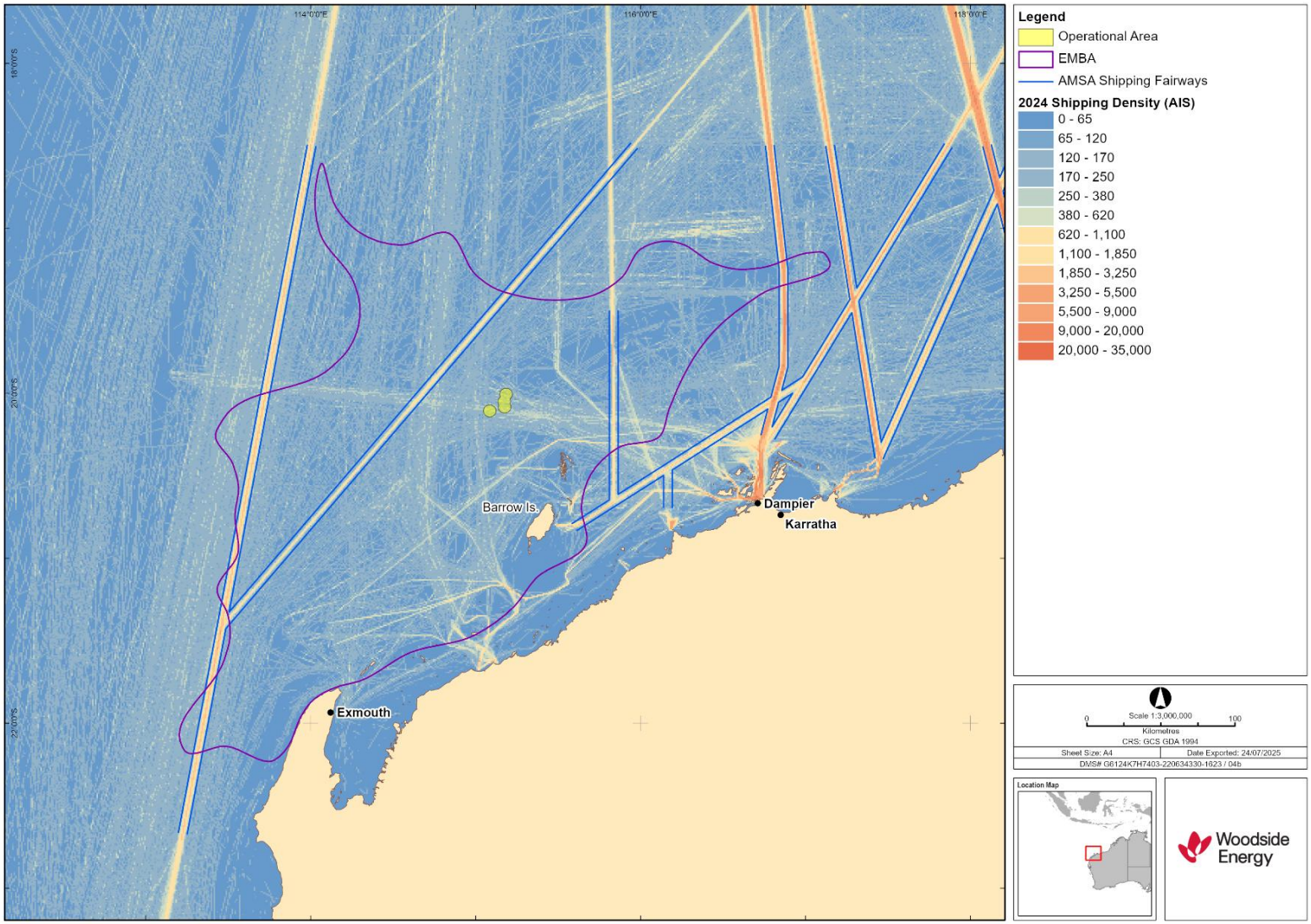

Figure 4-20: Vessel density map for the Operational Area and EMBA

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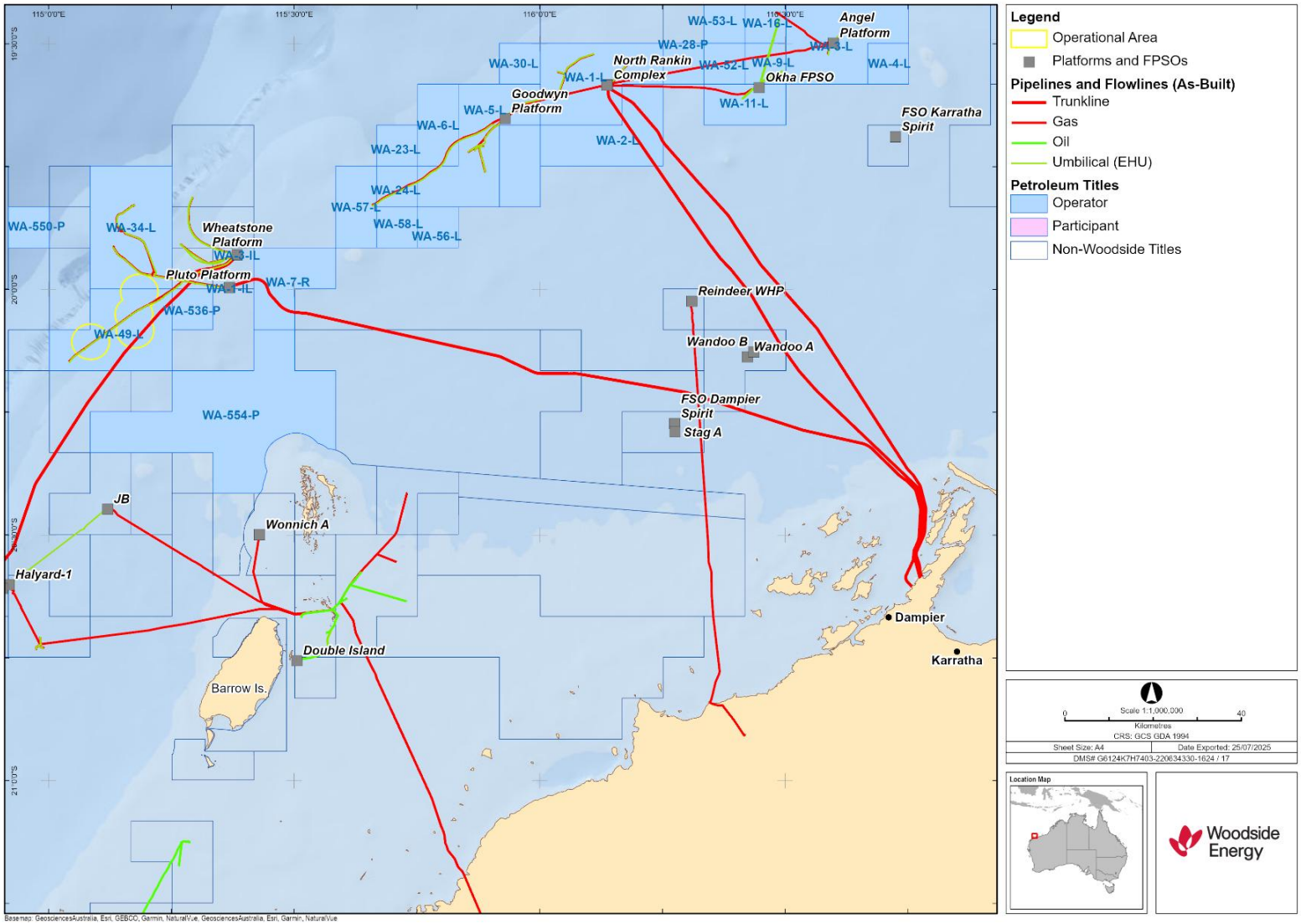

Figure 4-21: Oil and gas infrastructure within the Operational Area and region

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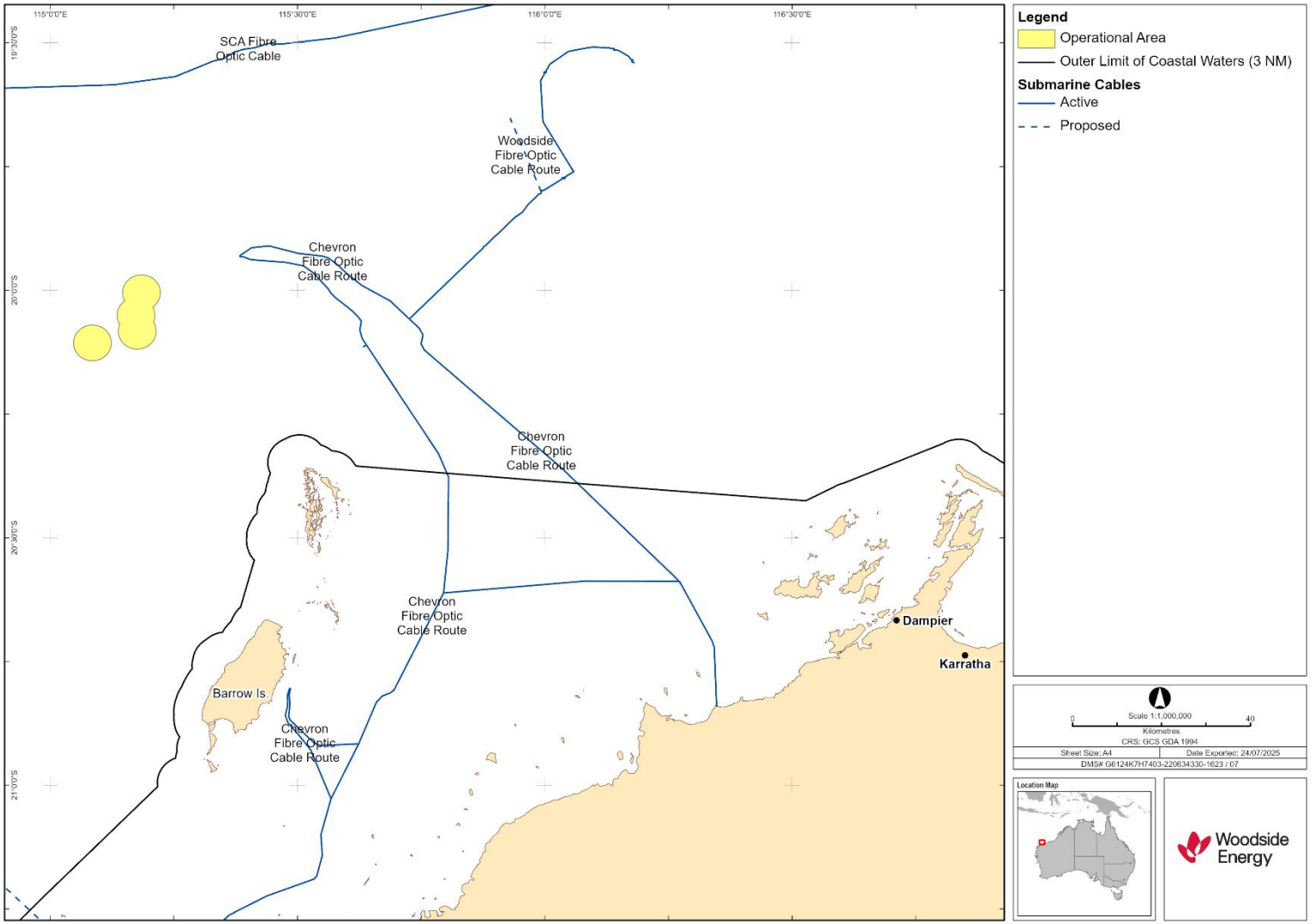

Figure 4-22: Submarine communication cables within the region

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4.9.7 Defence

There are designated defence training and practice areas in the offshore marine waters off Ningaloo and the North West Cape in the EMBA. The Operational Area lies within the northern tip of one of these defence training areas, the Royal Australian Air Force Base Learmonth (R853A) (Figure 4-23). The closest site where unexploded ordinance is known to occur is 8 km east of Trimouille Island in depths of about 40 m, located approximately 56 km south-east of the Operational Area. Defence areas overlapping the Operational Area and EMBA are presented in Figure 4-23 and Table 4-26.

Table 4-26: Defence areas, facilities and unexploded ordnance overlapping the Operational Area or EMBA

Defence area/facility	Presence	
	Operational Area	EMBA
Defence training area	✓	✓
Designated defence practice area	X	✓
Potential Depth Charge UXO DEP027: East of Montebello Islands. This site was an area where Depth Charges were used in WW2 and where some depth charges failed to function.	X	✓
Potential Depth Charge UXO DEP022: North-west of Bessieres Island. This site was an area where Depth Charges were used in WWII and where some depth charges failed to function.	X	✓
UXO SDG096 Sea Dumping: Anchor Island. This site is an area used for the dumping at sea of ordnance and other items.	X	✓

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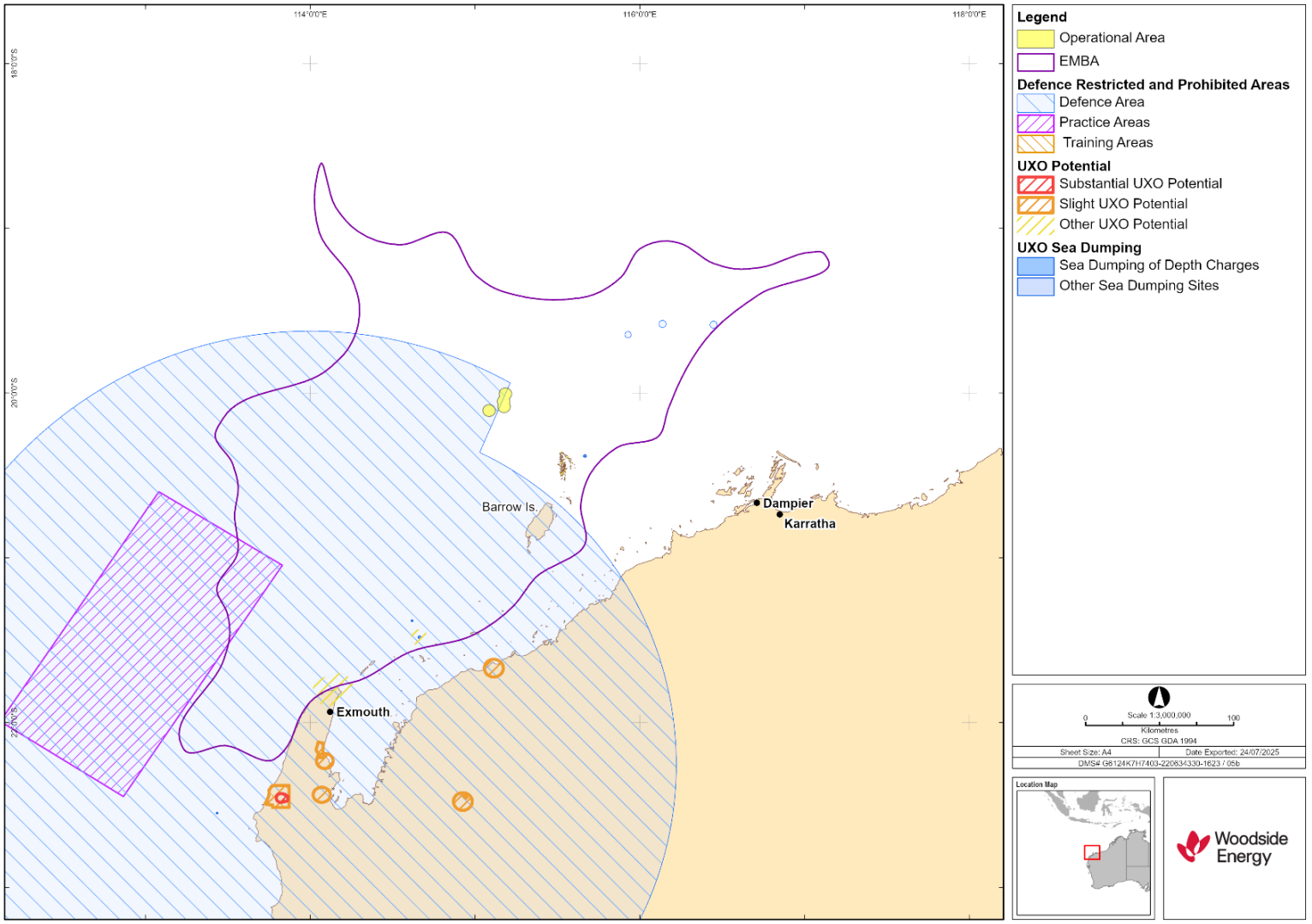

Figure 4-23: Defence areas within the Operational Area and EMBA

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5. STAKEHOLDER CONSULTATION

5.1 Summary

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

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

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

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

Woodside's consultation methodology is divided into two parts:

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

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

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

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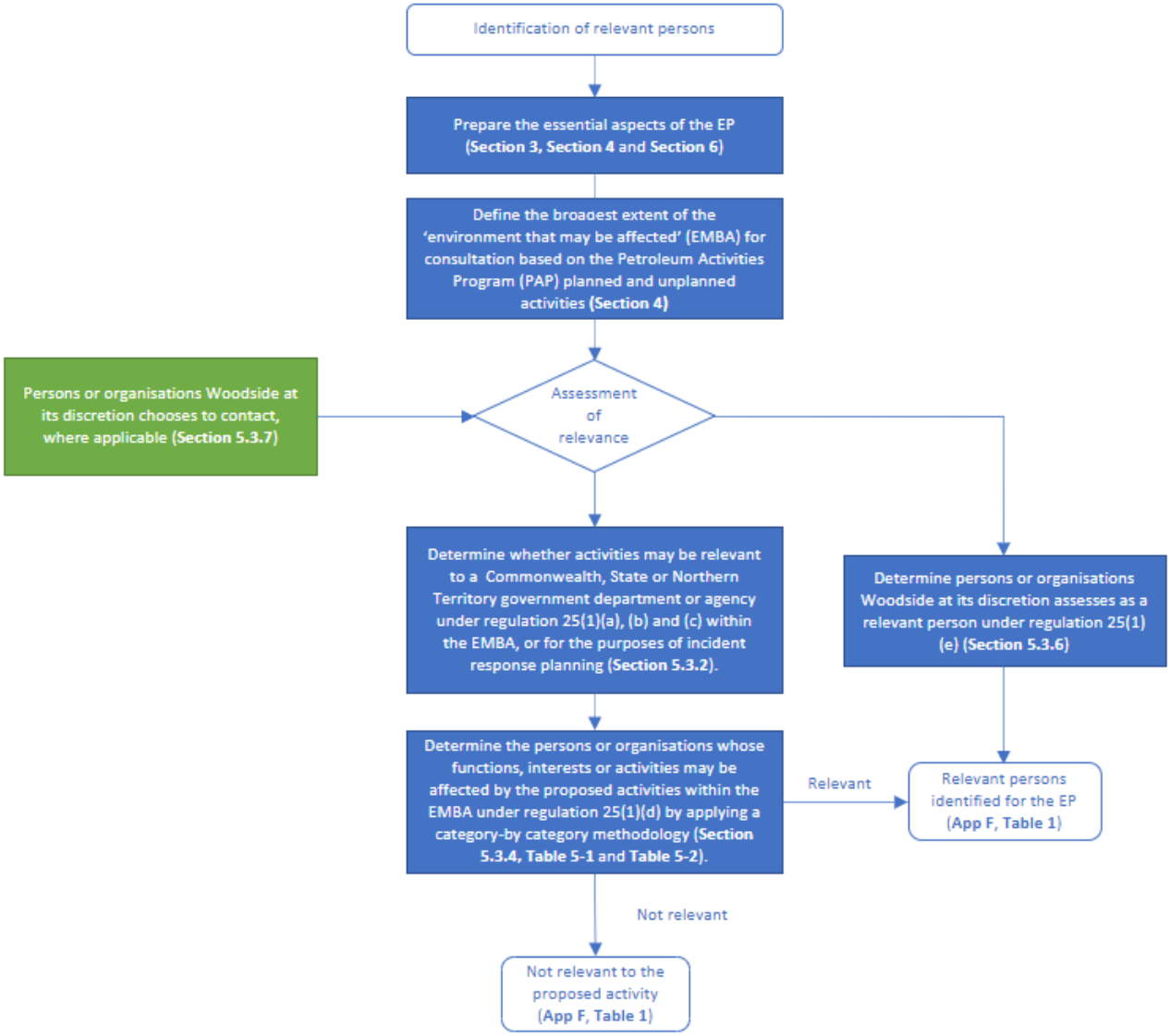

Figure 5-1: Overview of Woodside's methodology to identify relevant persons

5.2 Consultation – general context

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

The length of time that we have operated in Commonwealth and State waters, and the history of continued engagement with a wide range of persons and organisations, enables Woodside to develop an extensive consultation list to inform its consultation process. This consultation list is not used as a definitive list of persons to consult but, rather, assists Woodside as an input to its understanding of relevant persons with whom to consult on a Petroleum Activities Program. 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 6.8).
- The geographical extent to which the environment may be affected (EMBA) by risks and impacts from our activities (unplanned) (identified in Section 4.1 and assessed in Section 6.9).

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

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

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

- Is consistent with the principles of ecologically sustainable development (ESD) set out in section 3A of the EPBC Act – see Section 1.

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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 Activity and to enable Woodside to consider measures that may be taken to mitigate the potential adverse environmental impacts from the petroleum activity.
- Is collaborative. Woodside respects that, for a relevant person, consultation is voluntary. Where the relevant person seeks to engage, Woodside engages with the relevant person with the aim of seeking genuine and meaningful two-way dialogue.
- Provides opportunities for relevant persons to provide feedback throughout the life of the EP through its ongoing consultation process (refer to Section 5.7 and Section 7.10).

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

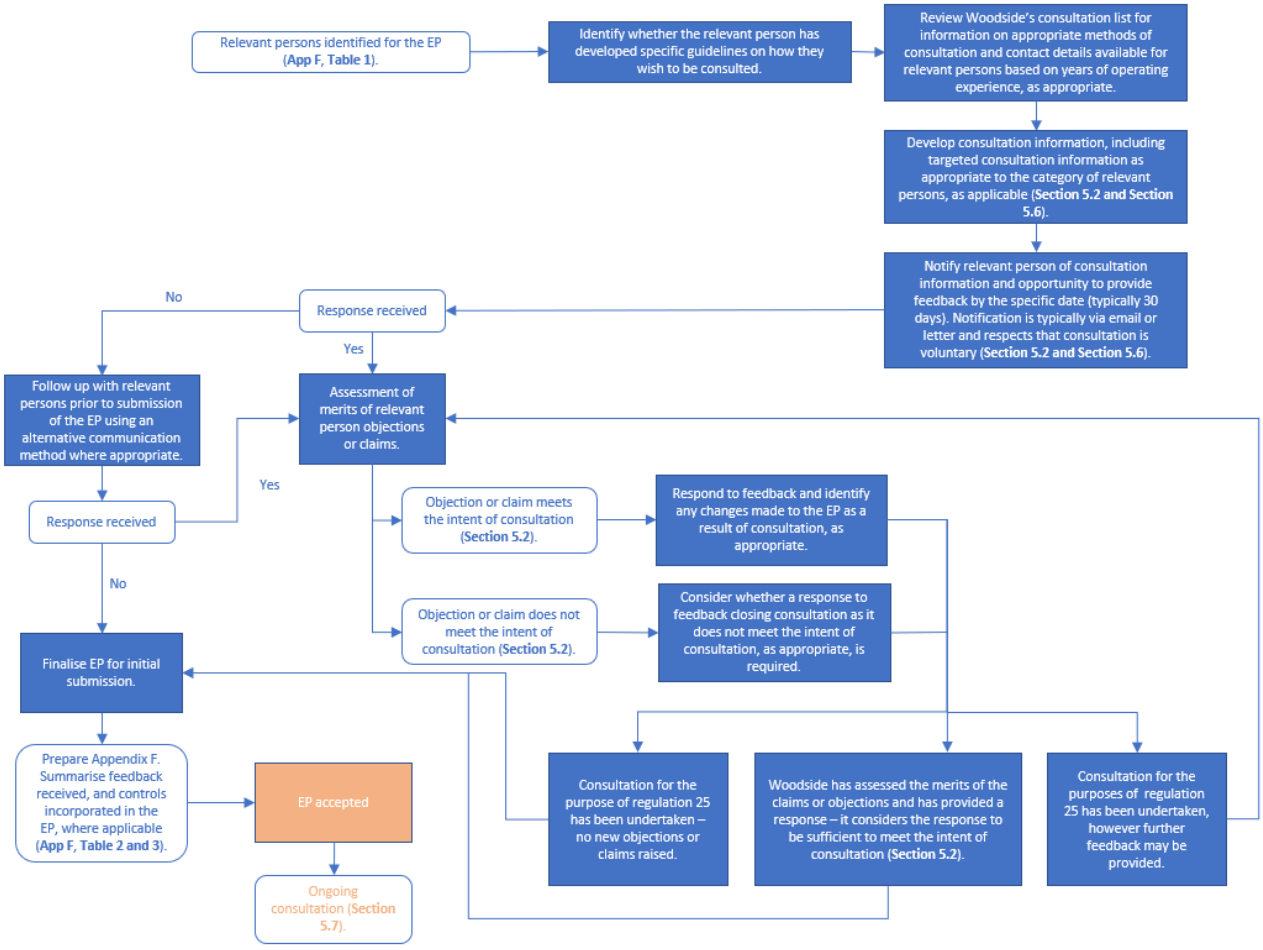

Figure 5-2: Overview of Woodside's consultation approach.

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

Federal Court:

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

NOPSEMA:

- GL2086 – Consultation in the course of preparing an environment plan – May 2024
- GN1847 – Responding to public comment on environment plans – January 2024

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

Department of Mines, Petroleum and Exploration (DMPE):

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

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

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

Australian Fisheries Management Authority (AFMA):

- Petroleum industry consultation with the commercial fishing industry

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

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

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

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

WA Department of Transport and Major Infrastructure (DTMI):

- Offshore Petroleum Industry Guidance Note

WA Australian Fishing Industry Council (WAFIC):

- Oil and Gas Consultation Framework

Good practice consultation:

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

5.3 Identification of relevant persons for consultation

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

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

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

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

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

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

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

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

5.3.3 Regulation 25(1)(d)

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

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

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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 6.8), and
- the EMBA by unplanned activities (identified in Section 4.1 and assessed in Section 6.9).

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, and
- whether a person or organisation's functions, interests or activities may be affected by Woodside's proposed planned or unplanned activities to be carried out under the EP.

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

To assist in identifying the full range of relevant persons, Woodside considers the impacts and risks associated with its proposed activities and considers the broad categories of relevant persons who may be affected by the activities to be carried out under the EP. The broad categories are identified in Table 5-1 below and identification methodology applied as set out in Table 5-2.

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

Feedback received, if any, is assessed in accordance with the intended outcome of consultation and applying the categories of relevant persons methodology outlined in Table 5-2, as appropriate.

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

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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.
Historical heritage groups or organisations	Legislated or government enlisted groups or organisations responsible for the management of marine heritage.
Local government and elected Parliamentary representatives and recognised local community reference/liaison groups or organisations	Local government body formed under the Local Government Act 1995 (WA) and elected Parliamentary representatives which are responsible for representing the local community. Recognised local community reference or liaison group or organisation in relation to oil and gas matters.
Other non-government groups, organisations or individuals	Non-government organisation with public website material targeting the proposed activity. Individual who demonstrates the proposed activity could potentially impact their interests, functions or activities.
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

Category	Relevant person identification methodology
Commercial fisheries (Commonwealth and State) and peak representative bodies	Woodside assesses relevance for commercial fisheries (Commonwealth and State) and their representative bodies using the following next steps in its methodology: • Defining the parameters having regard to timing, location and duration of the proposed petroleum activity. • Confirming whether the EMBA overlaps with the fisheries management area (i.e., the spatial area the fishery is legally permitted to fish in) (see Section 4.9.2). • Woodside acknowledges WAFIC's consultation guidance[23], that Titleholders develop separate consultation strategies for significant unplanned events (for example an oil spill) where Titleholders can demonstrate the likelihood of such events occurring is extremely low. WAFIC's guidance is that consultation on unplanned events resulting in an emergency scenario should only be undertaken if an incident occurs (see Appendix G). • For Commonwealth and State commercial fisheries, Woodside assesses the potential spatial and temporal extent for interaction with the fishery by reviewing AFMA, ABARES and DPIRD Fishcube data within the Operational Area and EMBA (see Section 4.9.2). Assessment of relevance: • State commercial fisheries that have been assessed as having a potential for interaction within the Operational Area or EMBA (see Section 4.9.2) are assessed as relevant to the proposed activity. However, to avoid over consulting and as requested in WAFIC's guidance, Woodside only consults individual licence holders based on WAFIC's advice. Woodside also utilises WAFIC's consultation service whereby WAFIC: – directly consults fishery licence holders that are assessed as having potential for interaction in the Operational Area, and – consults fisheries that are assessed as having a potential for interaction in the EMBA only in the event of an unplanned emergency scenario. • Commonwealth commercial fisheries that have been assessed as having a potential for interaction within the Operational Area or EMBA (see Section 4.9.2) are assessed as relevant to the proposed activity. • If Woodside has identified that a Commonwealth or State fishery is a relevant person, then Woodside also consults the fisheries relevant representative body. For example, WAFIC represents the interests of State fisheries in Western Australia. If a State fishery is identified as relevant, Woodside would also identify WAFIC as relevant. Recognised Commonwealth fishery representative bodies are identified by AFMA via its website. WAFIC is the only recognised State fishery representative body.
Recreational marine users and peak representative bodies	Woodside assesses relevance for recreational marine users and peak representative bodies using the following next steps in its methodology: • Using Woodside knowledge and operating experience, applying knowledge of recreational marine users in the area. This assessment is both activity and location based. • Defining the parameters having regard to timing, location and duration of the proposed petroleum activity.

[23] *Consultation Approach for Unplanned Events – WAFIC*

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Category	Relevant person identification methodology
	• Assessing the potential spatial and temporal extent for interaction with recreational marine users by reviewing DPIRD Fishcube data to assess whether there has been activity within the EMBA in the past 5 years. Assessment of relevance: • Recreational marine users that have been active in the past 5 years within the EMBA are assessed as relevant to the proposed activity. Woodside is provided with the contact details of charter, boat tourism and dive operators specific to the region of the EMBA by DPIRD to consult with the relevant persons. • If Woodside has identified recreational marine users as relevant persons, then Woodside also consults identified peak recreational marine user representative bodies. For example, Recfishwest represents the interests of recreational fishers. These representative bodies are identified via Woodside's existing consultation list, which is updated as appropriate via advice from known groups and DPIRD.
Titleholders and Operators	Woodside assesses relevance for other Titleholders and operators using the following steps in its methodology: • Using GPInfo to determine overlap with other Titleholders or Operators permit areas within the EMBA. • Using Woodside knowledge and operating experience, applying knowledge of other operators in the area. • Woodside produces a map showing the outcome of this assessment. Assessment of relevance: • Titleholders and Operators whose permit areas are identified as having an overlap within the EMBA are assessed as relevant.
Peak industry representative bodies	Woodside assesses relevance for peak industry representative bodies using the following steps in its methodology: • Review of peak industry representative bodies responsibilities that Woodside actively participates in, with consideration of overlap between industry focus area and Woodside's proposed activities within the EMBA. • Review of Woodside's existing consultation list. • Website search to identify whether any additional peak industry representative bodies have been created whose responsibilities may overlap with Woodside's proposed activities within the EMBA. Assessment of relevance: • Peak industry representative bodies whose responsibilities are identified as having an overlap with Woodside's proposed activities within the EMBA are assessed as relevant.
Traditional Custodians (individuals and/or groups/entity) and Nominated Representative Corporations	Consistent with its understanding of the matters discussed in Section 4.9.1, 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 Prescribed Bodies Corporate (PBCs)); or, in the case of Native Title and where appropriate, the Native Title Representative Body. • Requests the nominated representative body to forward the notifications and invitations to consult to their members (members are individual communal rights holders).

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Category	Relevant person identification methodology
	• Requests advice as to other First Nations groups or individuals that should be consulted. • Advertises widely so as to invite self-identification and consultation by First Nations groups and individuals. Further detail to Woodside's methodology is as follows. Woodside uses the databases of the National Native Title Tribunal: • To understand whether there are any Native Title Claims (historical or current) or determinations overlapping or coastally adjacent to the EMBA. • To understand whether there are any relevant Indigenous Land Use Agreements (ILUAs), registered with the National Native Title Tribunal that overlap or are adjacent to the EMBA that may identify Traditional Custodians or representative bodies to contact regarding potential cultural values. Where there is a positive determination of Native Title, contacting the PBC or, where their representative is a Native Title Representative Body, contacting the Native Title Representative Body. Where appropriate, contacting the relevant Native Title Representative Body to request a list of any First Nations groups asserting Traditional Custodianship over an area of coastline adjacent to the EMBA. Review of Commonwealth and State Marine Park Management Plans that overlap the EMBA which may identify Traditional Custodians or representative bodies to contact regarding potential cultural values. In Victoria, using the Victorian Aboriginal Heritage Council data to determine whether there are any Registered Aboriginal Parties (RAP) appointed under the Aboriginal Heritage Act 2006 (Vic), that overlap or are adjacent to the EMBA. First Nations groups or individuals identified by a Traditional Custodian, nominated representative corporation, Native Title Representative Body. Request to the PBC to distribute Woodside consultation materials through its membership. Woodside is unable to contact this membership through any other means. Woodside has a number of public notification and information sharing processes by which individual Traditional Custodians can become aware of the proposed activity, its risks and impacts, and self-identify. Individuals that consider their functions, interests or activities may be affected by a proposed activity are provided an opportunity to self-identify for each EP. Woodside does not presume that self-identification for an activity, covered by another EP, automatically means that an individual/s functions, interests and activities may be affected by other activities where EMBAs overlap. This decision is for the individual to make. The public notification, information sharing, and consultation processes Woodside puts in place enables Traditional Custodians to become aware of proposed activities, assess risks and impacts to their values, and enable individuals to self-identify. Assessment of relevance: • Traditional Custodian groups, entities or individuals and Nominated Representative Corporations who are identified through the above methodology and overlap or are coastally adjacent to the EMBA are assessed as relevant.
Native Title Representative Bodies	Woodside assesses relevance for Native Title Representative Bodies using the following steps in its methodology: • A Representative Aboriginal/Torres Strait Islander Body (RATSIB) is a regional organisation appointed under the *Native Title Act 1993* with prescribed functions set out in Part 11 of the *Native Title Act 1993*, which relate to: facilitation and assistance; certification; dispute

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Category	Relevant person identification methodology
	resolution; notifications; agreement making. They are also known, and referred to here, as Native Title Representative Bodies. • Review of National Native Title Tribunal RATSIB areas that overlap or are coastally adjacent to the EMBA. Assessment of relevance: • Where the area for which a Native Title Representative Body is recognised under the *Native Title Act 1993*, overlaps with the EMBA or is coastally adjacent to the EMBA, Woodside will assess the Native Title Representative Body as relevant.
Historical heritage groups or organisations	Woodside assesses relevance for groups or organisations whose responsibilities are focused on historical heritage using the following steps in its methodology: • Using the Australasian Underwater Cultural Heritage Database to assess known records Maritime Cultural Heritage sites (shipwrecks, aircraft and relics) within the EMBA (see Section 4.9.1.8). Assessment of relevance: • Where there is a known underwater heritage site (shipwrecks, aircraft and relics) within the EMBA, the relevant group or organisation that manages the site will be assessed as relevant.
Local government and recognised local community reference/liaison groups or organisations	Woodside assesses relevance for local government and recognised local community reference/liaison groups or organisations using the following steps in its methodology: • Review of Woodside maps (developed based on data from the WA Local Government, Sport and Cultural Industries 'My Council' database and WA Local Government Association (WALGA) Local Government Directory maps to assess overlap between the local government's defined area of responsibility and the EMBA. • Woodside hosts regular community reference/liaison group meetings. Members represent a cross-section of the community and local towns interests. Representatives are from community and industry and generally include, Woodside, State Government (for instance relevant Regional Development Commissions), Local Government, Indigenous Groups, Industry representative bodies, community and industry organisations. Woodside considers these reference/liaison groups to be the appropriate recognised representatives of the local community for the oil and gas sector. • Woodside reviews the community reference/liaison group's terms of reference to determine its area of responsibility and overlap with the EMBA. For example, the Exmouth Community Liaison Group's area of responsibility in relation to Woodside's operational, development and planning activities, is defined in the terms of reference as the Exmouth sub-basin. Comparatively, the Karratha Community Liaison Group's area of responsibility is the Pilbara region (i.e., onshore). Assessment of relevance: • The local government whose defined area of responsibility overlaps the EMBA is assessed as relevant. • The community reference/liaison group whose defined area of responsibility overlaps the EMBA is assessed as relevant and consulted collectively via the relevant reference/liaison group.
Other non-government groups, organisations or individuals	Woodside assesses relevance for other non-government groups, organisations or individuals using the following steps in its methodology: • Review of Woodside's existing consultation list. • Website search of registered non-government groups or organisations (i.e., registered with an Australian Business Number (ABN) and publicly available contact information) that may have

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Category	Relevant person identification methodology
	public website and/or social media material specific to the proposed activity at the time of development of the EP. • Organisation has a publicly available statement (or purpose) that clearly describes their collective functions, interests or activities. • Review of current website and/or social media material to identify targeted information which demonstrates functions, interests or activities relevant to the potential risks and impacts associated with planned activities associated with the EMBA. • Review of an organisation's/individual's feedback to consider whether their functions, interests or activities within the EMBA may be affected by the activities to be carried out under the EP. Considering interests outside the EMBA would be considered too remote and contrary to the purpose of EP consultation. Assessment of relevance: • Registered non-government groups or organisations with current targeted public material specific to the proposed activity at the time of developing the EP and who have demonstrated functions, interests or activities relevant to the potential risks and impacts associated with planned activities in accordance with the intended outcome of consultation will be assessed as relevant. • Individual demonstrates their functions, interests or activities may be impacted will be assessed as relevant.
Research institutes and local conservation groups or organisations	Woodside assesses relevance for research institutes and local conservation groups or organisations using the following steps in its methodology: • Review of Woodside's existing consultation list. • Website search for research institutes that may operate within the EMBA. This assessment is both activity and location based. • 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.

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

5.3.8 Assessment of relevant persons for the proposed activity

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

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

5.4 Consultation material and timing

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

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

5.4.1 Sufficient information

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

- a description of the proposed petroleum activity,
- the Operational Area,
- where the activity will take place,
- the timing and duration of the activity,
- a location map of the Operational Area,
- a description of the EMBA,
- relevant exclusion zones, and
- a summary of relevant risks and mitigation and management control measures relevant to the proposed petroleum activity.

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

The level of information necessary for a person or organisation to understand the impacts of the proposed activity on their functions, interests or activities may vary and may depend on the degree to which a relevant person is affected. For example, Woodside considers that relevant persons who may be impacted by planned activities in the Operational 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

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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, and
- the ways in which a person or organisation can provide feedback.

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

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

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

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

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

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

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

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Category of relevant person	Typically accepted form of communication
	ordinary course of business. Other forms of communication, such as phone calls, and meetings and/or presentation briefings are used on request.
Other non-government groups or organisations	Email is used as the primary form of communication with Other non-government groups or organisations. Other forms of communication, such as phone calls, and meetings and/or presentation briefings are used on request.
Research Institutes and Local conservation groups or organisations	Email is used as the primary form of communication with research institutes and local conservation groups or organisations. Other forms of communication, such as phone calls, and meetings and/or presentation briefings are used on request.

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

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

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

5.4.2 Reasonable period for consultation

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

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

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

The consultation period under this EP has satisfied benchmark periods under other relevant legislative processes:

- Regulation 30 sets out a public consultation period of 30 days.
- The Department of Mines, Petroleum and Exploration (DMPE) *Guidelines for Consultation with Indigenous People by Mineral Explorers* directs a period of 21 to 30 days of consultation with traditional owners.
- While repealed, guidance taken from the Aboriginal Cultural Heritage Act 2021 – *Consultation Guidelines* (Government of Western Australia, 2023) suggests that up to 12 weeks may be a reasonable period to allow identification, contact and response from First Nations peoples (subject to any alternative timeframe being agreed through co-design of consultation).

This period of consultation demonstrates that Woodside has provided a "*reasonable period*" for relevant persons to consult in accordance with Regulation 25(3). Commentary in the *Tipakalippa Appeal* judgment limits consultation to a process that must be capable of being discharged within a reasonable time:

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"*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...*" [24]

Woodside seeks feedback in order to support preparation of its EP. What constitutes a reasonable period for consultation is considered on a case-by-case basis, with reference to the person being consulted and the nature, scale and complexity of the activity.

Woodside's typical approach to providing a reasonable period for consultation is as follows:

- Advertising in selected local, state and national newspapers to give persons or organisations the opportunity to understand the activity and identify whether their functions, interests or activities may be affected.
- Providing consultation materials directly to identified relevant persons as well as persons who are 'not relevant' but woodside chose to contact and providing a target date for feedback. Woodside acknowledges that feedback may be received from relevant persons following the target date.
- Acknowledging that the way in which woodside provides consultation information may vary depending on the relevant person or organisation and, may depend on the degree to which a relevant person or organisation is affected. Different consultation processes may be required for relevant persons and organisations depending on the information requirements.
- Following up with relevant persons prior to EP submission. Where possible, woodside will endeavour to use an alternative method of communication to contact the relevant person.
- Engaging in two-way dialogue with relevant persons or organisations where feedback is received.

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

Woodside considers that consultation for this EP has closed.

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

5.4.3 Discharge of Regulation 25

The Full Federal Court made clear in the *Tipakalippa Appeal* that consultation should be approached in a "*reasonable*", "*pragmatic*" and "*not so literal*" way, so that consultation obligations were capable of being met by Titleholders (Section 5.5.1). [25] Consultation is a "real world activity" and must be capable of reasonable discharge. [26] 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. [27]

When the Titleholder demonstrates that it has provided sufficient information and a reasonable period for consultation, then Regulation 25 consultation requirements are met.[28] 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.[29]

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*"

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

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

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

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

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

[29] *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].*

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for consultation must be afforded to relevant persons.[30] A reasonable opportunity may not be every opportunity requested and is limited to reasonable opportunities to consult.

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

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

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

5.5 Context of consultation approach with Traditional Custodians

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

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 5.5.3 to 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,[31] and how obligations to consult "*each and every*" person under Regulation 25 should be interpreted in a similarly pragmatic way, so that consultation is workable. The reference to NTA authorities was made by analogy:

"It can be seen that the terms of [the native title legislation] are somewhat absolute – "all". However, [the native title legislation] has consistently been construed in a way that is not so literal … The cases concerning [the native title legislation] … have reiterated … that [the native title legislation] does not require that "all" of the members of the relevant claim group be involved in the decision. The key question will be whether a reasonable opportunity to participate in the decision-making process has been afforded by the notice for a relevant meeting." [32]

"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"[33] (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" [34] (emphasis added).

[30] *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].*

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

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

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

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

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The Judgment in the *Tipakalippa Appeal* makes it clear that a Titleholder will have some decisional choice in identifying which person(s) are to be approached, how the information will be given to allow the "*relevant person*" to assess the possible consequence of the proposed activities on their functions, interests or activities, and how the requisite consultation is undertaken. Consultation is not fixed to a rigid process and will be adapted so that it is informed by the relevant person or group. Woodside has met its Regulation 25 requirements through its consultation methodology (Section 5.2).

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

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

5.5.2 Consultation method

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

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

By contrast, recognition for Traditional Custodian groups and their nominated representative corporations in Western Australia falls under the *Native Title Act 1993 (Cth*) because the vast majority of the Western Australian coastline is settled under the Native Title regime. This means that the methodology and process for consultation in Western Australia places greater emphasis on, but is not limited to, Native Title Representative Bodies and PBCs.

Native Title determinations provide certainty about the appropriate Traditional Custodian groups that have the cultural authority to speak for country adjacent to the EMBA and help Woodside to identify Traditional Custodian persons and groups asserting Traditional Custodianship. The Judgment in the *Tipakalippa Appeal* endorses methods of consultation with groups of relevant persons that are appropriate and adapted to the characteristics of groups.[35] Woodside's consultation methodology is adapted and appropriate to the recognised systems of communal interests in Western Australia.

In Western Australia (relevant for this EP), Woodside has sought to follow the established, effective and respectful means of communication used by Native Title Representative Bodies and nominated representative corporations (including PBCs) with their respective Traditional Custodian communities. Woodside follows these processes for the appropriate broad capture of individuals' awareness of our activities, to self-identify (Section 5.5.3), and to provide feedback to inform the management of environmental impacts and risks.

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

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Using these processes, Woodside communicates information about EPs by:

- Advertising in relevant Indigenous and non-Indigenous newspapers. This encourages self-identification, by advertising proposed activities widely through newspapers that have national and intra-state circulation, i.e., Koori Mail, National Indigenous Times, The West Australian.
- Creating carefully considered Summary Consultation Information Sheets with content developed by Woodside's First Nations Team to remove jargon and present information in a simplified format.
- Directing contact through nominated representative corporations.
- Using social media (i.e. Facebook/Instagram), texts, phone calls and emails. These mediums are the preferred communication methods used by Traditional Custodians throughout Western Australia and, on that basis, used by Native Title Representative Bodies and other government agencies and industry, to engage with Traditional Custodians or call meetings. First Nations woman, Professor Bronwyn Castle, through 10 years of research found *"Social media is an intrinsic part of daily life. The use of Facebook is around 20 per cent higher [among First Nations people] than the national average across all geographical locations*" (Social media mob: being Indigenous online, Professor Bronwyn Carlson (2018)).
- Carrying out ongoing consultation post Regulation 25 consultation, where Woodside has a Program of Ongoing Engagement with Traditional Custodians. This program sets out Woodside's commitment to ongoing engagement and support to care for and manage country, including Sea Country. The program was developed in response to Traditional Custodian feedback.
- Basing members of its First Nations team in Karratha and Roebourne who serve as on-Country points of contact for Traditional Custodian organisations and individuals. These team members have broad local knowledge and established, on-the-ground relationships within communities. This helps contribute to positive outcomes including distributing information and providing notice to the community to support Traditional Custodian attendance and involvement at Woodside's information sessions and Community roadshows.
- Ensuring that from the commencement of engagement with Traditional Custodians, Woodside seeks direction on how they prefer to be consulted and has consulted accordingly. Consultation processes that are informed by Traditional Custodians and co-designed on a case-by-case basis and includes their direction as to cultural protocols, structure of consultation and who to appropriately consult with (such as elders).
- Holding meetings on Country at a place and time agreed with Traditional Custodians and offering and providing financial assistance for meeting expenses (as appropriate).
- Providing information specifically designed to be easily understood, to reach all relevant people, and give a reasonable period of time for those people to make an informed assessment of the possible consequences of the proposed activity on them.

The First Nations team approach to consultation is also consistent with the Federal Court's decision in the *Munkara Case*. The *Munkara Case* notes that the word "*culture*" (and hence the word "*cultural*") has a communal aspect to it. To establish cultural features, it is necessary that the beliefs and values are held by the relevant people *as a people*. For values, features or beliefs that are expressed by an individual to be "*cultural*" they cannot simply be an individual's belief – the belief must have a communal aspect too and demonstrate that the "*individual beliefs are broadly representative of the beliefs of other members of the group*"[36]. 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[37]. 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.

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

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

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5.5.3 Identification of relevant persons

To undertake consultation, Woodside has developed a methodology for identifying relevant persons, in accordance with Regulation 25(1) (Section 5.2 and 5.3).

Specific to Woodside's approach for identifying relevant Traditional Custodians, Woodside's First Nations Communities Policy and consultation approach is guided by Traditional Custodians by directing consultations through their nominated representative corporation. This has been implemented by Woodside through consultation with a nominated representative corporation, where that corporation has advised Woodside that it acts as the representative body for a Traditional Custodian group and has requested that Woodside engage with it as the representative body for that Traditional Custodian group.

Woodside asks nominated representative corporations (such as PBCs) and Native Title Representative Bodies to identify individuals that should be consulted, and enables individuals to self-identify in response to national and local advertising, social media and community engagement opportunities (Section 5.5.4). Where there is a nominated representative corporation for an area, unless directed by the nominated representative corporation, Woodside does not directly approach individuals for consultation, because this has the potential to undermine the role of the nominated representative corporation. Approaching individuals directly is a practice that is no longer considered acceptable because of divisions it has been shown to cause in communities. In addition to asking for the identification of individuals, Woodside also asks nominated representative corporations to distribute consultation information to whomever the nominated representative corporations deem appropriate, including members of the nominated representative corporations who are communal rights holders.

Having said this, as set out in further detail in Section 5.5.4 below, individuals are also given the opportunity to self-identify, consult and provide their own feedback on the proposed activity. When approached in this way, Woodside will engage individuals as relevant persons and will also (subject to any confidentiality or cultural restrictions) advise the nominated representative body of the consultation where it relates to cultural values. These methods of consultation are consistent with requirements for notification under the *Native Title Act 1993 (Cth*), such as under the future act provisions (section 29), which requires notification of the Native Title Representative Body, the PBC (or nominated representative) and notification through newspapers. The notification process has been selected as a respectful, practical and pragmatic analogue for consultation with First Nations peoples, rather than requiring members to be notified via a formal authorisation process which seeks, from members, authorisation of agreements and Native Title/compensation claims under the *Native Title Act 1993* (*Cth*)[38].

In this consultation, Woodside requested nominated representative corporations to identify any potential individual relevant persons for consultation. Woodside requests nominated representative corporations to distribute consultation materials to their members. However, Woodside recognises that the process is voluntary and that it cannot compel nominated representative corporations (such as PBCs) to do so. Woodside also recognises that it would not be appropriate to seek to audit the nominated representative corporations for compliance with any member consultation request.

5.5.4 Opportunity to self-identify and identifying other individuals

Woodside requests nominated representative corporations and Native Title Representative Bodies to identify other individuals to consult with or individuals who may seek to self-identify for a proposed activity. Woodside also advertises broadly through Indigenous, national and local advertising, social media and community engagement opportunities to provide individuals with an opportunity to consult. Woodside does not directly approach individuals for consultation, as this undermines the role of the nominated representative corporations (Section 5.5.3). Woodside's approach to providing individual Traditional Custodians the opportunity to self-identify and consult for an EP is as follows:

- Woodside applies the principles of self-determination when consulting with Traditional Custodians by consulting through the Traditional Custodians authorised representative entities.
- Recognising the function of nominated representative corporations (such as PBCs) and Native Title Representative Bodies to represent communal interests and manage cultural values, Woodside requests

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

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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 on information provisions, Woodside has tailored effective consultation methods for its activities. These methods are specifically designed for Traditional Custodians, so that information is provided in a form that is readily accessible and appropriate. The targeted Summary Information Sheet is developed and reviewed by Woodside's First Nations Team to ensure that content is appropriate to the intended recipients, which is then provided to relevant Traditional Custodian groups. Phone calls are made to provide context to the consultation.

Where face-to-face consultation meetings are requested, Woodside coordinates engagement at the Traditional Custodians location of choice (where practicable) and with their nominated attendees. Along with members of Woodside's First Nations engagement team, key project personnel and environmental experts are typically present to enable effective communication and prompt response to questions. Materials for these sessions incorporate visual aids such as photos, maps and videos, and plain language suitable for people with a non-technical background.

During consultation, Woodside provides relevant persons with additional information as appropriate in response to requests. There is no requirement to provide relevant persons with all information or documents requested and a Titleholder will have provided sufficient information even where it has not provided all information or documents requested.

Woodside has sought to provide sufficient information to individual members of nominated representative corporations (such as PBCs) by providing information to representative bodies and requesting dissemination with members. However, Woodside recognises consultation is voluntary and it cannot compel them to do so, nor would it be appropriate to seek to audit the representative entities for compliance with any request.

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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).

Discharge of Regulation 25

Woodside's consideration and approach to discharging Regulation 25 for relevant persons is discussed in Section 5.4.3. In addition to this, Woodside has considered the application of Regulation 25 specific to Traditional Custodians based on the *Tipakalippa Appeal*.

In relation to Traditional Custodian relevant persons (and all relevant persons), Woodside has discharged its duty under Regulation 25 of the Environment Regulations. Woodside considers that consultation under Regulation 25 is complete (Section 5.4.3).

5.6 Providing feedback and assessment of merit of objections or claims

There are a number of ways in which feedback can be provided. Feedback can be provided through the Woodside feedback email or via the Woodside feedback toll free phone line as outlined in the Consultation Information Sheet and the Woodside website. Where appropriate, consultation may also be supported by phone calls or meetings. An EP feedback form is also available on Woodside's website enabling stakeholders to provide feedback on proposed activities, or to request additional information.

Woodside consults widely on its EPs and notes that feedback is received in various forms. Feedback that is considered inappropriate or that puts the environment, health, safety or wellbeing of Woodside employees or operations at risk will not be tolerated. Woodside respects people's rights to protest peacefully and lawfully but actions that put the environment, health, safety or wellbeing of Woodside employees or operations at risk go beyond those boundaries.

Woodside accepts feedback and engages in consultation in order to achieve the aims set out in Section 5.2. Woodside recognises that there are persons and organisations that take a view that Woodside's operations and/or growth projects should be stopped or at least delayed as far as possible. Whilst Woodside assesses the merits of objections or claims received, it acknowledges NOPSEMA's guidance in its brochure entitled Consultation on offshore petroleum environment plans information for the community, which states that relevant persons are free to respond on any matter and raise any concern, however this may not be able to be considered if it is outside the scope or purpose of the EP and approval process, for example, statements of fundamental objection to offshore petroleum activities or information containing personal threats or profanities. Under Regulation 34(g), there is no requirement for a relevant person to agree or confirm that they have been adequately consulted.

During consultation relevant persons may seek to introduce other issues (such as agreements) not specific to EP consultation. Concepts of agreements associated with broader consultation nevertheless consultation to specific EPs can occur.

Feedback from relevant persons is reviewed and an assessment of the merits is made of information provided as well as objections or claims about the adverse impact of each activity to which the EP relates. This might, for instance, be done through a review of data and literature and for relevance to the nature and scale of the activity outlined in the EP. Consistent with the aim of consultation in Section 5.2, Woodside will consider information received when reviewing and designing measures to put in place to minimise harm to relevant persons and where reasonable or practical to further manage impacts and risks to ALARP and acceptable levels.

Woodside considers feedback during consultation from relevant persons and other persons Woodside chose to contact (see Section 5.3.4 and 5.3.7). This information is summarised in Appendix F, Table 1 and Table 2 of the EP and includes a statement of Woodside's response, or proposed response, if any, to each objection and claim.

In accordance with Regulation 26(8), sensitive information (if any) in an EP, and the full text of any response by a relevant person to consultation under Regulation 25, must be contained in the sensitive information part of the plan and not anywhere else in the plan.

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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 Review 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, Environmental Performance Outcomes (EPOs), Environmental Performance Standards (EPSs) and Measurement Criteria (MC) for the Petroleum Activity, using the methodology described in Section 2 of this EP. Impacts and risks associated with the Petroleum Activity are summarised in Table 6-1 and evaluated throughout this chapter.

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

Activity	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 other marine users	6.8.1	F	No lasting effect. Localised impact not significant to environmental receptors.	-	-	Broadly acceptable
Physical presence: Seabed disturbance	6.8.2	F	No lasting effect. Localised impact not significant to environmental receptors.	-	-	Broadly acceptable
Routine acoustic emissions: Generation of noise from project vessels, MODU, mechanical equipment and helicopter operations	6.8.3	F	No lasting effect. Localised impact not significant to environmental receptors.	-	-	Broadly acceptable
Routine light emissions: External lighting on MODU, project vessels and flaring	6.8.4	F	No lasting effect. Localised impact not significant to environmental receptors.	-	-	Broadly acceptable
Routine and non-routine atmospheric and greenhouse gas emissions	6.8.5	F	No lasting effect. Localised impact not significant to environmental receptors.	-	-	Broadly acceptable
Routine and non-routine discharges: MODU and project vessels	6.8.6	F	No lasting effect. Localised impact not significant to environmental receptors.	-	-	Broadly acceptable
Routine and non-routine discharges: Drilling and well clean-out fluids (WBM drilling/milling fluids/brine), well kill fluids, cement cuttings, hydraulic fluid, swarf, formation rock and wellhead removal fluids (grit and flocculant)	6.8.7	F	No lasting effect. Localised impact not significant to environmental receptors.	-	-	Broadly acceptable

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Activity	EP section	Risk rating				Acceptability of impact/risk
		Impact/consequence	Potential impact/consequence level	Likelihood	Current risk rating	
Routine and non- routine discharge: Residual NWBM, wet cement, cementing fluids, subsea control fluids (BOP control fluids), unused bulk products and marine riser clean-out	6.8.8	F	No lasting effect. Localised impact not significant to environmental receptors.	-	-	Broadly acceptable
Solid Waste Generation and Management	6.8.9	F	No lasting effect. Localised impact not significant to environmental receptors.	-	-	Broadly acceptable
Unplanned activities (accidents, incidents, emergency situations)						
Unplanned hydrocarbon release: Vessel collision	6.9.2	C	Moderate impact on environmental feature/s or area/s, such as impact on feature/area of heightened sensitivity with limited ability to recover.	1	M	Broadly acceptable
Unplanned hydrocarbon release: Loss of well containment during P&A	6.9.3	C	Moderate impact on environmental feature/s or area/s, such as impact on feature/area of heightened sensitivity with limited ability to recover.	1	M	Broadly acceptable
Unplanned hydrocarbon or chemical release: Hydrocarbon release during bunkering/refuelling and chemical transfer, storage and use	6.9.4	E	Slight and low-level impact on environmental feature/s or area/s of low significance.	2	M	Broadly acceptable
Unplanned discharges: Drilling and well fluids	6.9.5	D	Minor impact on environmental feature/s or area/s such as impact on feature of low significance with some ability to recover.	2	M	Broadly acceptable
Unplanned discharges: Deck and subsea spills	6.9.6	F	No lasting effect. Localised impact not significant to environmental receptors.	3	M	Broadly acceptable

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Activity	EP section	Risk rating				Acceptability of impact/risk
		Impact/consequence	Potential impact/consequence level	Likelihood	Current risk rating	
Unplanned discharges: Loss of solid hazardous and non-hazardous wastes (including dropped objects)	6.9.7	F	No lasting effect. Localised impact not significant to environmental receptors.	3	M	Broadly acceptable
Physical presence: Interaction with marine fauna	6.9.8	D	Minor impact on environmental feature/s or area/s such as impact on feature of low significance with some ability to recover.	2	M	Broadly acceptable
Physical presence: Introduction and establishment of invasive marine species	6.9.9	D	Minor impact on environmental feature/s or area/s such as impact on feature of low significance with some ability to recover.	1	M	Broadly acceptable
Physical presence: Disturbance to the seabed from loss of station keeping	6.9.10	E	Slight and low-level impact on environmental feature/s or area/s of low significance.	2	M	Broadly acceptable

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6.2 Impacts and risk analysis evaluation

As required by Regulations 21(5) and 21(6) of the Environment Regulations, the following analysis and evaluation demonstrates that the identified impacts and risks associated with the Petroleum Activity are reduced to ALARP and are of an acceptable level, 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, and
- 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 nine impacts and 10 risks associated with the Petroleum Activity. Planned activities and unplanned events are summarised in Table 6-1. The assigned risk ratings were determined with controls in place as described in Section 2.3.6.

The analysis and evaluation for the Petroleum Activity 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 Sections 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 and/or impacts were identified as either being outside the scope of this EP, or not relevant to the Petroleum Activity, these are described below.

6.3.1 Impacts and risks covered under existing EPs

6.3.1.1 Unplanned hydrocarbon release from live infrastructure

As described in Section 4.9.6, existing subsea infrastructure containing hydrocarbons is present in the Operational Area as part of Chevron's Wheatstone Development and Woodside's Julimar Development (see Figure 4-21). The Operational Area for the activity overlaps with the Wheatstone trunkline which traverses from the Wheatstone offshore facilities to the LNG plant at Ashburton on the mainland. It also overlaps with the Julimar-Brunello pipeline and umbilical. A subsea loss of containment from a rupture of the Wheatstone pipeline or Julimar-Brunello pipeline within the Operational Area could occur in the event of a dropped object or anchor drag across a pipeline caused by a loss of station keeping of the MODU.

Worst-case credible hydrocarbon release scenarios have been defined in the accepted Wheatstone Project Start-Up and Operations EP and the Julimar Operations EP, including subsea loss of containment resulting from a rupture of the pipeline/flowline. The accepted EPs provide a description and assessment of impacts and risks from these loss of containment events. Management controls and response capabilities are also detailed in the EPs. Therefore, these spill scenarios are not addressed further in this EP.

Additional controls for operating the MODU to reduce the risk of dropped objects and loss of station keeping are provided in Sections 6.9.7 and 6.9.10.

6.3.1.2 Loss of containment from abandoned wellheads

Several existing wellheads occur within the Operational Area for this EP that have been plugged and abandoned in accordance with applicable legislation at the time of the activity. Barriers are in place within the wells, therefore if a well is inadvertently damaged or removed through dropped objects or anchor drag, no loss of containment is expected to occur. The scenario of loss of containment from existing wellheads on abandoned wells occurring within the Operational Area which are not within the scope of this EP are not considered credible and is not assessed further.

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6.3.2 Shallow/nearshore activities

The Operational Area is located in water depths of ~120 m to ~210 m and at a distance about 41 km from the nearest landfall (Montebello Islands). Consequently, risks associated with shallow/near shore activities such as risks of grounding were assessed as not credible.

6.4 Cumulative impacts

Woodside has assessed the cumulative impacts of the Petroleum Activity in relation to other relevant petroleum and greenhouse gas (GHG) activities that could realistically result in overlapping temporal and spatial extents. Potential SIMOPs and concurrent activities between the Petroleum Activity and other activities occurring in WA-49-L, WA-34-L or adjacent, are described in Section 3.8 and Section 3.9.

Where relevant, cumulative impacts resulting from activities under this scope of this EP and other petroleum activities including concurrent activities, SIMOPS, or adjacent titleholder activities have been assessed in Section 6.8 and Section 6.9.

No simultaneous P&A operations (i.e., more than one MODU in the Operational Area simultaneously) are planned within the scope of this EP. Petroleum activities overlapping the Operational Area are operated by Woodside or its joint ventures and will be managed under a SIMOPs plan. Relevant adjacent titleholders will be notified of Petroleum Activity commencement and completion as per Section 6.8.1.

There is potential that concurrent activities conducted by project vessels may still be ongoing once the MODU mobilises and commences plugging activities within the Operational Area (as described in Section 3.8).

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

- MODU (moored, DP or hybrid).
- Up to three MODU project vessels, including IMR, AHTSVs and general supply/support vessels.

Subsurface infrastructure located within the Operational Area were identified within Section 4.9.6. While there is spatial overlap with the Chevron-operated Wheatstone platform trunkline and Operational Area, it is highly unlikely that concurrent activities with other operations would occur, due to required communications between operators and the inherent risk reduction in avoiding such situations. Therefore, no cumulative risks or impacts will credibly occur.

6.5 Indirect impacts from activities outside the Operational Area

For the Petroleum Activity, the potential 'indirect' environmental impacts and risks evaluated are those associated with mobilisation/demobilisation of the MODU and project vessels to the Operational Area, such as those considered in the environmental impact assessment in Section 6.8.1, Section 6.8.4, Section 6.8.5 and Section 6.8.6.

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 MODU and project vessels to be inherently ALARP. Therefore, Woodside considers that standard vessel and MODU operations are appropriate to manage the potential impacts and risks from mobilisation and demobilisation of the MODU and project 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.

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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 2.3.4 and Section 2.3.5 as part of the acceptability and ALARP justification process.

The EPOs, EPSs and MC are presented throughout this section and in Appendix G (Oil Spill Preparedness and Response). A breach of these EPOs or standards constitutes a ‘Recordable Incident’ under the Environment Regulations (refer to Section 7.11.4).

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 2.3.2), 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.

<table>
<tr><td colspan="14">Context
Description of the context for the impact/risk. Regulation 21(1), 21(2) and 21(3)</td></tr>
<tr><td colspan="4">Description of the Activity – Regulation 21(1)</td><td colspan="5">Description of the Environment – Regulations 21(2)(3)</td><td colspan="5">Consultation – Regulation 25 and 24(b)</td></tr>
<tr><td colspan="14">Impact and risk evaluation summary
Summary of ENVID outcomes</td></tr>
<tr><td rowspan="2">Source of impact/risk
Regulation 21(1)</td><td colspan="6">Environmental value potentially impacted
Regulations 21(2)(3)</td><td colspan="7">Evaluation
Regulations 21(5)(6)</td></tr>
<tr><td>Marine Sediment</td><td>Water Quality</td><td>Air Quality (incl Odour)</td><td>Ecosystems/Habitat</td><td>Species</td><td>Socio-economic</td><td>Decision Type</td><td>Consequence/Impact</td><td>Likelihood</td><td>Risk Rating</td><td>ALARP Tools</td><td>Acceptability</td><td>Outcome</td></tr>
<tr><td>Summary of source of risk/impact</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td colspan="14">Description of source of impact or risk</td></tr>
<tr><td colspan="14">Description of the identified risk/impact including sources or threats that may lead to the impact/risk or identified event. Regulation 21(1).</td></tr>
</table>

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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 Regulation 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)[39]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
ALARP/hierarchy of control tools used – Section 2.4				
Summary of control considered to ensure the impacts and risks are continuously reduced to ALARP. Regulation 21(5)(c).	Technical/logistical feasibility of the control. Cost/sacrifice required to implement the control (qualitative measure).	Qualitative commentary of impact/risk that could be averted/environmental benefit gained if the cost/sacrifice is made and the control is adopted.	Proportionality of cost/sacrifice vs environmental benefit. If proportionate (benefits outweigh costs), the control will be adopted. If disproportionate (costs outweigh benefits), the control will not be adopted.	If control is adopted, reference to Control No. provided.
ALARP statement: Made on the basis of the environmental impact/risk assessment outcomes, use of the relevant tools appropriate to the decision type (Section 2.3.4.2) 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 2.3 in accordance with Regulation 34(c)

EPOs, EPS and MC			
Environmental performance outcomes	***Controls***	***Performance standards***	***Measurement criteria***
EPO No. S: Specific performance that addresses the legislative and other controls that manage the activity, and against which performance by Woodside in protecting the environment will be measured. M: Performance against the outcome will be	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).

[39] *Qualitative measure*

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EPOs, EPS and MC			
Environmental performance outcomes	***Controls***	***Performance standards***	***Measurement criteria***
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[40] T: The outcome will state the timeframe during which the outcome will apply or by which it will be achieved.			

[40] 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 other marine users

Context		
Project vessels – Section 3.6	Socio-economic environment – Section 4.9	Stakeholder consultation – Section 5

Impact evaluation summary

Source of impact	***Environmental value potentially impacted***						***Evaluation***						
	Marine Sediment	Water Quality	Air Quality (incl Odour)	Ecosystems/Habitat	Species	Socio-economic	Decision Type	Consequence/Impact	Likelihood	Risk Rating	ALARP Tools	Acceptability	Outcome
Interference with other users – proximity of MODU and project vessels causing interference with or displacement to third party vessels (commercial fishing and commercial shipping).						X	A	F	-	-	LCS GP PJ	Broadly Acceptable	EPO 1, 2
Presence of the well infrastructure on the seabed prior to removal.						X	A	F					
Permanent presence of up to 0.5 m of well infrastructure if full removal is not possible.						X	A	F					

Description of source of impact

Presence of MODU and Project vessels

A number of vessels and a MODU (outlined in Section 3.6) will be temporarily present in the Operational Area during the Petroleum Activity to permanently plug the wells, for NWBM remediation/removal activities and for wellhead removal activities. A temporary 500 m radius exclusion zone will be implemented around the MODU during permanent plugging and NWBM remediation/removal activities. Marine users are requested to avoid this area during the activity for safety purposes.

A project vessel (MPSV, LCV, or AHTSV) will be used to conduct preparatory activities such as removal of marine growth prior to the permanent plugging activity, this will take an estimated one to seven days per well. An AHTSV may be used to pre-lay the MODU moorings and will take up 10 days per site.

Permanent plugging activities are expected to take about 10 to 60 days per well as outlined in Section 3.5 and will be undertaken by a MODU (moored, DP or hybrid). NWBM removal and/or isolation activity will be undertaken by a MODU or IMR vessel and is expected to take between two to 20 days.

Removal and recovery of well infrastructure will be undertaken by a MODU (moored, DP or hybrid) immediately following P&A. Alternatively wellheads may be removed and wet parked for recovery by a vessel at a later date. An as-left survey will commence at completion of the P&A activity.

- Support vessels will also be present in the Operational Area for transporting equipment and materials to the Operational Area and for general resupply and support for the MODU and may include infield support vessels (ISV) or platform supply vessels (PSV).

The presence of project vessels and MODU in the Operational Area presents an opportunity for interaction with third-party marine users.

Presence of well infrastructure

Following permanent plugging, wellhead removal is planned to be achieved using one of wellhead cutting methods as outlined in Table 3-13 based on the most practicable approach determined at the time of the activity. All potential impacts related to the various cutting methods presented have been assessed under this EP. In the event that an

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internal cutting method is deemed not feasible, a diamond wire saw cutting method may be used, creating an external cut as close as reasonable to the mudline. This cutting method retains potential for up to 0.5 m of wellhead infrastructure to remain above the mudline and left in-situ. Given the Operational Area does not currently overlap with any active trawl fisheries, interaction with fisheries is not expected. Woodside understands however, that fishing effort is subject to change and any remaining well infrastructure will be marked on navigational charts to provide sufficient information for trawl fishers to avoid the area. Any potential remaining well infrastructure left in-situ up to 0.5 m in height is expected to eventually degrade into seabed sediments over approximately 150 years or less, in which time the snag potential would no longer be present (Melchers 2005).

Following wellhead severance, the wellheads may be removed using a MODU under this EP or wet parked and removed at a later date using a construction support vessel under the NWS and Julimar Exploration Wellhead Decommissioning EP. The continued presence of wellheads until removal has been assessed under this EP (Sections 6.8.2 and 6.8.8).

Impact assessment

Environmental value(s) potentially impacted

Interactions with commercial fishing activities

The Operational Area overlaps with three Commonwealth-managed and 13 State-managed fisheries (Section 4.9.2). However, only three State-managed fisheries (the Pilbara Trap Managed Fishery, Pilbara Line Fishery (Condition), and the Mackerel Managed Fishery), as well as tour operators, are considered to have potential for interaction with the Petroleum Activity (Section 4.9.2) within the Operational Area.

The Operational Area lies within two 60 nautical mile CAES blocks, where FishCube data from the Department of DPIRD indicates that, between 2019 and 2024, up to five vessels from the Pilbara Line Fishery (Condition), up to three vessels from the Pilbara Trap Managed Fishery, and up to four vessels from the Mackerel Managed Fishery operated annually. These fisheries have shown consistent fishing effort in the area each year (Section 4.9.2). Given the overlap between the Operational Area and these actively fished blocks, some interaction with fishing activities may occur during the project.

During the Petroleum Activity, temporary exclusion zones and the presence of vessels within the Operational Area may limit access for fisheries identified as having a potential (though unlikely) interest in the area. The primary restriction will be a 500 m temporary exclusion zone established around the MODU during permanent plugging and NWBM remediation/removal activities. Given that this exclusion zone is relatively small and only in place temporarily, the area from which fishing vessels may be displaced at any one time is minimal compared to the broader fishing grounds, including those where fishing activity has been recorded over the past five years. Furthermore, the MODU and project vessels will only be present for short, defined periods, meaning any displacement will be localised and of short duration. As a result, the temporary presence of the MODU and associated vessels may cause only minor, localised disruption, such as navigational interference or the temporary displacement or avoidance of commercial fishing vessels operating in the immediate vicinity.

If wellheads are temporarily left in-situ for later recovery, it is highly unlikely to displace or cause a risk to other marine users given the water depths where the wellheads will be located and that no trawl fishers currently operate in the area. Although recent fishing effort from the Pilbara Trap, Pilbara Line, and Mackerel Managed Fisheries overlap the Operational Area, interactions between fisheries and wellheads temporarily left in-situ are not expected given the distribution of effort and the fishing methods utilised by the fishery (i.e. line fishing restricted to the upper portion of the water column).

Where the four wellheads are removed under this EP, they will be removed as close as practicable to seabed in the first instance. If internal cutting of the wellheads is not practicable, external cutting methods will be used which may result in up to 0.5 m of well infrastructure may be left in situ. The presence of the remaining well infrastructure may present a snagging hazard for fishing trawl equipment. As stated above, this would only be a potential impact in the Operational Area where trawl fisheries overlap, however, review of fishing effort (Section 4.9.2) in this area does not indicate recent trawl fishing activity occurring within the Operational Area. Woodside understands that fishing efforts are subject to change and will remaining well infrastructure will be marked on navigational charts to provide sufficient information for trawl fishers to avoid the area. The area that will be occupied by remaining well infrastructure is small (<16 m^2). The remaining infrastructure will eventually degrade into seabed sediments over approximately 150 years, in which time the snag hazard would no longer be present (Melchers 2005). Well infrastructure may be left in situ up to 0.5 m height above the mudline, however this is a worst-case scenario and all cuts made with a diamond wire saw will aim for the well infrastructure to be removed as close as reasonable to the mudline. Therefore infrasturcture remaining up to a height of 0.5 m is considered a conservative estimate. Commercial fishers were consulted on the possibility of up to 0.5 m of wellhead remaining in situ and no feedback was received.

Displacement of recreational fishing

Recreational fishing is unlikely to occur in the Operational Area due to its depth and distance from shore. Stakeholder consultation did not identify any recreational activities that could be impacted by the activity. Recreational fishing in the region is concentrated around the coastal waters and islands of the NWMR, such as the Montebello Islands (about 41 km south-east from the Operational Area).

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If recreational fishing effort occurred within the Operational Area while activities are being performed, displacement as a result of the Petroleum Activity would be minimal and relate only to the exclusion zones (temporary) (500 m radius) that would be in place around the MODU when undertaking activities described in Section 3. Therefore, the potential impact is considered to be localised and would result in no lasting effect.

Due to the nature of the equipment that is typically used by recreational fishers in the region, the potential for up to 0.5 m of well infrastructure to be left in situ is not expected to cause adverse interactions. Recreational fishers were consulted on the possibility of up to 0.5 m of well infrastructure remaining in situ and no feedback was received.

Displacement to commercial shipping

The presence of the MODU and/or project vessels could potentially cause temporary disruption to commercial shipping, however, the nearest marine fairway is approximately 30 km north-west of the Operational Area (Section 4.9.5). 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.

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

Interference with existing oil and gas infrastructure

A number of oil and gas facilities are located in the vicinity of the Operational Area, including existing pipelines and fibre optic cables (Section 4.9.6). Interactions with operators of nearby facilities have the potential to occur, including the Wheatstone Trunkline (operated by Chevron) and the Julimar-Brunello Pipeline (operated by Woodside) which overlaps the Operational Area. During the Petroleum Activity, Chevron may be temporarily restricted from accessing the portion of the Wheatstone Trunkline which overlaps the Operational Area. However, the duration of the works is short and temporary and all adjacent Titleholders will be notified of the Petroleum Activity prior to commencement and upon completion.

The Pluto (operated by Woodside), Wheatstone (operated by Chevron (TAPL) Pty Ltd), John Brookes and Wonnich (operated by Santo (BOL) Pty Ltd) Platforms are located 15 km, 19 km, 34 km and 49 km from the Operational Area, respectively. Any interaction would mainly result from project-based vessel movements to and from the Operational Area, which are not covered within this EP. Any impacts are considered negligible with no lasting effects.

The Operational area also overlaps currently vacant acreage (previously WA-526-P), where the MODU moorings for Julimar-East 1 may extent into this area. Although unlikely, interactions with other marine users may occur. This would mainly be as a result of project vessel movements during MODU mooring pre-lay and retrieval within the Operational Area. Any impacts are considered negligible with no lasting effects.

Cultural values and heritage

The physical presence of the MODU and/or project vessels has the potential to restrict access to Sea Country. However, impacts from restricting access to Sea Country are typically associated with areas that were traditionally accessed by Traditional Custodians, which is anticipated to be focused on areas adjacent to the coast. Consultation with Traditional Owners has not identified any impacts from restricting access to Sea Country due to the Petroleum Activity.

The Operational Area lies within Sea Country, this has the potential to impact First Nations communities where they have identified an obligation to care for Country. Woodside acknowledges that Traditional Custodians connection to Country is underpinned by a cultural obligation to manage the cultural values that may be impacted within the Operational Area and surrounding EMBA. In order to ensure that this connection and cultural obligation is not impacted by the Petroleum Activity, Woodside has implemented management methods and controls such as ongoing consultation to consider all cultural features and values are managed throughout the Woodside operations. Where possible, cultural safety considerations and protocols with be adopted in collaboration with First Nations communities.

Cumulative impacts

For the fisheries considered active in the vicinity of the Operational Area, potential cumulative impacts to vessels that overlap the Operational Area would be localised with no lasting effect.

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[41]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
Legislation, codes and standards				
Contract vessels compliant with Marine Orders for safe vessel operations: • Marine Order 21 (Safety of navigation and emergency arrangements) 2016. • Marine Order 27 (Safety of navigation and radio equipment) 2023. • Marine Order 30 (Prevention of Collisions) 2016.	F: Yes. CS: Minimal cost. Standard practice.	Marine Orders 21, 27 and 30 are required under Australian regulations; implementation is standard practice for commercial vessels as applicable to vessel size, type and class.	Control based on legislative requirement – must be adopted.	Yes **C 1.1**
In the event that the well infrastructure cannot be removed at or below the mudline, remaining component will be assessed against the requirements of the *Environmental Protection (Sea Dumping) Act 1981* (to the extent that Act is applicable).	F: Yes CS: Minimal cost, legislative requirement.	If required, compliance with the *Environmental Protection (Sea Dumping) Act 1981* will mean material left on the seabed is managed appropriately.	Benefits outweigh cost/sacrifice. Control is also a legislative requirement.	Yes **C 2.1**
Good practice				
Notify relevant government departments, fishing industry representative bodies and licence holders, and adjacent titleholders of activities prior to commencement and upon completion of activities.	F: Yes CS: Minimal cost. Standard practice.	Communicating the Petroleum Activity to other marine users ensures they are informed and aware, thereby reducing the likelihood of interfering with other marine users.	Benefits outweigh cost/sacrifice. Control is standard practice.	Yes **C 1.2**
Notify AHO no less than four weeks prior to commencement of activities.	F: Yes. CS: Minimal cost. Standard practice.	Notification to AHO will enable them to generate navigation warnings (Maritime Safety Information Notifications (MSIN) and Notices to Mariners (NTM) (including AUSCOAST warnings where relevant)), thereby reducing the likelihood of unplanned interactions with other vessels.	Benefits outweigh cost/sacrifice. Control is standard practice.	Yes **C 1.3**

[41] *Qualitative measure*

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[41]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
Notify AMSA Response Centre at least 24 – 48 hours prior to commencement of vessel movement and activities.	F: Yes CS: Minimal cost. Standard practice.	Communicating the Petroleum Activity to other marine users ensures they are informed and aware should emergency response be required.	Benefits outweigh cost/sacrifice. Control is standard practice.	Yes **C 1.4**
Establish and maintain a publicly available interactive map which provides stakeholders with updated information on activities being conducted as part of the Petroleum Activity including location of MODU.	F: Yes CS: Minimal cost. Standard practice.	Interactive map provides additional/alternate method for marine users to obtain information on the timing of activities, thereby reducing the likelihood of interference with other marine users.	Benefits outweigh cost/sacrifice.	Yes **C 1.5**
Project vessels to operate Automatic Identification System (AIS).	F: Yes. CS: Minimal cost. Standard practice.	Use of AIS on project vessels will reduce the likelihood of an interaction with a third-party vessel.	Benefits outweigh cost/sacrifice. Control is also standard practice.	Yes **C 1.6**
Wellheads to remain on AHO navigation charts until removal.	F: Yes. CS: Minimal cost. Standard practice.	The presence of the wellheads is currently marked on AHO navigation charts and will remain until removal activities are complete. Ongoing notification to AHO will ensure that any infrastructure remaining above the mudline is retained on charts, helping marine users, such as fishers and trawlers, plan activities safely and avoid potential interactions.	Benefits outweigh cost/sacrifice. Control is standard practice.	Yes **C 1.7**
Vessel marine assurance process conducted prior to contracting vessels, to ensure suitability and compliance with Marine Order requirements.	F: Yes CS: Minimal cost. Standard practice.	Ensures safe interaction with other marine users by verifying vessel suitability and regulatory compliance before operations begin.	Benefits outweigh cost/sacrifice.	Yes **C 1.8**
Develop SIMOPS plan where multiple campaigns occur concurrently within the Operational Area and when MODU working in vicinity of other facilities, vessels or live infrastructure.	F: Yes. CS: Minimal cost. Standard practice.	Ensures safe coordination when a MODU operates near other facilities or infrastructure by defining clear procedures, roles, and	Benefits outweigh cost/sacrifice.	Yes **C 1.9**

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[41]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
SIMOPS Plan will contain information on: • Minimum separation distances. • Communications. • MODU/vessels/activities involved in SIMOPS. • Exclusion zone entry and exit processes. • ROV operations. • Helicopter operations. • Key roles, responsibilities and emergency contacts. • PTW arrangements. • Incident reporting and investigation. • Management of Change.		communication protocols, minimizing the risk of collision, interference, or emergency incidents. In particular, this will allow Chevron to plan for the Petroleum Activity presence.		
Professional judgement – Eliminate				
Remove well infrastructure as close as reasonable to the mudline. Or demonstrate that removal above the mudline is not possible.	F: Yes. CS: Moderate cost.	Removal of infrastructure eliminates any potential interactions with commercial fishers.	Benefits outweigh cost/sacrifice.	Yes **C 2.1**
Remove all well infrastructure immediately following permanent plugging activities.	F: Yes. CS: Moderate cost.	Impact assessment has determined that the temporary presence of wellheads on the seabed following permanent plugging activities is not expected to result in impacts to other marine users .	Disproportionate. Cost/sacrifice outweighs benefits.	No
Limit activities to avoid peak shipping and commercial fishing activities.	F: No. Shipping occurs year-round. The potential for displacement of shipping from the Operational Area may occur, given the moderate shipping density adjacent to the Operational Area. Simultaneous operations with fishing seasons cannot be eliminated as fishing activities may occur throughout the year, and exact details on future fishing activities are not known.	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)[41]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
	CS: Not considered – control not feasible.			
Eliminate use of vessels.	F: No. The use of vessels is required to conduct the Petroleum Activity. CS: Not considered – control not feasible.	Not considered – control not feasible.	Not considered – control not feasible.	No
Professional judgement – Substitute				
No additional controls identified.				
Professional judgement – Engineered Solution				
No additional controls identified.				
ALARP statement: On the basis of the assessment outcomes, use of the relevant tools appropriate to the decision type (i.e. Decision Type A; Section 2.3.4.2) and Woodside's criteria for demonstrating ALARP (Section 2.4.1), Woodside considers the adopted controls appropriate to manage potential impacts/risks associated with MODU and Project vessels during permanent plugging, NWBM removal and/or isolation activity and well infrastructure removal activities on other marine users, such as shipping and commercial fisheries. As no reasonably practicable additional/alternative controls were identified that would further reduce the impacts without disproportionate sacrifice, the impacts/risks are considered ALARP.				

Demonstration of acceptability
Acceptability statement: The impact assessment has determined that, given the adopted controls, physical presence of the MODU, vessels and continued presence of wellhead infrastructure prior to removal may result in negligible, localised impacts (<1 month) to other marine users, with no lasting effect. Further opportunities to reduce the impacts and risks have been investigated above. The impact assessment has also determined that, given the adopted controls, if the well infrastructure cannot be fully removed above the seabed, the ongoing physical presence of well infrastructure will be managed through the overarching permissioning documents for these fields ("Julimar Operations EP"[42]) and is unlikely to result in more than a localised impact. On the basis of the assessment outcomes, use of the relevant tools appropriate to the decision type (i.e. Decision Type A; Section 2.3.4.2) and Woodside's criteria for demonstrating acceptability (Section 2.4.2), Woodside considers the adopted controls appropriate to manage the impacts/risks to be managed to a level that is broadly acceptable, and compliance with those controls demonstrates that the EPOs are met.

[42] *Julimar Operations EP available via the following link Julimar Operations EP*

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EPOs, EPS and MC			
EPO	***Controls***	***PS***	***MC***
EPO 1 Impacts to relevant stakeholders from the planned Petroleum Activity will be limited through the provision of appropriate information/notification.	**C 1.1** Contract vessels complying with Marine Orders for safe vessel operations: • Marine Order 21 (Safety of navigation and emergency procedures) 2016. • Marine Order 27 (Safety of navigation and radio equipment) 2016. • Marine Order 30 (Prevention of Collisions) 2016.	**PS 1.1** Vessels contracted whose practices comply with Marine Orders as applicable to vessel size, type and class (Marine Orders 21, 27 and 30).	**MC 1.1.1** Marine verification records demonstrate compliance with standard maritime safety procedures (Marine Orders 21, 27 and 30).
	C 1.2 Notify relevant government departments, fishing industry representative bodies and licence holders, and adjacent titleholders of activities prior to commencement and upon completion of activities.	**PS 1.2** AFMA, Department of Defence (DoD), DPIRD, Recfishwest, WAFIC and licence holders, and adjacent titleholders notified prior to commencement and upon completion of activities.	**MC 1.2.1** Consultation records demonstrate that notifications are complete.
	C 1.3 Notify AHO no less than four weeks prior to commencement of activities.	**PS 1.3** Notification to AHO of activities and movements to allow generation of navigation warnings (MSIN and NTM [including AUSCOAST warnings where relevant]).	**MC 1.3.1** Records demonstrate that AHO notifications complete.
	C 1.4 Notify AMSA Response Centre at least 24 – 48 hours prior to commencement of vessel movement and activities.	**PS 1.4** ARC is notified 24 to 48 hrs before mobilisation, for activities in the field >3 weeks, for awareness should emergency response be required.	**MC 1.4.1** Records demonstrate a once-off notification provided to ARC within required timeframes, before mobilisation.

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EPOs, EPS and MC			
EPO	***Controls***	***PS***	***MC***
	C 1.5 Establish and maintain a publicly available interactive map which provides stakeholders with updated information on activities being conducted as part of the Petroleum Activity including location of MODU.	**PS 1.5** Activity interactive map established and maintained throughout activities.	**MC 1.5.1** Records demonstrate interactive map is available to stakeholders throughout activities.
	C 1.6 Project vessels to operate Automatic Identification System (AIS).	**PS 1.6** Project vessels operating AIS.	**MC 1.6.1** Records demonstrate project vessels are operating AIS.
	C 1.7 Wellheads to remain on AHO navigation charts until removal.	**PS 1.8** Notification to AHO after wellhead removal.	**MC 1.7.1** Consultation records demonstrate that AHO have been notified of wellhead removal.
	C 1.8 Vessel marine assurance process conducted prior to contracting vessels, to ensure suitability and compliance with Marine Order requirements.	**PS 1.8** Project vessels meet Woodside vessel marine assurance criteria.	**MC 1.8.1** Records demonstrate project vessels are compliant with Woodside vessel marine assurance.
	C 1.9 SIMOPS Plan in place when MODU working in vicinity of other facilities, vessels or live infrastructure. SIMOPS Plan will contain information on: • Minimum separation distances. • Communications. • MODU/vessels/activities involved in SIMOPS. • Exclusion zone entry and exit processes. • ROV operations. • Helicopter operations. • Key roles, responsibilities and emergency contacts. • PTW arrangements. • Incident reporting and investigation.	**PS 1.9** MODU and applicable vessels compliant with SIMOPS Plan.	**MC 1.9.1** Up-to-date and approved SIMOPS Plan in Place.

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EPOs, EPS and MC			
EPO	***Controls***	***PS***	***MC***
	• Management of Change.		
EPO 2 Limit adverse interactions with other marine users during the Petroleum Activity or from permanent presence of well infrastructure.	**C 2.1** Remove well infrastructure, ensuring the cut is made as close as reasonable to the mudline. In the event that well infrastructure cannot be safely removed within 0.5 m height above the mudline, remaining component will be assessed against the requirements of the Environmental Protection (Sea Dumping) Act 1981 (to the extent that the Act is applicable).	**PS 2.1** Woodside continues to engage with DCCEEW regarding the application of the *Environmental Protection (Sea Dumping) Act 1981* and to comply with requirements under the Act (to the extent that Act is applicable).	**MC 2.1.1** Records demonstrate DCCEEW continues to be engaged on the application of the *Environmental Protection (Sea Dumping) Act 1981* relevant to the petroleum activity and demonstrate Woodside's compliance with the Act (to the extent that Act is applicable).
		PS 2.2 Well infrastructure is removed as close as reasonable to the mudline. If well infrastructure cannot be removed below the mudline, Woodside can demonstrate that removal was not possible.	**MC 2.2.1** As left survey demonstrates well infrastructure has been removed below the mudline. Or records demonstrate that it was not possible to remove infrastructure.

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6.8.2 Physical presence: Seabed disturbance

Context		
Remotely operated vehicles – Section 3.6.3 Mooring installation and anchor hold testing – Section 3.11.2 Marine growth removal – Section 3.11.7.1 Sediment relocation – Section 3.11.7.2 Permanent plugging activities – Sections 3.12	Physical environment – Section 4.4 Habitats and biological communities – Section 4.5 Cultural values and heritage – Section 4.9.1	Stakeholder consultation – Section 5

Impact evaluation summary

Source of impact	***Environmental value potentially impacted***						***Evaluation***						
	Marine Sediment	Water Quality	Air Quality (incl Odour)	Ecosystems/Habitat	Species	Socio-economic	Decision Type	Consequence/Impact	Likelihood	Risk Rating	ALARP Tools	Acceptability	Outcome
Disturbance to seabed from MODU station keeping (MODU mooring, including anchor hold testing) and BOP tethering system.	X	X		X			A	F	-	-	LCS GP PJ	Broadly Acceptable	EPO 3, 3a, 4
Disturbance to seabed from subsea cleaning and preparation for permanent plugging activities (water blaster and sediment relocation), including use of the ROV (movement and work basket).	X	X		X			A	F					
Disturbance to seabed from placement and recovery of transponders and clump weights on seabed.	X	X		X			A	F					
Disturbance to seabed from cutting and removal of wellheads including mud mats for equipment laydown.	X	X		X			A	F					

Description of source of impact

MODU anchoring, anchor hold testing and BOP tethering

Seabed disturbance will result from anchor hold testing and MODU mooring system, including placement of anchors and chain/wire/fibre on the seabed, potential dragging during tensioning and recovery of anchors. Overall, mooring of the MODU and anchor hold testing activities will result in localised, small-scale seabed disturbance.

Moorings will be placed in a radius around each well of up to 3 km and a mooring analysis will be undertaken to determine the appropriate mooring pattern. Mooring may require an 8 to 12 point mooring system.

The area of seabed affected by anchoring operations depends upon water depth, currents, size of the vessels and anchors, and length of anchor chain (National Energy Resources Australia [NERA] 2018). As part of mooring preparations, anchor holding testing may be conducted and may result in short-term, localised anchor drag on the

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seabed. The planned anchoring activities are expected to be within the parameters defined in the Anchoring of Vessels and Floating Facilities EP Reference Case (NERA 2018) during the Petroleum Activity, including:

- installation of moorings, buoys, equipment or other infrastructure for a period of up to two years,
- wet storage on seabed of anchor chains etc., during activities up to two years,
- activities with total areas of seabed disturbance less than 13,000 m², and
- locations of water depth greater than 70 m. This boundary is set to exclude areas of sensitive primary producer habitats (e.g. corals, seagrass) that occur in shallower waters.
- Seabed disturbance from BOP tether installation and removal will occur at the locations where the clump weights or suction piles are deployed, approximately 20 to 40 m away from the wellhead. Each clump weight, weighing between 25 to 60 tonnes, will make direct contact with the seabed, resulting in localised disturbance at each placement site. If suction piles (four 160" diameter piles used per tether system) are used, disturbance will occur at each of the four pile installation sites due to seabed penetration. Additional disturbance will occur during removal of the clump weights or suction piles, along with any MODU moorings. Seabed disturbance will also occur along the tether paths during ROV operations to connect and tension the tethers between the anchors and the BOP.

ROVs

The use of ROVs during the Petroleum Activity may result in temporary seabed disturbance and suspension of sediment causing increased turbidity as a result of working close to, or occasionally on, the seabed. ROV use close to or on the seabed is limited to that required for effective and safe subsea activities. The footprint of a typical work class ROV is approximately 2.5 m by 1.7 m (4.25 m^2).

Subsea cleaning, sediment and marine growth removal and other preparation activities

Due to natural setting and buildup of sediment, subsea cleaning and preparation activities including removing marine growth and relocating sediment that has built up around the wellheads may be required.

ROV high-pressure water jetting and/or brushing, and sulfamic acid soaks may be used for the removal of marine growth. An ROV may also be used to relocate sediment material around the well location to allow inspection/removal works to be performed. Relocating sediment involves using an ROV-mounted suction pump to remove sediment that has built up around the well infrastructure.

If a diamond wire saw is required to be used due to the AWJ tool not being able to enter the well, sediment may need to be relocated so that the diamond wire saw can cut as close to the mudline as practicable. Although this would require more sediment relocation than the use of an AWJ, the sediment relocation will be localised and within the immediate vicinity of the wellhead.

Underwater Transponders

An array of long base line (LBL) transponders may be installed on the seabed as required to support P&A activities. Transponders may be moored to the seabed either by a clump weight or mounted on a seabed frame. The standard clump weights used, made of cement or steel, are estimated to weigh ~80 kilograms (kg). A typical seabed frame is 1.5 m × 1.5 m × 1.5 m in dimension and weighs approximately 40 kg. On completion of the positioning operation, the array transponders moored by clump weights will be recovered by means of an acoustic release and the clump weights will be removed from the seabed. The transponders mounted on seabed frames will be removed by ROV.

Equipment lay-down

Equipment such as ROV frames and baskets may be placed on the seabed during infrastructure removal activities. Frames/baskets typically have a perforated base with a footprint of about 15 m^2. Equipment lay-down is temporary and all equipment will be removed on the completion the activities.

Wellheads may be set down on the seabed in the immediate vicinity of removal for a period to enable safe rigging prior to recovery. Placement of the wellhead on the seabed will result in temporary seabed disturbance and suspension of sediment causing increased turbidity.

Wellheads may be temporarily wet parked on mud mats on the seabed for removal removed at a later date by a construction support vessel operating under the NWS and Julimar Exploration Wellhead Decommissioning EP[4] resulting in additional seabed disturbance. The disturbance footprint from wet-parked wellheads will be limited to the footprint of the mud mat.

Cutting and removal of well infrastructure

Localised seabed disturbance will occur when cutting and removing the four wellheads, including the placement of mud mats for equipment laydown. Wellhead cutting methods are outlined in Section 3.12.2. AWJ cutting may result in localised sediment relocation, temporary increase in turbidity and a small proportion of grit and flocculant may accumulate on the seabed. Diamond wire saw may also be used and may require localised sediment relocation. Well infrastructure may be set down on mud mats in the immediate vicinity of removal for a period to enable safe rigging prior to recovery. Placement of well infrastructure on mud mats will result in temporary seabed disturbance and suspension of sediment causing increased turbidity.

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Well infrastructure left in situ (contingency)

If the well infrastructure cannot be removed there is potential for a up to 0.5 m length of well infrastructure to be left in situ. The physical presence has the potential to:

- Alter hydrodynamic conditions around the infrastructure, potentially resulting in scouring and accretion.
- Introduce hard substrate resulting in the creation of new habitat.

Impact assessment

Environmental value(s) potentially impacted

Seabed disturbance from the Petroleum Activity can be categorised into two potential impacts, being:

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

Water and sediment quality

Seabed disturbance may result in a temporary decline in water quality as a result of increased suspended sediment concentrations from ROV operations close to the seabed, sediment relocation, the placement and retrieval of wellheads, muds mats, clump weights as well as MODU and BOP anchors and tether system. ROV water jetting for marine growth removal on the wellhead structures will result in temporary suspension of organic matter and localised increase in turbidity. Water jetting will be limited to what is necessary to perform an effective inspection prior to cutting and removal of the wellhead.

Resuspended sediment loads are not likely to be significant due to the relatively small footprint for each activity described above. Given the short nature of each activity, and the small footprint, any impacts to water and sediment quality are expected to be localised and transient in nature.

Benthic habitats

Direct physical disturbance to benthic environment (including fauna), indirect disturbance to benthic habitats and fauna by sedimentation and increase in turbidity to water column and the removal of artificial habitat are considered potential impacts to benthic habitats. Physical impacts from the Petroleum Activity are expected to be predominantly confined to sediment-burrowing infauna associated with the soft sediment seabed. Impacts to epifauna associated with hard substrate could occur but would represent a small proportion of the wider representative biota. Impacts associated with anchoring and mooring will occur beyond the footprint of the wellheads, however, the area disturbed will be limited. Project-specific Mooring Design Analysis will help avoid any direct physical impacts to natural hard substrate that may occur in the Operational Area.

MODU station keeping (including activities associated with mooring and anchor hold testing), BOP tether system installation, wellhead cleaning and preparation, installation of mud mats, sediment relocation, temporary placement of wellheads on mud mats on seabed prior to recovery, equipment laydown, subsea transponders and ROV operations are likely to result in localised, short-term physical modification to the seabed and localised disturbance to soft sediments. Potentially leaving 0.5 m of well infrastructure in situ may alter hydrodynamic conditions and result in scouring and accretion or potentially result in the creation of a new benthic habitat.

Benthic habitats within the Operational Area consist of soft, unconsolidated sediments which host sparse assemblages of filter and deposit-feeding epifauna and infauna, as well as demersal fishes. These soft sediment habitats, and associated biological communities, are widely represented throughout the NWMR and are not considered to be of particular conservation significance (see Section 4.5). Discrete areas of hard substrate hosting sessile filter feeding communities may also be associated within the Ancient Coastline at the 125 m Depth Contour KEF, which overlaps the Operational Area.

ROV activities near the seabed, along with associated sediment relocation, may result in localised impacts to benthic biota due to elevated turbidity and the potential clogging of respiratory and feeding structures in filter-feeding organisms. However, any increase in turbidity is expected to be highly localised and short-term in nature, and therefore not anticipated to result in significant impacts to environmental receptors. This is particularly the case given the low density of benthic organisms at the water depths within the Operational Area.

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

KEFs

The Operational Area overlaps two KEFs: the ancient coastline at 125 m depth contour KEF and the Continental Slope Demersal Fish Communities KEF (Section 4.7). The ecological values of the KEFs are described in Appendix C. Within the Ancient Coastline KEF, several discrete areas of hard substrate exist, which play host to sessile filter feeding communities with studies suggesting these areas are may be present within the small overlap of the Operational Area (Section 4.7 and Table 4-3). Demersal fish associated with the Continental Slope Demersal Fish Communities KEF will likely avoid the immediate area of disturbance mostly associated with MODU anchoring due to

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the location of overlap with the Operational Area (Section 4.7). The NWS Province experiences naturally high episodic sediment resuspension due to events such as tidal movements and cyclones, and the biota in the region are adapted to such conditions.

The majority of suspended sediments from the activities described above are expected to be highly localised to the source. Based on the above assessment, ecological functions of the KEFs (submerged coastline providing areas of hard substrate, diverse biological assemblages, enhanced productivity) are not predicted to be impacted by seabed disturbance associated with the Petroleum Activity.

Submerged Cultural heritage

As described in Section 4.7, the Operational Area overlaps the Ancient Coastline at 125 m depth contour KEF and therefore, seabed disturbance may directly disturb a very small, localised area of the KEF where there is the potential that unidentified cultural features may exist. These may potentially be disturbed from removal of wellheads, placement of supporting equipment on the seabed or the operation of equipment near the seabed. As such, controls have been adopted to assist in the identification and management in cases where potential underwater cultural heritage may be identified. Assessments of the Operational Area, detailed in Section 4.9.1, have not identified any archaeological sites on the Ancient Landscape. Additionally, volcanic rock which may contain petroglyphs do not occur within the Operational Area. Review of the seabed survey data will be completed prior to activities which may include seabed contact.

Submerged archaeological sites have the potential to exist on the Ancient Landscape within the broader EMBA. However, given the EMBA is driven by an unplanned hydrocarbon release, it is not expected to impact the seabed or archaeological material on or within it. Therefore, there is no anticipated impact pathway to submerged archaeological sites in the broader EMBA from the Petroleum Activity.

Submerged Cultural features or heritage values identified through consultation with Traditional Custodians, such as submerged fish traps, are not expected to be impacted by activities resulting in seabed disturbance.

Four historical shipwrecks have been identified within the Operational Area (Section 4.9.1.8). Based on EPO 3, appropriate avoidance methods and management controls will been adopted to ensure underwater heritage values associated with these wrecks are protected and not impacted by seabed contact activities under the Petroleum Activity. Additional assessment is scheduled to occur prior to the activity commencing in order to confirm the specific location of these wrecks (C 3.3).

Cumulative impacts

Cumulative impacts in relation to other relevant petroleum activities (as described in Section 6.4) or concurrent activities under this EP are not predicted to occur as it is expected that any seabed disturbance associated with the Petroleum Activity will be spatially and temporally separated from impacts associated with other activities occurring within or adjacent the Operational Area.

Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[43]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
Legislation, codes and standards				
All temporary equipment is removed from the seabed at the completion of the Petroleum Activity.	F: Yes. CS: Minimal cost.	In accordance with OPGGS Act Section 572, all equipment is removed when no longer in use.	Control based on legislative requirements – must be adopted.	Yes **C 3.1**
Report any potential UCH finds to relevant stakeholders and authorities in accordance with the Unexpected Finds Procedure, *Underwater Cultural Heritage Act 2018* and the *Aboriginal and Torres Strait Islander Heritage Protection* (ATSIHP) *Act*.	F: Yes. CS: Minimal costs associated with reporting process.	Meets legislative requirements and community expectations.	Benefits outweigh cost/sacrifice.	Yes **C 3.2**

[43] *Qualitative measure*

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[43]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
Good practice				
Review of existing survey data by a suitably qualified maritime archaeologist to inform areas for laydown and/or installation of equipment that will cause new seabed disturbance to avoid or where not possible, minimise physical impacts to cultural heritage areas or prospective areas.	F: Yes. CS: Minimal costs associated with review of data and avoidance or minimisation options.	Review of data by suitably qualified maritime archaeologist will inform potential exclusion or avoidance areas for 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 2024c).	Benefits outweigh cost/sacrifice.	Yes **C 3.3**
Relevant vessel crew and ROV operators will be advised in an induction of the potential to encounter UCH and the requirement to follow the Unexpected Finds Procedure.	F: Yes. CS: Minimal cost.	Ensures workforce are suitably aware of legal and process requirements for managing cultural features and heritage values.	Benefits outweigh cost/sacrifice.	Yes **C 3.4**
Unexpected finds of potential Underwater Cultural Heritage sites/features, including First Nations UCH are managed in accordance with an Unexpected Finds Procedure set out in Section 7.2.3.	F: Yes. CS: Minimal costs associated with implementation of process.	Allows management of Unexpected Finds in accordance with legislative requirements, (including Underwater Cultural Heritage Guidance for Offshore Developments and the Guidelines to assessing and managing impacts to Underwater Cultural Heritage in Australian waters (DCCEEW 2024) under the *Underwater Cultural Heritage Act 2018*, expert advice and community expectations.	Benefits outweigh cost/sacrifice.	Yes **C 3.5**

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[43]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
Apply a 'living heritage[44]' 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.	Yes **C 3.6**
Project-specific Mooring Design Analysis will be performed.	F: Yes. CS: Additional costs associated with upgraded MODU mooring design.	The mooring design analysis determines the number and spread of anchors required based on sediment type and seabed topography, reducing the likelihood of anchor drag leading to seabed disturbance.	Benefits outweigh cost/sacrifice.	Yes **C 4.1**
Mooring systems (chains/wires and anchors) will be removed at the completion of the Petroleum Activity.	F: Yes. CS: Moderate cost.	Removal of infrastructure minimises potential long-term impacts to the seabed.	Benefits outweigh cost/sacrifice.	Yes **C 4.2**
Anchoring procedures to guide the setting of anchors and include: • Accurate positioning of anchors. • Prevention of excessive anchor wire drag on the seabed by ensuring sufficient tension is maintained during anchor running operations. • Anchoring equipment certification (winches, anchor wires and associated hardware). • Anchor installation as per mooring design analysis.	F: Yes. CS: Minimal cost, standard practice.	Anchoring procedures minimise seabed disturbance by ensuring anchors are accurately placed and tensioned to prevent dragging, while using certified equipment and following mooring design.	Benefits outweigh cost/sacrifice.	Yes **C 4.3**
Seabed infrastructure will be positioned within the planned footprint to reduce seabed disturbance.	F: Yes. CS: Minimal cost.	Proximity to other infrastructure already limits the laydown area of seabed infrastructure. The planned footprint is	Benefits outweigh cost/sacrifice.	Yes **C 4.4**

[44] 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

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[43]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
		designed to reduce seabed disturbance as much as practicable.		
Monitor inventory deployed to field and track removal of equipment during activity, and list residual infrastructure.	F: Yes. CS: Minimal cost. Standard practice.	Removing wet stored items will reduce the duration of impact.	Benefits outweigh cost/sacrifice.	Yes **C 4.5**
Environmental monitoring of the seabed prior to and following the Petroleum Activity to assess any impacts to seabed.	F: Yes CS: Significant. Monitoring of the seabed would have significant additional costs to obtain and analyse data with the spatial resolution to accurately assess changes to the seabed habitat.	Environmental monitoring would not result in any additional information about the seabed above what is provided by the Woodside mooring design analysis. Therefore, no additional reductions in likelihood or consequence would occur.	Control grossly disproportionate. Monitoring will not reduce the consequence or likelihood of any impacts to the seabed, and the cost associated with the level of monitoring required to accurately assess any impacts greatly outweighs the benefits gained. Although adoption of this control could be used to verify EPOs, alternative controls identified also allow demonstration that the environmental outcome has been met based on the nature of the activity (i.e. predictable impacts) and relatively low sensitivity of the area.	No
Use of cultural heritage monitors on vessels to oversee implementation of controls protecting cultural values.	F: No CS: Not feasible.	Vessels are POB constrained with no ability to facilitate additional personnel.	Not considered – control not feasible.	No
Professional judgement – Eliminate				
Do not complete MODU anchor hold test.	F: No. Anchor hold testing is a requirement for a moored MODU and it is not technically feasible for the MODU to use DP in the water	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)[43]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
	depth of the well location (up to about 130 m). Woodside has a demonstrated capacity to manage the environmental risks and impacts from mooring to a level that is ALARP and acceptable. CS: Not considered – control not feasible.			
Do not use ROV close to or on the seabed.	F: No. The use of ROVs (including work close to or occasionally landed on the seabed) is critical, as the ROV is the main tool used to guide and manipulate equipment during infrastructure removal activities. ROV usage is already limited only to that required to conduct the work effectively and safely. Due to visibility and operational issues, ROV work on or close to the seabed is avoided unless necessary. CS: Not assessed, control not feasible.	Not considered – control not feasible.	Not considered – control not feasible.	No
ROV survey before laydown of equipment on seabed.	F: Yes. CS: Time/cost associated with operating ROV survey and review of data.	The planned laydown area has previously been disturbed. An ROV conducting a survey prior to placing equipment on the seabed could identify any potential cultural heritage or prospective areas not identified during the archaeological review.	Recommendations from the desktop cultural heritage survey will be reviewed to determine the value of further controls (e.g. Additional surveys or avoidance).	No
Professional judgement – Substitute				
No additional controls identified.				
Professional judgement – Engineered Solution				
No additional controls identified.				
ALARP statement: On the basis of the assessment outcomes, use of the relevant tools appropriate to the decision type (i.e. Decision Type A; Section 2.3.4.2) and Woodside's criteria for demonstrating ALARP (Section 2.4.1), Woodside considers the				

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[43]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
adopted controls appropriate to manage potential impacts/risks associated with seabed disturbance. As no reasonably practicable additional/alternative controls were identified that would further reduce the impacts without disproportionate sacrifice, the impacts/risks are considered ALARP.				

Demonstration of acceptability
Acceptability statement: The impact/risk assessment has determined that, given the adopted controls, seabed disturbance may result in slight and low-level impact on environmental feature/s or area/s of low significance. Further opportunities to reduce the impact have been investigated above. On the basis of the assessment outcomes, use of the relevant tools appropriate to the decision type (i.e. Decision Type A; Section 2.3.4.2) and Woodside's criteria for demonstrating acceptability (Section 2.4.2), Woodside considers the adopted controls appropriate to manage the impacts/risks to be managed to a level that is broadly acceptable, and compliance with those controls demonstrates that the EPOs are met.

EPOs, EPS and MC			
EPO	***Controls***	***PS***	***MC***
EPO 3 No adverse impact to unexpected finds of Underwater Cultural Heritage[45] without a permit[46].	**C 3.1** All temporary equipment is removed from the seabed at the completion of the Petroleum Activity.	**PS 3.1** Temporary equipment is recovered from the seabed at the completion of the Petroleum Activity.	**MC 3.1.1** Records demonstrate that all temporary equipment intended to be recovered during the petroleum activity has been recovered.
EPO 3a Woodside will actively support Traditional Custodians' capacity for ongoing engagement and consultation for the purpose of avoiding impacts to cultural heritage values.	**C 3.2** Report any potential UCH finds to relevant stakeholders and authorities in accordance with the Unexpected Finds Procedure, *Underwater Cultural Heritage Act 2018* and the ATSIHP Act.	**PS 3.2** Report any finds of potential UCH in accordance with the Unexpected Finds Procedure (Section 7.2.3) including to the Australasian Underwater Cultural Heritage Database.	**MC 3.2.1** Records of potential UCH finds reported to relevant authorities and stakeholders.
	C 3.3 Review of existing survey data by a suitably qualified maritime archaeologist to inform areas for laydown and/or installation of equipment that will cause new seabed to avoid or where not possible, minimise physical impacts	**PS 3.3** Existing survey data reviewed by a suitably qualified maritime archaeologist to inform areas for seabed disturbance activities.	**MC 3.3.1** Records demonstrate review of existing archaeological data completed prior to commencement of seabed disturbance activities.

[45] Underwater Cultural Heritage is defined as any trace of human existence that has a cultural, historical or archaeological character and is located under water, in accordance with the UCH Act.

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

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EPOs, EPS and MC			
EPO	***Controls***	***PS***	***MC***
	to cultural heritage areas or prospective areas.		
	C 3.4 Relevant vessel crew and ROV operators will be advised in an induction of the potential to encounter UCH and the requirement to follow the Unexpected Finds Procedure.	**PS 3.4** Relevant vessel crew (including ROV operators) are made aware of the requirements of the Unexpected Finds Procedure through an induction.	**MC 3.4.1** Records demonstrate vessel crew are made aware of potential to encounter UCH.
	C 3.5 Unexpected finds of potential Underwater Cultural Heritage sites/features, including First Nations UCH are managed in accordance with an Unexpected Finds Procedure set out in Section 7.2.3.	**PS 3.5** In the event that an underwater cultural heritage site or feature is identified implement the Unexpected Finds Procedure set out in Section 7.2.3.In the event that an underwater cultural heritage site or feature is identified implement the Unexpected Finds Procedure set out in Section 7.2.3.	**MC 3.5.1** No non-compliance with the Unexpected Finds Procedure.
	C 3.6 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.	**PS 3.6.1** Woodside will continue to give voice to Traditional Custodians to identify interests, transmit information and express concern through ongoing consultation as identified in Section 4.9.1.	**MC 3.6.1** Records demonstrate Change Management and Management of Knowledge processes have been followed where new controls or management measures identified.
		PS 3.6.2 Woodside will assess and where deemed practicable implement appropriate cultural protocols when requested by Traditional Custodians.	**MC 3.6.2** Records demonstrate Woodside implemented cultural protocols where practicable as requested.
EPO 4 Seabed disturbance to be limited to planned activities and impacts described as part of the Petroleum Activity and will not occur	**C 4.1** Project-specific Mooring Design Analysis will be performed.	**PS 4.1** Seabed disturbance from MODU mooring limited to that required to ensure adequate MODU station keeping capacity.	**MC 4.1.1** Records demonstrate Mooring Design Analysis completed and implemented during anchor deployment.
	C 4.2	**PS 4.2**	**MC 4.2.1**

[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*

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EPOs, EPS and MC			
EPO	***Controls***	***PS***	***MC***
outside the Operational Area.	Mooring systems (chains/wires and anchors) will be removed at the completion of the Petroleum Activity.	Mooring systems (chains/wires and anchors) are removed at the completion of the Petroleum Activity.	Records demonstrate mooring system has been removed.
	C 4.3 Anchoring procedures to guide the setting of anchors and include: • Accurate positioning of anchors. • Prevention of excessive anchor wire drag on the seabed by ensuring sufficient tension is maintained during anchor running operations. • Anchoring equipment certification (winches, anchor wires and associated hardware). • Anchor installation as per mooring design analysis.	**PS 4.3** Anchoring is conducted as per the relevant anchoring procedure and mooring design analyses.	**MC 4.3.1** Records indicate anchoring procedures were followed.
	C 4.4 Seabed infrastructure will be positioned within the planned footprint to reduce seabed disturbance.	**PS 4.4** Laydown of equipment occurs within the planned footprint.	**MC 4.4.1** Records demonstrate equipment laydown within the planned footprint.
	C 4.5 Monitor inventory deployed to field and track removal of equipment during activity, and list residual infrastructure.	**PS 4.5** Any wet stored items will be tracked and removed from the seabed at the completion of the Petroleum Activity.	**MC 4.5.1** Surveys demonstrate wet stored items have been removed from the seabed.

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

Context		
Project vessels – Section 3.6 Helicopters – Section 3.7 Permanent plugging activities – Section 3.12	Protected species – Section 4.6	Stakeholder consultation – Section 5

Impact evaluation summary

Source of impact	***Environmental value potentially impacted***						***Evaluation*** •						
	Marine Sediment	Water Quality	Air Quality (incl Odour)	Ecosystems/Habitat	Species	Socio-economic	Decision Type	Consequence/Impact	Likelihood	Risk Rating	ALARP Tools	Acceptability	Outcome
Generation of acoustic signals from MODU (hybrid), project vessels, and helicopters during normal operations.					X		A	F	-	-	LCS GP PJ	Broadly Acceptable	EPO 5a, 5b
Generation of acoustic signals from DP systems on project vessels and MODU (hybrid).					X		A	F					
Generation of acoustic signals from P&A activities.					X		A	F					
Generation of acoustic signals from cutting equipment.					X		A	F					
Underwater and atmospheric noise from venting/flaring activities.					X		A	F					

Description of source of impact

Project vessels and the MODU will generate noise both in the air and underwater, due to the operation of thruster engines, propeller cavitation, plugging operations, on-board machinery, etc. These noises will contribute to and can exceed ambient noise levels, which typically range from around 90 to 120 dB re 1 µPa (root square mean sound pressure level (rms SPL)) (Cato and McCauley 2002, McCauley 2005). The following information describes the general expected source sound levels for the MODU and project vessels. The most significant noise source will be the operation of thruster engines while operating the DP systems on the MODU and project vessels.

The MODU and support vessels may remain within the Operational Area for up to seven months (refer to Section 3.5). Permanent P&A will take 10 to 60 days per well, and NWBM removal and/or isolation activity (Balnaves Deep-1) will take between 2 to 20 days. Well infrastructure for all exploration wells will be removed as soon as practicable once wells are permanently abandoned in accordance with applicable regulatory requirements.

Project vessels and MODU operation of dynamic positioning systems

Vessels will generate noise both in the air and underwater, due to the operation of thrusters, engines, propeller cavitation, etc. Vessels will use DP where propellers and thrusters are used to hold position, rather than anchoring in the Operational Area. Whilst the MODU has DP capability to maintain station keeping as required, the majority of the P&A activities are expected to be performed with the MODU secured via a mooring system. When moving between wells, the MODU will use DP and maintain active DP systems until the MODU is completely connected to the mooring system.

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The sound levels and frequencies generated by vessels vary with the size of the vessel, speed, engine type and the activity being undertaken. Vessels produce low frequency sound (i.e. below 1 kHz) from the operation of machinery, hydrodynamic flow sound around the hull and from propeller cavitation, which is typically the dominant source of sound (Ross 2013). Larger or more powerful vessels typically produce higher sound levels at lower frequencies than small vessels, although significant variation may be found among vessels within the same group (Jiménez-Arranz et al. 2020). 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 (Salgado Kent et al. 2016). The greatest sound levels are likely to be associated with vessels using DP thrusters to maintain position on station.

An overview of vessels proposed to be used for plug and abandonment and remediation activities are detailed in Section 3.6 and include a MODU, AHTSVs, general supply/support vessels and an IMR vessel.

Vessels will maintain DP for varying durations during the Petroleum Activity, depending on the activity being undertaken. A IMR or AHTSV vessel with ROV capabilities will be used to conduct removal of marine growth prior to the permanent plugging activity and IMR activities, set anchors and to cut and recover infrastructure following plugging activities. ISV and PSV will transport equipment and materials from port/staging areas to the Operational Area, and for general re-supply and support for the MODU.

Concurrent activities contributing to cumulative underwater noise levels during plug and abandonment and remediation activities have been assessed through commissioned noise modelling. This includes a routine and non-routine scenario (worst case scenario).

MODU operations (moored)

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

MODU Rig Anchor Release (RAR)

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

Cutting of well infrastructure

Additional noise from the cutting of the wellhead casing and conductors is likely to be generated. The casings and conductors will be cut at or below the mudline to enable wellhead recovery. Wellheads may be cut via mechanical internal cutting, AWJ, or external diamond wire saw.

Internal mechanical cutting is carried out using a hydraulic cutter deployed from the MODU. As the process occurs within the well structure, it generates minimal underwater noise. A field study at Naval Base Point Loma found that mechanical cutting noise was detectable, but minor compared to vessel noise, particularly from dynamic positioning (DP) operations (Naval Base Point Loma Naval Facilities Engineering Command Southwest 2018). Noise from this method is expected to attenuate rapidly and is unlikely to contribute significantly to cumulative underwater noise during the activity.

AWJ cutting and diamond wire saw cutting may also be used where internal mechanical cutting is not practicable. Any noise propagating from either AWJ cutting or diamond wire saw cutting of the wellhead casing and conductors is likely to attenuate to levels at, or close to, background ambient levels within less than 100 m of the source, with ambient levels being significantly elevated by the concurrent presence of a project vessel on DP directly above the wellhead location. As such, noise from the cutting of the casing and conductors is not expected to contribute noticeably to cumulative underwater noise levels during the operation.

Pangerc et al. (2016) described underwater sound measurements taken during diamond wire cutting of a 0.76 m conductor approximately 10 m above the seabed in about 80 m of water depth. The study found that the sound from the diamond wire cutting was not easily discernible above background noise levels at the closest recorder, located 100 m from the source. Where sound could be associated with the diamond wire cutting, it was primarily detectable above the background noise at higher acoustic frequencies, specifically, above approximately 5 kHz. The background noise was attributed to surface vessel activity, such as dynamic positioning. In a separate study, the United States Navy recorded underwater noise during diamond saw cutting of caissons as part of pile replacement works. They reported an average sound pressure level (SPL) for a single cutter at 136.1 to 141.4 dB SPL at 10m (Naval Base

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Point Loma Naval Facilities Engineering Command Southwest 2018).These findings further support the expectation that noise from casing and conductor cutting activities, including diamond wire saw and AWJ methods, would be limited in spatial extent and unlikely to add significantly to overall underwater noise levels generated during the activity.

Positioning equipment

Mooring may require an 8 to 12 point pre-laid mooring system at each well location, depending on the time of year. Moorings are typically placed in a radius around the well of up to approximately 3 km. Transponders may be required to inform anchor positioning. The expected frequency of the signal from transponders is 18 to 26 kHz with a source level of 196 dB re 1 µPa @ 1 m. Transmissions are not continuous but consist of short 'chirps' with a duration that ranges from 3 to 40 milliseconds. Transponders will not emit any sound when on standby and are planned to only actively emit sound for about six hours per well. When required for general positioning they will emit one chirp every five seconds (estimated to be required for four hours at a time). When required for precise positioning they will emit one chirp every second (estimated to be required for two hours at a time).

Helicopter transfers

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

Water has a very high acoustic impedance contrast compared to air, and the sea surface is a strong reflector of noise energy (i.e. very little noise energy generated above the sea surface crosses into and propagates below the sea surface (and vice versa) – the majority of the noise energy is reflected). The angle at which the sound path meets the surface influences the transmission of noise energy from the atmosphere through the sea surface, angles >13° from vertical being almost entirely reflected (Richardson et al. 1995). Given this, and the typical characteristics of helicopter flights within the Operational Area (duration, frequency, altitude and air speed), the opportunity for underwater noise levels to exceed the behavioural thresholds is not considered credible and is not assessed further in the impact assessment.

Flaring/venting

Flaring/venting of annulus gas during P&A activities will be relatively minor with ~1.5 MMscf of gas potentially flared per well. Only a very small fraction of the acoustic energy produced from flaring will transmit through the air/water boundary due to the surface of water acting as a reflective plane and a significant component of acoustic energy reflecting back into the air. The angle at which the sound path meets the surface (angle of incidence) influences the transmission of noise energy from the atmosphere through the sea surface; with angles ±>13° from vertical being almost entirely reflected (Richardson et al. 1995). It is not credible that airborne noise from flaring would add to levels of underwater noise emanating from the MODU, project vessels and positioning equipment. Accordingly, the potential impacts associated with noise produced during flaring is considered highly localised and not expected to result in any significant impacts to marine fauna.

Cumulative sound sources

As outlined in Section 3.9, if concurrent operations were to occur, up to three vessels supporting the MODU and one IMR vessel may be in the field at the same time based on:

- MODU.
- Up to three project vessels (AHTSVs and general supply/support vessels) and one IMR vessel.

Additional vessel presence will elevate noise levels, however, vessel noise is not likely to exceed levels estimated above and in the acoustic modelling scenarios.

Impact assessment

Environmental value(s) potentially impacted

Receptors

The Operational Area is located in waters ~120 to ~210 m deep. The fauna associated with this area are predominantly pelagic species of fish, with migratory species such as cetaceans, whale sharks and marine turtles seasonally present (Section 4.6.5). Noise interference is a key threat to cetaceans and marine turtles identified as potentially occurring within the Operational Area (Section 4.6). BIAs that overlap the Operational Area include:

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

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- An internesting buffer BIA and habitat critical to the survival for flatback turtles (Section 4.6.2), where turtles may be present year-round and have the potential to transit through the Operational Area.
- A pygmy blue whale migration BIA (Section 4.6.3). Pygmy blue whale individuals may occasionally transit the Operational Area during April to August and October to January during their seasonal migrations (Section 4.6.5).

In addition, a humpback whale BIA is located ~20 km south of the Operational Area, and migrating whales may be present between May and November.

A number of other protected species have been identified as potentially occurring within the Operational Area (Section 4.6) that may be impacted by acoustic emissions generated by the sources described above.

Potential impact of noise

Elevated underwater noise can affect marine fauna, including cetaceans, fish, turtles, sharks and rays, in three main ways (Richardson et al. 1995; Simmonds et al. 2004):

- by causing direct physical effects on hearing or other organs. Hearing loss may be temporary (temporary threshold shift [TTS]; referred to as auditory fatigue), or permanent, either in the form of permanent threshold shift (PTS) or other auditory injury (AINJ), resulting in tissue damage (Houser 2021, NMFS 2024), in the absence PTS)[48]
- by masking or interfering with other biologically important sounds (including vocal communication, echolocation, signals and sounds produced by predators or prey)
- through disturbance leading to behavioural changes or displacement from important areas (e.g. BIAs). The occurrence and intensity of disturbance is highly variable and depends on a range of factors relating to the animal and situation.

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

Sound propagation

Increasing the distance from the noise source results in the level of noise reducing, due primarily to the spreading of the sound energy with distance. The way that the noise spreads (geometrical divergence) depends upon several factors, such as water column depth, pressure, temperature gradients, and salinity, as well as surface and bottom conditions.

Acoustic modelling

To assess the potential magnitude and extent of impacts from underwater noise produced during the Petroleum Activity, Woodside commissioned modelling of sound propagation for both:

- routine operations (MODU and two AHTSV)
- non-routine operations (MODU, three AHTSV, and one IMR)

Estimated underwater acoustic levels are presented as SPL, and accumulated sound exposure levels are presented over a 24-hour period (SEL24h) for non-impulsive (continuous) noise sources. Modelling included animat modelling to provide a realistic representation of pygmy blue whale potential to exposure to noise generated from the Petroleum Activity.

Marine mammals

Marine mammals, particularly cetaceans, rely on sound for important life functions including communication, individual recognition, socialising, detecting predators and prey, navigation and reproduction (Weilgart 2007; Erbe et al. 2015, 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 (National Resource Council [NRC] 2003; Erbe 2012; Rolland et al. 2012).

The thresholds that could result in a behavioural response, temporary threshold shift (TTS) and permanent threshold shift (PTS) for cetaceans as a result of continuous and impulsive noise sources are presented in Table 6-2. These thresholds have been adopted by the United States NOAA, including updated thresholds for auditory injury which includes but is not limited to PTS, and TTS adopted in October 2024 (NMFS, 2014, 2018; 2024; NOAA,2019). The adopted thresholds are peer-reviewed and based on best data available, representing conservative internationally accepted and applied impact evaluation thresholds for continuous (non-impulsive) and impulsive sound sources.

[48] Recent updates to acoustic impact thresholds by NMFS (2024) and Accomando et al. (2025) use the term "auditory injury" rather than PTS, acknowledging that auditory injury may occur without PTS. The terms are used interchangeably in this report.

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Frequency-specific hearing sensitivity differs among marine mammals, influencing how they are affected by noise exposure. For the purposes of predicting the effects of noise exposure on different groups of cetaceans, humpback whales and other large mysticete (baleen) whales are categorised as low frequency (LF) cetaceans, while odontocetes (toothed whales and dolphins) are categorised as high frequency (HF) or very high frequency (VHF) cetaceans (Southall et al., 2019).

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

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

Hearing group	*Impulsive*					*Continuous*		
	PTS onset		*TTS onset*		*Behavioural response*	*PTS onset*	*TTS onset*	*Behavioural response*
	SEL24h	*PK*	*SEL24h*	*PK*	*SPL*	*SEL24h*	*SEL24h*	*SPL*
LF cetaceans	183	222	168	216	160	197	177	120
HF cetaceans	193	230	178	224	160	201	181	120
VHF cetaceans	159	202	144	196	160	181	161	120

Sources: PTS & TTS – NMFS (2024); Behavioural response – NOAA (2019).

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

Under the non-routine scenario (worst case scenario), predicted noise levels would drop below 120 dB re 1 µPa (behavioural response threshold for continuous noise sources) within 21.1 km of the source location. Under the SEL_{24h} TTS threshold criteria for LF cetaceans TTS onset could occur within 7.7 km under the same scenario. For LF cetaceans, the maximum distance to the PTS onset threshold was 300 m.

For HF cetaceans, TTS onset could occur ~630 m and PTS ~70 m for non-routine operations, while for VHF cetaceans, such as dwarf or pygmy sperm whales, TTS and PTS onset could occur at distances of up to 1.1 km and 110 m respectively.

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 location. Realistically, marine fauna would not stay in the same location or at the same range for 24-hours (Stroot et al. 2023). It is unlikely that PTS and TTS thresholds would be exceeded for most cetacean species given the known movement behaviour of cetaceans, including key migrating LF whale species such as pygmy blue whales or humpback whales that might occasionally transit through the Operational Area.

The results of the animat modelling predicted the maximum exposure range in the 95th percentile ($ER_{95\%}$) to SEL_{24h} thresholds for TTS was 250 m under the non-routine scenario. Between 11 and 19% of animats approaching within this range would be exposed above the TTS threshold. No PTS exposures were predicted for pygmy blue whales under the modelled scenarios. The maximum $ER_{95\%}$ to the behavioural response SPL threshold of 120 dB re 1 µPa was 9.92 km in the northbound scenario.

The modelling study was based on the MODU using DP, whilst the majority of the P&A activities will be conducted with the MODU moored and not under DP. Noise levels would therefore be expected to be lower than the modelled worst-case scenario for the majority of P&A activities. The times of highest risk of TTS impacts on pygmy blue whales are when the MODU is moving between wells, maintaining active DP systems until the MODU is completely connected to the mooring system.

Pygmy blue whales transiting through the area may deviate slightly from their migration route but can continue on their migration without any likely biologically significant impacts. The Operational Area is surrounded by open water, with no restrictions (e.g. shallow waters, embayments) to an animal's ability to avoid the activities. Potential behavioural disturbance to pygmy blue whales within the migration BIA is most likely to occur during migratory periods, with the highest likelihood of impacts occurring doing the peak northbound (April to July [peak: May and June]) and southbound (October to January [peak: November]) migratory seasons. However, as described in Section 4.6.3, the likelihood of encountering migrating or foraging pygmy blue whales is considered low.

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Based on the impact assessment and the adopted controls the potential for impacts from underwater noise is therefore not inconsistent with the requirements of the Conservation Management Plan for the Blue Whale (BWCMP) (Commonwealth of Australia 2015).

Transponders are the only source of impulsive noise planned during the activity. The typical frequencies of 18 to 26 kHz produced by the transponders are most audible to HF and VHF cetaceans, such as toothed whales and dolphins, rather than LF cetaceans, and the source levels (196 dB re 1 µPa at 1 m SPL) rapidly attenuate within a very short distance from the source, such that PTS or TTS are not considered credible. No impacts to Southern Right Whales and dugongs are expected to occur due to the distance of the Southern Right Whale BIA (> 190km) and the inshore habitat of dugong.

Impacts on marine mammals from noise generated by the Petroleum Activity, will be limited to temporary changes in behaviour and very low potential for TTS at the individual level.

Marine turtles

The Recovery Plan for Marine Turtles (Commonwealth of Australia, 2017) notes there is limited information available about the impact of noise on marine turtles and that the impact of noise on turtle stocks may vary depending on whether exposure is short (acute) or long-term (chronic). Marine turtles have a limited underwater hearing range, generally between 50 and 1,000 Hz, with peak sensitivity around 100 to 400 Hz (Bartol and Ketten 2006; Piniak et al. 2012, Finneran et al., 2017). Finneran et al. (2017) presented thresholds for turtle injury and hearing impairment from impulsive noise, considering both PK and frequency weighted SEL, while Accomando et al. (2025) revised thresholds for AINJ (PTS) and TTS for impulsive and continuous sound exposures using frequency weighted SEL Table 6-3. No data exists for PTS and TTS in sea turtles. Accomando et al. (2025) determined TTS onset by extrapolating data from freshwater turtles (averaged from 6 individuals, with a standard deviation of + 7.5 dB SEL). The PTS criterion was derived by adding 20 dB to the TTS criteria. There is therefore a considerable degree of uncertainty in the criteria applied and modelled distances for auditory responses are considered indicative only.

McCauley et al. (2000) observed the behavioural response of caged green and loggerhead turtles to impulsive sound (an approaching seismic airgun). For received levels above 166 dB re 1 µPa SPL, the turtles increased their swimming activity and above 175 dB re 1 µPa they began to behave erratically, which was interpreted as an agitated state. No quantitative (numerical) thresholds have been developed for behavioural effects from continuous sources (e.g., vessel noise) on marine turtles. However, Popper et al. (2014) propose qualitative impact criteria for near-field, intermediate and far-field exposures (Popper et al. 2014). The thresholds listed in Table 6-3. are considered appropriate for the assessment of impacts from impulsive and continuous acoustic discharges to marine turtles from the Petroleum Activity.

The only impulsive noise sources generated by the activity will be transponders used in positioning equipment. The expected signal frequency from transponders is 18 to- 26 kHz, which lies well outside marine turtle hearing range. As a result, acoustic signals from transponders are not expected to cause auditory impacts or behavioural disturbance to turtles.

Marine turtles could potentially experience PTS from vessel activity within 190 m. However, marine turtles within the Operational Area are expected to be transient, and unlikely to remain with 190 m of the vessels for 24-hours, therefore PTS thresholds are not expected to be reached.

There is potential for TTS to occur if a turtle remained within 5.72 km of the vessels for 24 hours during non-routine operations, or within 2.3 km during routine operations. Modelling was however based on the MODU using DP, whilst the majority of the P&A activities will be conducted with the MODU moored and not actively engaging DP thrusters. The highest risk of TTS impacts to marine turtles will occur when the MODU is moving between wells, and maintaining active DP systems until the MODU is completely connected to the mooring system or where DP systems activate, for example where the MODU moves beyond a certain zone of tolerance from its intended position. This activity will be infrequent and short term in nature. Noise levels are therefore be expected to be lower than the modelled scenarios for the majority of P&A activities.

Given the thresholds outlined in Table 6-3 and distances described above it is reasonable to expect that marine turtles may demonstrate avoidance or attraction behaviour to the noise generated by the Petroleum Activity. Based on Popper et al.'s (2014) qualitative impact criteria for behavioural effects from continuous noise sources (e.g., vessel noise), behavioural response could occur for turtles within tens to hundreds of metres of the vessels, with impacts expected to be localised and temporary.

The Operational Area is located near Barrow Island and the Montebello Islands, overlapping habitat critical to the survival of flatback turtles and an internesting BIA for flatback turtles.

Internesting flatback turtles can move up to 63 km away from their nesting site (Whittock et al. 2016a). However, a study by Whittock et al. (2016a) found tracked internesting flatback turtles remained in water <44 m deep. Further, habitat suitability modelling showed waters overlapping the Operational Area as having an absence of suitable habitat (Whittock et al., 2016a) for the flatback turtle. Peel et al. (2024), reported flatback turtles spend most of their time in waters <50 m deep and only 1% in waters deeper than 100 m. Given water depths in the Operational Area range from approximately 120 m to 210 m, it is considered unlikely that large numbers of internesting flatback turtles will be present during project activities and the risk of significant impact to turtles in critical habitat or the internesting BIA is considered low.

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Impacts to marine turtles are expected to be limited to localised, temporary behavioural disturbance. PTS is not expected as turtles are expected to be transient and are unlikely to stay within 190m of vessels for 24 hours. TTS is possible however is considered unlikely given impacts will only occur when the MODU is moving between wells which will be infrequent and short term.

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

Receptor	Impulsive					Continuous			
	AINJ		TTS		Behavioural disturbance	AINJ	TTS	Masking	Behaviour
	SEL24h	PK	SEL24h	PK	SPL	SEL24h	SEL24h		
Marine turtles	184	230	169	224	175	198	178	(N) High (I) High (F) Moderate	(N) Moderate (I) Moderate (F) Low

Source: AINJ and TTS thresholds – Accomando et al. (2025), SEL24h thresholds are frequency weighted; Behavioural disturbance threshold (impulsive) – McCauley et al. (2000); Behavioural and masking response thresholds (continuous) – Popper et al. (2014).

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

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

Table 6-4: Continuous sources – thresholds for fish

Receptor	Mortality and potential mortal injury	PTS	TTS	Masking	Behaviour
Type 1 Fish: no swim bladder	(N) Low (I) Low (F) Low	(N) Low (I) Low (F) Low	(N) Moderate (I) Low (F) Low	(N) High (I) High (F) Moderate	(N) Moderate (I) Moderate (F) Low
Type 2 Fish: swim bladder not involved in hearing	(N) Low (I) Low (F) Low	(N) Low (I) Low (F) Low	(N) Moderate (I) Low (F) Low	(N) High (I) High (F) Moderate	(N) Moderate (I) Moderate (F) Low
Type 3 Fish: swim bladder involving hearing	(N) Low (I) Low (F) Low	170 dB rms SPL for 48 hours	158 dB rms SPL for 12 hours	(N) High (I) High (F) High	(N) High (I) Moderate (F) Low

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

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

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None of the underwater noise sources associated with the Petroleum Activity are expected to result in mortality or recoverable injury to fish. Based on the modelling conducted, thresholds for recoverable injury and TTS for fish species with the swim bladder be reached within 40 m and 140 m of the sound sources, respectively. However, the fish must remain within those ranges for 48 h (recoverable injury) or 12 h (TTS) in order for these thresholds to be reached.

Pelagic fish species, including sharks and rays, may display behavioural responses, such as avoidance of the area, within close proximity of the vessels. While continuous noise levels associated with vessels may exceed recoverable injury and TTS thresholds for Type 3 species and for pelagic species, it is unlikely individuals will remain within areas of exceeded noise levels. The Operational Area is not known to be an important spawning or aggregation habitat for commercially caught targeted species. Therefore, no impacts to fish stocks are expected.

Transponders typically operate at frequencies between 18 to 26 kHz which are well outside the hearing frequency range of fish. Popper et al. (2014) do not identify any behavioural or injury thresholds associated with high-frequency sounds in this range, given fish auditory limitations. Therefore, no impacts are expected to occur from impulsive noise sources.

A whale shark foraging BIA overlaps the Operational Area (Section 4.6.1). As a cartilaginous fish lacking a swim bladder, whale sharks are categorised as a Type 1 fish. Type 1 fish are considered low risk of mortality or injury from continuous noise sources (Popper et al. 2014), with moderate risk of TTS for animals remaining in close proximity to the source. Given their mobility, even while foraging, it is unlikely individuals would remain within threshold distances and impacts to whale sharks foraging within the BIA are not expected.

Based on the above, impacts to fish, sharks and rays are expected to be limited to temporary behavioural disturbance not affecting species at a population level.

Cultural values and heritage

Through consultation and review of available literature (Section 4.9.1), Woodside understands that marine fauna that may be affected by noise emissions, such as marine mammals and turtles, are culturally important to Traditional Custodians. Traditional Custodians value these species both tangibly as well intangibly as they can be considered a resource or linked to songlines and dreaming stories. Traditional Custodians also have connection to many marine species through kinship and totemic systems; an individual may have obligation to care for a species to which they are kin. Traditional Custodians may also have a cultural obligation to care for the environmental values of Sea Country.

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

Whale species are subject of First Nations' increase ceremonies/rituals which are performed to enhance or maintain populations. As these Thalu ceremonies are performed to maintain and increase populations of marine species, it is considered that management applies at the species/population level and not to individuals. For example, the Thalu site on Murujuga which "brings in whales to beach" will continue to serve its purpose so long as whales continue to migrate through Mermaid Sound.

Related intangible cultural heritage may include the transmission of cultural knowledge about whales and whale behaviour, including birthing areas, whale communication and migratory patterns. Such cultural knowledge may be associated with various cultural functions and activities that support the social and economic life of a community (Fijn 2021). Inter-generational transmission of cultural knowledge (including songlines) relating to marine reptiles may be impacted where changes results in reduced sightings (e.g., through population decline, changes to migration routes or changes to migration season ality). This transfer of knowledge may be integral to managing a group's intangible cultural heritage (UNESCO 2003).

As described, potential impacts to marine fauna are predicted to be at an individual level. Impacts are not expected to occur to ecologically significant proportions of species populations, nor result in a decrease of the quality of the habitat such that the extent of these species is likely to decline. As such, cultural values and intangible cultural heritage associated with these species are expected to be maintained.

Cumulative impacts

Additional vessels associated with concurrent operations within the Operational Areas (refer to Section 3.9) will contribute noise into the marine environment; however, this is not expected to exceed levels already assessed above. Potential impacts to individuals are expected to be limited to temporary behavioural responses localised around vessels. Given the minor behavioural responses expected, localised area of potential impact, and that the MODU will be moored for the majority of P&A activities, the presence of multiple vessels within the Operational Areas does not increase the consequence rating of this impact.

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[49]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
Legislation, codes and standards				
EPBC Regulations 2000 – Part 8 Division 8.1 Interacting with cetaceans, including the following measures[50]: • Project vessels will not travel greater than 6 knots within 300 m of a cetacean. • 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 shows signs of being disturbed, project vessels will immediately withdraw from the caution zone at a constant speed of less than 6 knots.	F: Yes. CS: Minimal cost.	Implementation of these controls will not significantly reduce negligible impacts to marine fauna from underwater noise given outcomes of impact assessment.	Disproportionate – cost/sacrifice outweighs benefit to be gained. However, control has been adopted to minimise vessel collisions with marine fauna in Section 6.9.8.	Yes **C 5.1**
Good practice				
Vessel marine assurance process conducted prior to contracting vessels, to ensure suitability and compliance with Marine Order requirements.	F: Yes CS: Minimal cost. Standard practice.	Ensures safe interaction with other marine users by verifying vessel suitability and regulatory compliance before operations begin.	Benefits outweigh cost/sacrifice.	Yes **C 1.8**
Implement adaptive management procedure prior to: • Resupply vessel (PSV) moving alongside the MODU within the Operational Area, during daylight hours. • MODU departing well location (excludes kedging).	F: Yes. CS: Time/Cost associated with person used for observations. Schedule delays associated with waiting on pygmy blue whale activity to cease/move on.	Implementation of adaptive management where pygmy blue whales (or large unidentified whales) are observed means a new noise source (vessel) is not introduced while pygmy blue whales are sighted. Restricting the introduction of new noise sources when pygmy blue whale presence is detected could lower likelihood of disturbance to pygmy blue whales so as to not be inconsistent with the	Benefits outweigh cost/sacrifice.	Yes **C 5.2**

[49] Qualitative measure

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

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[49]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
		Blue Whale Conservation Management Plan.		
Implement speed limitations when safe to do so for MODU and IMR vessel within the Operational Area.	F: Yes CS: Minimal cost. Standard practice.	Implementation of controls for reduced vessel speed can potentially reduce the underwater noise footprint of a vessel.	Benefits outweigh cost/sacrifice. Good Practice.	Yes **C 5.3**
Project vessels will not travel greater than 6 knots within 250 m of a whale shark and not allow the vessel to approach closer than 30 m of a whale shark.	F: Yes. CS: Minimal cost. Standard practice.	Implementation of controls for reduced vessel speed around whale sharks can potentially reduce the underwater noise footprint of a vessel.	Legislative control for State waters. Benefits outweigh cost/sacrifice. Good Practice.	Yes **C 5.4**
Project vessels will not travel greater than 6 knots within 300m of a turtle (caution zone). If the turtle shows signs of being disturbed, vessels will immediately withdraw from the caution zone at a constant speed of less than 6 knots.	F: Yes CS: Minimal cost. Standard practice.	Implementation of controls for reduced vessel speed around turtles can potentially reduce the underwater noise footprint of a vessel.	Benefits outweigh cost/sacrifice. Good Practice.	Yes **C 5.5**
Stop or deviate from course if pygmy blue whale (or large unidentified whale) observed during entry of a hybrid/DP MODU and project vessels to the Operational Area.	F: Yes CS: Time/Cost associated with vessel moving and delay to activities which cannot be carried out without support vessel present and at required standby distance.	Can reduce cumulative noise and potential reduction in likelihood of impact to pygmy blue whales or other large unidentified whales.	Benefits outweigh cost/sacrifice. Good Practice.	Yes **C 5.6**
Flaring/venting, if required, is restricted to a duration necessary to perform the activity for well kill.	F: Yes. CS: Minimal cost. Standard practice.	Reduces noise emissions to the marine environment.	Benefits outweigh cost/sacrifice.	Yes **C 5.7**
The use of dedicated Marine Fauna Observers (MFOs) on project vessels for the duration of the Petroleum Activity to watch for whales and provide direction on and monitor compliance with Part 8 of the EPBC Act Regulations.	F: Yes. However, activity support vessel bridge crews already maintain a constant watch during operations in compliance with the Woodside Marine – Charterers Instructions, on the requirements of vessel and whale interactions. In the event of a cetacean (or other sensitive fauna) in close proximity to	Given that support vessel bridge crews already maintain a constant watch during operations, additional MFOs would not further reduce the likelihood or consequence of impact.	Disproportionate – cost/sacrifice outweighs benefit to be gained.	No

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[49]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
	project vessels, it is unlikely that DP (the most significant source of underwater noise expected during the Petroleum Activity) will be deactivated given it is a safety critical requirement for project vessels to hold station. As such, an MFO implementing management/shut down zones is considered to be ineffective. CS: Additional cost of MFOs.			
Professional judgement – Eliminate				
Remove activity support vessel on standby at the Petroleum Activity location.	F: No. Activity support vessel required for safety reasons, particularly for maintaining the 500 m exclusion zone around the MODU or vessel engaged in P&A activities. CS: Not considered – control not feasible.	Not considered – control not feasible.	Not considered – control not feasible.	No
Elimination of noise from the project vessels (including MODU and project vessels), positioning transponders, helicopters or flaring.	F: No. The generation of noise from these sources cannot be eliminated due to operating requirements. Note: Operating vessels on DP may be a safety critical requirement. CS: Inability to conduct the Petroleum Activity. Loss of project.	Not considered – control not feasible.	Not considered – control not feasible.	No
Professional judgement – Substitute				
Avoid peak migration periods for migratory cetaceans.	F: Yes. Migration periods for cetaceans that may occur in the Operational Area (pygmy blue whales) are well known. CS: Potentially significant. Woodside has not finalised the schedule for the Petroleum Activity, and some activities may be	Avoiding migration periods would reduce the likelihood of impacts to cetaceans. However, given that the predicted impacts from noise sources associated with the Petroleum Activity are considered to be minor, the overall benefit is minimal.	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)[49]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
	undertaken on an opportunistic basis and in succession to one another while a vessel is available. Precluding operations during cetacean migration periods may impose a considerable cost and operational burden, while resulting in little environmental benefit.			
Professional judgement – Engineered Solution				
No additional controls identified.				
ALARP statement: On the basis of the assessment outcomes, use of the relevant tools appropriate to the decision type (i.e. Decision Type A; Section 2.3.4.2) and Woodside's criteria for demonstrating ALARP (Section 2.4.1), Woodside considers the adopted controls appropriate to manage potential impacts/risks associated with routine acoustic emissions. As no reasonably practicable additional/alternative controls were identified that would further reduce the impacts without disproportionate sacrifice, the impacts/risks are considered ALARP.				

Demonstration of acceptability
Acceptability statement: The impact/risk assessment has determined that, given the adopted controls, routine acoustic emissions are expected to have no lasting effect, with localised impact not significant to environmental receptors. The impacts are consistent with good oil-field practice/industry best practice. On the basis of the assessment outcomes, use of the relevant tools appropriate to the decision type (i.e. Decision Type A; Section 2.3.4.2) and Woodside's criteria for demonstrating acceptability (Section 2.4.2), Woodside considers that the adopted controls are appropriate to manage impacts/risks to a level that is broadly acceptable, and that compliance with those controls demonstrates that the EPOs are met.

EPOs, EPS and MC			
EPO	***Controls***	***PS***	***MC***
EPO 5a No injury of, or mortality to, *EPBC Act 1999* and *WA Biodiversity Conservation Act 2016* listed marine fauna as a result of noise generated by the Petroleum Activity.	**C 5.1** EPBC Regulations 2000 – Part 8 Division 8.1 Interacting with cetaceans, including the following measures: • Project vessels will not travel greater than 6	**PS 5.1.1** Compliance with EPBC Regulations 2000 – Part 8 Division 8.1 (Regulations 8.05 and 8.06) Interacting with cetaceans to manage the risk of fauna collision.	**MC 5.1.1** Records demonstrate no breaches of EPBC Regulations 2000 – Part 8 Division 8.1 Interacting with cetaceans and application of these regulations to whale sharks.

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EPOs, EPS and MC			
EPO	***Controls***	***PS***	***MC***
EPO 5b Ensure biologically important behaviour can continue for marine turtles during nesting/breeding (including internesting periods for turtles) in biologically important areas.	knots within 300 m of a cetacean. • 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 shows signs of being disturbed, project vessels will immediately withdraw from the caution zone at a constant speed of less than 6 knots.		**MC 5.1.2** Records demonstrate reporting cetacean ship strike incidents to the DCCEEW.
	C 1.8 Refer to Section 6.8.1	**PS 1.8** Refer to Section 6.8.1	**MC 1.8.1** Refer to Section 6.8.1
	C 5.2 Implement adaptive management procedure prior to: • Resupply vessel (PSV) moving alongside the MODU within the Operational Area, during daylight hours. • MODU departing well location (excludes kedging).	**PS 5.2** Implement adaptive management procedure during daylight hours. Adaptive management procedure to include: • Trained crew as marine fauna observers monitor for pygmy blue whales or large unidentified whales for 30 minutes prior to: – resupply vessel moves alongside the MODU within the Operational Area. – MODU departing well location (excludes kedging). Proceed with move only when no pygmy blue whales or large unidentified whales have been sighted, to the limits of visibility, over the 30-minute monitoring period.	**MC 5.2.1** Records demonstrate crew acting as marine fauna observers receive suitable training in detecting marine fauna, including cetaceans, whale sharks and turtles. **MC 5.2.2** Records demonstrate trained crew on watch prior to resupply vessel moves alongside the MODU or MODU departs well location. **MC 5.2.3** Records demonstrate when pygmy blue whale, or large unidentified whale are present, resupply activities moves have not commenced and/or MODU did not depart well location.
	C 5.3 Implement speed limitations when safe to do so for MODU and IMR vessel within the Operational Area.	**PS 5.3** Vessel speed limitations (6 knots) adhered to by MODU and IMR vessel while in the Operational Area, within the limits of navigational safety.	**MC 5.3.1** Records show MODU and IMR vessel travelled at or below 6 knots within the Operational Area, within the limits of navigational safety.

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EPOs, EPS and MC			
EPO	***Controls***	***PS***	***MC***
	C 5.4 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	**PS 5.4** When within 250 m of a whale shark, vessels will not travel greater than 8 knots and vessels will not approach closer than 30 m to a whale shark.	**MC 5.4.1** Records demonstrate no breaches of speed requirements when within 250 m of a whale shark.
	C 5.5 Project vessels will not travel greater than 6 knots within 300m of a turtle (caution zone). If the turtle shows signs of being disturbed, vessels will immediately withdraw from the caution zone at a constant speed of less than 6 knots.	**PS 5.5** When within 300 m of a turtle, vessels will not travel greater than 6 knots.	**MC 5.5.1** Records demonstrate no breaches of speed requirements when within 300 m of a turtle.
	C 5.6 Stop or deviate from course if pygmy blue whale (or large unidentified whale) observed during entry of a hybrid/DP MODU and project vessel/s to the Operational Area.	**PS 5.6** MODU (if DP or hybrid and under own propulsion)/project vessel/s stops or deviates from course if pygmy blue whale (or large unidentified whale) observed during entry to the Operational Area.	**MC 5.6.1** Records show hybrid/DP MODU and/or project vessel/s stopped or deviated if pygmy blue whale (or large unidentified whale) observed during entry to the Operational Area.
	C 5.7 Flaring/venting, if required, is restricted to a duration necessary to perform the activity for well kill.	**PS 5.7** Flaring restricted to a duration necessary to perform the activity for well kill.	**MC 5.7.1** Records demonstrate flaring was restricted to a duration necessary to perform the activity for well kill.

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6.8.4 Routine light emissions: External lighting on MODU, project vessels and flaring

Context		
Project vessels – Section 3.6 Permanent plugging activities – Section 3.12	Habitats and biological communities – Section 4.5 Protected species – Section 4.6 Socio-economic environment – Section 4.9 Cultural values and heritage – Section 4.9.1	Stakeholder consultation – Section 5

Impact evaluation summary

Source of impact	***Environmental value potentially impacted***						***Evaluation***						
	Marine Sediment	Water Quality	Air Quality (incl Odour)	Ecosystems/Habitat	Species	Socio-economic	Decision Type	Consequence/Impact	Likelihood	Risk Rating	ALARP Tools	Acceptability	Outcome
External light emissions onboard MODU and project vessels.				X	X	X	A	F	-	-	GP PJ	Broadly Acceptable	EPO 6a, 6b, 6c
Light emissions from MODU operations-flaring.				X	X	X	A	F					

Description of source of impact

Light emissions onboard MODU and project vessels

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

The vessels/MODU that may be required for the Petroleum Activity are outlined in Section 3.6. External lighting is located on vessel/MODU decks, with most external lighting directed towards working areas such as the main decks. These areas are typically <20 m above sea level for vessels, and ~30 m for MODUs. Indicative timing for activities is provided in Section 3.5 and may occur throughout the year.

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

Light emissions – flaring

Flaring, which is a relatively bright light source, may be necessary for short periods of time during permanent plugging of wells (Section 3.13.2). Flaring of gas or liquids during the Petroleum Activity is contingency only as hydrocarbons in the wells requiring abandonment are only expected in the event that the pre-existing cement plug has not formed an effective barrier. In the event that well kill is required, and fluids are not bullheaded back into wells, minor volumes of hydrocarbons may be bled off to the MODU. If bullheading is not successful, any residual gas may also be flared. Flaring is for a limited duration as it is constrained by the volume of gas/liquids in the annulus and well bore. It is estimated that there would be a maximum of 1,080 minutes (~18 hours) of flaring. Flaring will only be at low flow rates,

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unlike unload operations, and would take place during both daytime and nighttime. Hence, the duration of any flaring events (if they occur) during nighttime would be very limited.

Cumulative impacts

Cumulative impacts from light sources may occur during the Petroleum Activity where vessel-based preparatory activities may overlap with MODU mobilisation and the commencement of plugging activities within the Operational Area (refer to Section 3.8).

There is also potential for cumulative light sources to occur from flaring, IMR activities and project vessel lighting from other petroleum activities in proximity to licence WA-49-L. Infrastructure in the vicinity includes the Pluto, Wheatstone, John Brookes and Wonnich platforms (collectively within 50 km from the Operational Area) which may result in slightly elevated ambient light levels.

Impact assessment

Environmental value(s) potentially impacted

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

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

Light emissions can affect fauna in two main ways:

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

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

Marine turtles

Hatchlings

Turtle hatchlings emerge from the nest and orient towards the sea. After entering the water, hatchlings use a combination of cues (wave direction and currents) to orient and travel into offshore waters. Impacts to the sea-finding behaviour of hatchlings are more common for light sources behind a beach, as lighting offshore will orient emerging hatchlings towards the sea. Artificial light at close distances can also impact hatchling dispersal once they are in the water. Light spill may ‘entrap’ hatchling swimming behaviour, reducing the success of their seaward dispersion and potentially increasing their exposure to predators via silhouetting (Salmon et al. 1992; Wilson et al. 2018).

The Operational Area overlaps one Habitat Critical for the Survival of the flatback turtle, with the Montebello Islands, about 41 km south-east of the Operational Area (for green, loggerhead and hawksbill turtles). The distance between the most significant light source on the MODU (flare boom) and the edge of visibility, or the visible horizon, was calculated using a manual calculation that takes atmospheric refraction into consideration (Young’s method) as expressed by the formula $d = 3.86\sqrt{h}$, where ‘d’ is the distance to the visible horizon, and ‘h’ is the light source height in metres. For a flare boom height of 32 m (maximum likely for potential MODUs that could be contracted for the Petroleum Activity), the distance to the visible horizon is ~22 km – i.e. anything beyond this distance is below the horizon and direct light would not be visible. Sky glow (particularly from flaring) is also unlikely to be visible at the closest nesting locations resulting in no behavioural impact (i.e. not biologically relevant). External lighting on vessels is typically lower than MODU lighting, with vessel lighting usually reduced to improve night vision of bridge crew.

Since the Operational Area is located ~43 km from turtle nesting beaches in the Montebello Islands, the risk of significant numbers of dispersing hatchlings becoming attracted to direct light or sky glow from project vessels/MODU is not considered credible. At this distance the density of dispersing hatchlings is expected to be low and very few individuals will be at risk of attraction. For any isolated individuals potentially attracted to light spill from project vessels/MODU, following sunrise, any effect of these light sources on hatchlings will be eliminated allowing dispersal behaviour to resume.

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

Adults

Artificial lighting may affect the location that turtles emerge to the beach, the success of nest construction, whether nesting is abandoned, and even the seaward return of adults (Salmon et al. 1995a, 1995b; Salmon and Witherington 1995; Price et al. 2018). However, such lighting is typically from residential and industrial development overlapping the coastline, rather than offshore from nesting beaches The Operational Area overlaps the internesting BIA and the 'internesting habitat critical for the survival of the species' for flatback turtles. Internesting flatback turtles favour depths of <25 m, and foraging flatback turtles have been found to occur in waters shallower than 130 m (Whittock et al. 2016a, 2016b). Given the water depths of the Operational Area (~120 to 210 m), foraging flatback turtles may occur in the Operational Area but not in significant numbers given their preference for shallower waters. Individual turtles migrating or mating may occur within or adjacent to the Operational Area, marine turtles do not use light cues to guide these behaviours. As such, light emissions from the vessels are unlikely to result in more than short-term, negligible behavioural disturbance to isolated transient individuals with no lasting effect. Short-term light emissions from the MODU/vessels are unlikely to result in displacement of adult turtles from internesting habitat, or important behaviours for nesting adult turtles. It is acknowledged that marine turtles may be present transiting the Operational Area in low densities, however light cues aren't used to guide this behaviour.

Seabirds

Artificial lighting can attract and disorient seabird species resulting in species behavioural changes (e.g. circling light sources or disrupted foraging), injury or mortality near the light source as a result of collision (Longcore and Rich 2004; Gaston et al. 2014). The Operational Area may be occasionally visited by seabirds and migratory shorebirds. There is no emergent land that could be used for roosting or nesting habitat in the Operational Area. The nearest emergent land that could be used for roosting or nesting habitat is the Montebello Islands (~41 km from the Operational Area).

One BIA for wedge-tailed shearwater breeding overlaps the Operational Area, with the breeding period occurring from August to April (Section 4.6.4). Adult shearwaters are vulnerable to artificial lighting during the breeding cycle, when returning to and leaving the nesting colony to maintain nesting sites or forage. Foraging wedge-tailed shearwaters may be attracted to sources of light emissions to feed on fish drawn to the light, however, the species feeds predominantly during the day (Catry et al. 2009). Migratory shorebirds may be present in or fly through the region between July and December, and again between March and April as they complete migrations between Australia and offshore locations (CoA 2015). The risk associated with collision from seabirds or migratory shorebirds attracted to artificial lighting is considered to be low, impacts are expected to be limited to localised behavioural disturbance to isolated individuals, with no displacement from important habitat.

The most vulnerable life stages for seabirds and migratory shorebirds are nesting adults or fledglings. Nesting or fledgling seabirds and migratory shorebirds are vulnerable to artificial lighting within 20 km of the nesting location (CoA 2020a). For shearwater species, fledglings are predominantly impacted by onshore lighting sources, which can override sea finding cues and attract fledglings further inland, preventing them from reaching the sea (Mitkus et al. 2018; Telfer et al. 1987). Artificial light can also impact important behaviour of nesting adults (e.g. adult nest attendance, maintaining nest sites) or confuse shearwater species, resulting in injury or mortality as a result of birds colliding with structures (Cianchetti-Benedetti et al. 2018; Rodriguez et al. 2017). Woodside will implement the Offshore Seabird Management Plan (SBMP) as described in Section 7.2.4 to reduce the likelihood and consequence of interactions with nocturnal seabird species. As the Operational Area is over 40 km from the nearest emergent land, impacts to adult nesting or fledgling seabirds and migratory shorebirds are not expected. Artificial light from the Petroleum Activity is not predicted to disrupt critical breeding behaviours within important nesting habitat or displace seabirds from nesting habitat.

Fish

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

Marine Mammals

A BIA for pygmy blue whale migration overlaps the Operational Area, however artificial light is not known to influence any biologically critical whale behaviours. Krill, plankton and/or fish may aggregate around the source of light. These aggregations would be confined to a small area and would only occur when the ROV is in use. Based on the short duration and localised nature of the Petroleum Activity, these aggregations are not expected to attract pygmy blue whales.

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Cultural values and heritage

Through consultation and review of available literature (Section 4.9.1), Woodside understands that marine fauna that may be affected by light emissions, such as turtles, birds, and plankton, are culturally important to Traditional Custodians. Turtles and their eggs have been identified through consultation and existing literature as an important resource, particularly as food sources. Traditional Custodians also have connection to many marine species through kinship and totemic systems; an individual may have obligation to care for a species to which they are kin. Traditional Custodians may also have a cultural obligation to care for the environmental values of Sea Country. 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 identified as components of a songline are important to protect, as their disturbance or loss could fragment the songline and lead to the erosion of sacred cultural knowledge. It is noted that oil and gas infrastructure exists in many areas of the North West Shelf, and that songlines are still acknowledged and recognised. 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. Intangible cultural heritage may also include the transmission of cultural knowledge about marine reptiles, such as nesting areas, hunting areas and migratory patterns. Cultural knowledge may also be conveyed through stories, such as the turtle being trapped in the sea as a result of its greed for berries as recounted by Capewell (2020). Such cultural knowledge may be associated with various cultural functions and activities that support the social and economic life of a community (Fijn 2021). 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) will be impacted where there is an impact at the species/population level.

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. 2018:251). Inter-generational transmission of cultural knowledge (including songlines) relating to marine reptiles may be impacted where changes to population or behaviour results in reduced sightings (e.g. through population decline, changes to migration routes or changes to migration seasonality). This transfer of knowledge may be integral to managing a group's intangible cultural heritage (UNESCO 2003). As described in the above impact assessment, potential impacts to marine reptiles resulting from light emissions are estimated to have no lasting effect on hatchlings or adult turtles 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.

Seabird species such as ospreys, as well as seabirds from the shag (*Gulosus* spp.) and seagull (*Larinae* spp.) family, have been identified through literature as a culturally significant feature (MAC 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 considered impacted where an impact occurs 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 above impact assessment, potential impacts to seabirds resulting from light emissions is not predicated to displace seabirds or disrupt critical breeding behaviours. Further, the risk associated with collision from seabirds or migratory shorebirds attracted to artificial lighting is considered to be low, impacts are expected to be limited to localised behavioural disturbance to isolated individuals, with no displacement from important habitat.

Based on the above cultural values and intangible cultural heritage associated with these marine reptiles and seabirds are expected to be maintained.

Cumulative impacts

There is potential for cumulative light impacts to occur where preparatory activities overlap with MODU mobilisation and the commencement of plugging and abandonment activities within the Operational Area (refer to Section 3.4). There is also potential for nearby infrastructure and associated activities to result in slightly elevated ambient light levels. The cumulative impact is likely to be no lasting effect, due to the low light intensities of the vessel navigational lighting, MODU and facility lighting, short and intermittent nature of the impact, and is not anticipated to adversely affect any sensitive receptors.

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)***[51]	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
Legislation, codes and standards				
No additional controls identified.				
Good practice				
Lighting will be limited to the minimum required for navigational and safety requirements, with the exception of emergency events.	F: Yes. Lighting is typically appropriate for navigation and safety. CS: Minimal cost sacrifice – usual mode of operation.	Limiting light during the Petroleum Activity will minimise potential for light attraction and vessel interaction with seabirds.	While the control does not result in reduction of impacts, it is good practice and not at significant cost.	Yes **C 6.1**
Implement the Offshore SBMP to reduce the likelihood and consequence of interactions with nocturnal seabird species.	F: Yes; however, a minimum level of lighting is required on vessels for safety. CS: Costs associated with implementation.	Implementation of the Frontline Offshore SBMP, particularly the adaptive management framework, will ensure population level impacts to nocturnal seabirds will not occur.	Benefit outweighs cost, given the low costs in implementation and potential benefits in providing certainty that population level impacts to nocturnal seabirds will not occur.	Yes **C 6.2**
Flaring/venting, if required, is restricted to a duration necessary to perform the activity for well kill.	F: Yes. CS: Minimal cost. Standard practice for Woodside activities.	Reduces the likelihood of change in fauna behaviour as a result of light source emissions. Consequence remains unchanged.	Benefits outweigh cost/sacrifice.	Yes **C 5.7**
Apply a 'living heritage[52]' 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.	Yes **C 3.6**

[51] *Qualitative measure*

[52] *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*

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)***[51]	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
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 to an acceptable level supports the maintenance of cultural features and heritage values.	Benefits outweigh cost/sacrifice.	Yes **C 6.3**
Professional judgement – Eliminate				
No use of external lighting during Petroleum Activity.	F: No. Light management will be consistent with that required to provide a safe working environment onboard MODU and project vessels. CS: Not considered – control not feasible.	Not considered – control not feasible.	Not considered – control not feasible.	No
Restrict the Petroleum Activity to daylight hours, eliminating the need for external work lights.	F: Yes. Restricting the Petroleum Activity to daylight hours is technically feasible, although not considered to be reasonably practicable. CS: Significant cost sacrifice. Limiting the Petroleum Activity to daylight hours would significantly increase the duration of the Petroleum Activity and therefore result in additional impacts from other sources (such as interference with other marine users, noise, vessel discharges, or potential for unplanned risks.	Negligible reduction in consequence, given the duration and nature of the activity.	Grossly disproportionate. Implementation of the control requires considerable cost sacrifice for minimal environmental benefit.	No
Substitute external lighting with light sources designed to minimise impacts to seabirds (as per NLPG 2023 management actions): • Use flashing or intermittent lights instead of fixed beam. • Use motion sensors to turn lights on only when needed.	F: Yes. Replacement of external lighting with lighting appropriate for turtles is technically feasible, although is not considered to be practicable. CS: Significant cost sacrifice. The retrofitting of all external lighting on vessels would result in considerable cost and	Given the potential impacts to turtles, nesting seabirds and fledglings during this activity are insignificant, implementation of this control would not result in a reduction in consequence. Potential for minor reduction in impact to individual foraging seabirds that may	Grossly disproportionate. Implementation of the control requires considerable cost sacrifice for minimal environmental benefit.	No

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)***[51]	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
• Use luminaires with spectral content appropriate for the species present. Avoid high-intensity light of any colour.	time expenditure. Considerable logistical effort to source sufficient inventory of the range of light types.	transit the Operational Area, as outlined in the NLPG.	The cost/sacrifice outweighs the benefit gained.	
No flaring during Petroleum Program activities.	F: No. While not a routine activity, the ability to flare hydrocarbons is a safety critical requirement on-board the facility. Flaring will only occur for a limited duration as it is constrained by the volume of gas/liquids in the annulus and well bore. CS: Not considered – control not feasible.	Not considered – control not feasible.	Not considered – control not feasible.	No
Professional judgement – Substitute				
No additional controls identified.				
Professional judgement – Engineered Solution				
No additional controls identified.				
ALARP statement: On the basis of the assessment outcomes, use of the relevant tools appropriate to the decision type (i.e. Decision Type A; Section 2.3.4.2) and Woodside's criteria for demonstrating ALARP (Section 2.4.1), Woodside considers the adopted controls appropriate to manage potential impacts/risks associated with routine light emissions. As no reasonably practicable additional/alternative controls were identified that would further reduce the impacts without disproportionate sacrifice, the impacts/risks are considered ALARP.				

Demonstration of acceptability
Acceptability statement: The impact/risk assessment has determined that, given the adopted controls, routine light emissions from external lighting on the MODU and vessels will have no lasting effect on environmental feature/s or area/s. Regard has been given to relevant conservation advice and wildlife conservation plans during the assessment of potential impacts and the NLPG were taken into consideration during the impact evaluation. No concerns or objections regarding light emissions from project vessels have been raised by relevant persons. However, marine species such as turtles and plankton have been identified, during consultation for this EP as well as for other Woodside activities, as a cultural value for Traditional Custodians. Given impacts will be temporary and localised behavioural disturbance to individuals and no impacts on a population level will occur, cultural values and intangible cultural heritage associated with these species are expected to be maintained. On the basis of the assessment outcomes, use of the relevant tools appropriate to the decision type (i.e. Decision Type A; Section 2.3.4.2) and Woodside's criteria for demonstrating acceptability (Section 2.4.2), Woodside considers that the adopted controls are appropriate to manage impacts/risks to a level that is broadly acceptable, and that compliance with those controls demonstrates that the EPOs are met.

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EPOs, EPS and MC			
EPO	***Controls***	***PS***	***MC***
EPO 6a No impacts to marine fauna greater than that caused by minimum required light emissions for safe work/navigation.	**C 6.1** Lighting will be limited to the minimum required for navigational and safety requirements, with the exception of emergency events.	**PS 6.1** Lighting limited to that required for safe work/navigation.	**MC 6.1.1** Inspection verifies no excessive light being used beyond that required for safe work/navigation.
EPO 6b No displacement of marine turtles from habitat critical during nesting and internesting periods and marine turtles' biologically important behaviour can continue in biologically important areas. **EPO 6c** No adverse effects greater than a change to behaviour, with no lasting effect to seabirds from artificial light emissions during the Petroleum Activity.	**C 6.2** Implement the Offshore SBMP to reduce the likelihood and consequence of interactions with nocturnal seabird species.	**PS 6.2** Implementation of the Offshore SBMP 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.	**MC 6.2.1** Records demonstrate Frontline Offshore SBMP implemented through: • Records of avifauna interactions in accordance with the Offshore SBMP. • Records of Regulatory reporting of seabird deaths associated with the Petroleum Activity as required by the Offshore SBMPs.
	C 6.3 The environmental impacts and risks of the activity will continue to be managed to ALARP and an acceptable level for cultural features and heritage values.	**PS 6.3** 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 6.3.1** Records demonstrate Change Management and Management of Knowledge processes have been followed where new controls or management measures identified.
	C 5.7 Refer to Section 6.8.3	**PS 5.7** Refer to Section 6.8.3	**MC 5.7.1** Refer to Section 6.8.3

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EPOs, EPS and MC			
EPO	***Controls***	***PS***	***MC***
	C 3.6 Refer to Section 6.8.2	**PS 3.6** Refer to Section 6.8.2	**MC 3.6.1** Refer to Section 6.8.2

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6.8.5 Routine and non-routine atmospheric and greenhouse gas emissions

Context		
Project vessels – Section 3.6 Permanent plugging activities – Section 3.12	Socio-economic environment – Section 4.9	Stakeholder consultation – Section 5

Impact evaluation summary

Source of impact	*Environmental value potentially impacted*						*Evaluation* •						
	Marine Sediment	Water Quality	Air Quality (incl Odour)	Ecosystems/Habitat	Species	Socio-economic	Decision Type	Consequence/Impact	Likelihood	Risk Rating	ALARP Tools	Acceptability	Outcome
Atmospheric emissions from flaring or cold venting, fuel combustion and power generation.			X				A	F	-	-	LCS GP PJ	Broadly Acceptable	EPO 7

Description of source of impact

Internal combustion engines and incinerators

Atmospheric emissions will be generated by the MODU, project vessels and helicopters from internal combustion engines (including all equipment and generators, which may be diesel powered and/or LNG powered) and incineration activities (including onboard incinerators). The MODU and project vessels will use marine diesel oil to power vessel engines, waste incinerators, generators and mobile and fixed plant and equipment for the duration of the Petroleum Activity. Emissions associated with these operations will include SO_2, NO_x, ozone depleting substances, CO_2, particulates and volatile organic compounds (VOCs).

The Petroleum Activity is estimated to be completed between three and seven months, and when underway, activities will be 24 hours per day, seven days per week. A hybrid MODU may be used for the P&A campaign resulting in less fuel needed for station keeping if primarily moored, however dynamic positioning may be used in the event of adverse weather conditions. The MODU will be accompanied by at least one, but up to three, project vessels. Support vessels with dynamic positioning capability will primarily be used to deploy and recover anchors, towing and supply, but may perform other duties as required.

Based on fuel consumption information from a previous Woodside campaign using a MODU on DP semi-submersible (DPS-1), as well as expected activity duration plus mobilisation, it is estimated that a DP MODU could consume up to approximately 50 t/d when compared to similar scenarios, however this is considered a conservative estimate. Based on historical data and indicative activity durations provided in Section 3.5, Table 3-3, approximately 8,250 tonnes of fuel may be used during the MODU campaign for plug and abandonment activities (approximately 33 days per well). An additional 1,050 tonnes of fuel has been estimated for mobilisation. The total greenhouse gas emissions associated with the MODU operations is predicted to be approximately 25,198 t CO_2-e.

There is potential for up to four project vessels to operate supporting the activity, although associated emissions are anticipated to be substantially less than that of the MODU. The total greenhouse gas emissions associated with the project vessels' operations supporting the activity is predicted to be approximately 14,550 t CO_2-e.

Greenhouse gas emissions were estimated for the Petroleum Activity based on the following assumptions:

- MODU fuel use was estimated as 50 t/d based on historical data from previous Woodside drilling campaigns on a DP semi-submersible MODU (DPS-1).
- Two dedicated support vessels will service the MODU for approximately 33 days per well for plug and abandonment activities. Support vessel fuel use is estimated to be 15t/day based on historical performance.

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Helicopter operations will be used to support MODU during activities, assuming three helicopter return flights per week for the duration of the campaign. Helicopter fuel use was estimated to be 100 L/h.

Flaring of residual gas

Fluids returned to the MODU during well kill operations will pass through the MODU well control package or fluid handling bleed-off package (if fitted). Flaring of gas or liquids during the Petroleum Activity is contingency only as hydrocarbons in the wells requiring abandonment are only expected in the event that the pre-existing cement plug has not formed an effective barrier. Should flaring be required the primary method will be though the rig well control package. The additional fluid handling bleed-off package is designed to take fluids through a choke and into a liquid knock-out vessel or a surge tank (pressure rated). The knock-out vessel includes a separator which allows for gas and liquids to be separated. The gas, dependant on pressures and volumes, will be flared via a burner boom or cold vented from a safe location overboard. Liquids from the knock-out vessel or surge tank may be pumped to the burner head and burned via air atomisation or be diverted to a water treatment package. The flaring would occur at limited volumes, given the wells already contain barriers from previous plug and abandonment.

The volume estimates provided in are based on existing or planned pressure measurements and well design. The volumes of gas may be insufficient to sustain a flare, hence they will be vented in this circumstance. Up to 1.55 MMscf of gas may be vented or flared per well.

An EDS may be implemented if the MODU is required to rapidly disengage from the well. The EDS closes the BOP or IRS/EDP/LMRP (i.e. shutting in the well) and disconnects the riser to break the conduit between the BOP and the MODU. The EDS aims to leave the well and Lower Riser Package (LRS) in a secure condition but will result in the loss of the fluids/gases in the riser after disconnection.

Table 6-5: GHG emissions sources and quantities

Source	GHG emissions released (CO_2-e t)
MODU Operations	25,198
Offshore project vessel operations	14,550
Helicopter operations	281
Flaring	2,508
Cold venting	357
Total Estimated GHG Emissions	42,894

Calculations are based on the emission factors for fuel combustion for transport energy, as stipulated in the National Greenhouse and Energy Reporting (Measurement) Determination 2008 including:

- Diesel = 0.836t/m^3.
- Conversion factor (t Diesel fuel) to (t CO_2 e) = 2.7094.
- GHG factor (CH_4) = 84t CO_2 e.

Impact assessment

Environmental value(s) potentially impacted

Atmospheric emissions associated with fuel combustion, incineration, venting and flaring have the potential to result in localised, temporary reduction in ambient air quality. Given the short duration and exposed location of project vessels (which will lead to the rapid dispersion of the low volumes of atmospheric emissions), the potential impacts are expected to be localised and of no lasting effect.

Atmospheric emissions have the potential to cause impacts to fauna, if they are present in the immediate vicinity of significant releases. Birds, for example, have been shown to suffer respiratory distress and illness when subjected to extended duration exposure to air emissions (Sanderfoot and Holloway 2017). One BIA for wedge-tailed shearwater breeding overlaps the Operational Area, with the breeding period occurring from August to April (Sections 4.6.4 and 4.6.5). However, given the highly dispersed nature of atmospheric emissions and low fauna numbers at the point of discharge, injury or mortality to fauna as a result of atmospheric discharges is not expected.

Venting of hydrocarbon gases may result in a temporary gas plume and a localised contribution to greenhouse gas emissions. There is potential for human health effects for workers in the immediate vicinity of atmospheric emissions. However, the closest sensitive residential receptor is the town of Onslow, approximately 166 km south of the Operational Area; therefore, any risks associated with off-site human health effects are negligible beyond the immediate zone of release and dispersion.

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[53]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
Legislation, codes and standards				
Marine Order 97 (Marine Pollution Prevention – Air Pollution), which details requirements for: • All vessels having an International Air Pollution Prevention (IAPP) Certificate, required by vessel class. • Use of low sulphur fuel when available. • Ship Energy Efficiency Management Plan, where required by vessel class. • Onboard incinerator to comply with Marine Order 97.	F: Yes. CS: Minimal cost. Standard practice.	Legislative requirements to be followed may slightly reduce the likelihood of air impacts to air quality.	Control based on legislative requirements – must be adopted.	Yes **C 7.1**
Reporting of atmospheric and GHG emissions as required by regulatory requirements.	F: Yes. CS: Minimal cost. Standard practice for Woodside activities.	Tracking and reporting of emissions gives visibility to performance and enables improvement opportunities to be identified. Reporting increases transparency and accountability which can also drive performance improvements.	Control based on legislative requirements – must be adopted.	Yes **C 7.2**
Offshore Petroleum and Greenhouse Gas Storage (Resource Management and Administration) Regulations 2011: Accepted Well Operations Management Plan (WOMP). The WOMP describes the well integrity outcomes, control measures and performance criteria used to demonstrate how the risk of loss of well integrity is managed to ALARP including the well design and barriers to be used to prevent a loss of well integrity, which aligns with industry guidance and good practice.	F: Yes CS: Minimal cost. Standard practice.	Compliance with an accepted WOMP that aligns with industry guidance and good practice will ensure a number of barriers are in place and verified, reducing the likelihood of loss of well integrity occurring. Although the consequence of a blowout would not be reduced, the reduction in likelihood reduces the overall risk.	Control based on Legislative requirements – must be adopted.	Yes **C 7.3**

[53] *Qualitative measure*

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[53]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
Good practice				
Subsea BOP installed and function tested during permanent plugging operations. The BOP shall meet the Woodside Well Control Procedure, Woodside Engineering Standard – Rig Equipment and shall be subject to API Standard 53 BOP Risk Assessment. (Contingency in event of well kick).	F: Yes. CS: Standard practice. Required by Woodside standards.	BOP testing reduces the volume of gas vented in the event of a well kick.	Benefits outweigh cost/sacrifice.	Yes **C 7.4**
Well control bridging document for alignment of Woodside and the MODU contractor to manage the equipment and procedures for preventing and handling a well kick. (Contingency in event of well kick).	F: Yes. CS: Minimal cost. Standard practice for Woodside activities.	Implementing equipment and procedures in the well control bridging document will reduce the volume of gas vented in the event of a well kick.	Benefits outweigh cost/sacrifice.	Yes **C 7.5**
Vessel marine assurance process conducted prior to contracting vessels, to ensure suitability and compliance with Marine Order requirements.	F: Yes CS: Minimal cost. Standard practice.	Ensures safe interaction with other marine users by verifying vessel suitability and regulatory compliance before operations begin.	Benefits outweigh cost/sacrifice.	Yes **C 1.8**
Flaring/venting, if required, is restricted to a duration necessary to perform the activity for well kill.	F: Yes. CS: Minimal cost. Standard practice for Woodside activities.	Reduces the likelihood of atmospheric emissions impacting air quality. Consequence remains unchanged.	Benefits outweigh cost/sacrifice.	Yes **C 5.7**
Professional judgement – Eliminate				
Do not combust fuel.	F: No. There are no MODUs or 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
Do not vent or flare well fluids during well kill operations.	F: No. venting or flaring of well fluids is a safety-critical activity required to facilitate permanent plugging operations.	Not considered – control not feasible.	Not considered – control not feasible.	No
Contractors will be engaged to identify additional GHG emissions reduction opportunities.	F: Yes, additional GHG emissions reduction is captured within the vessel marine assurance process.	Captured within the vessel marine assurance process.	Control captured within the vessel marine assurance process.	No

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[53]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
Professional judgement – Substitute				
No additional controls identified.				
Professional judgement – Engineered Solution				
No additional controls identified.				
ALARP statement: On the basis of the assessment outcomes, use of the relevant tools appropriate to the decision type (i.e. Decision Type A; Section 2.3.4.2) and Woodside's criteria for demonstrating ALARP (Section 2.4.1), Woodside considers the adopted controls appropriate to manage potential impacts/risks associated with routine and non-routine atmospheric and GHG emissions. As no reasonably practicable additional/alternative controls were identified that would further reduce the impacts without disproportionate sacrifice, the impacts/risks are considered ALARP.				

Demonstration of acceptability
The impact/risk assessment has determined that, given the adopted controls, routine and non-routine atmospheric and GHG emissions from fuel combustion, flaring and venting may result in localised and low-level impact on environmental feature/s or area/s of low significance. The adopted controls are considered consistent with legislation, codes and standards, and professional judgment and meet the requirements of Australian Marine Orders. On the basis of the assessment outcomes, use of the relevant tools appropriate to the decision type (i.e. Decision Type A; Section 2.3.4.2) and Woodside's criteria for demonstrating acceptability (Section 2.4.2), Woodside considers that the adopted controls are appropriate to manage impacts/risks to a level that is broadly acceptable, and that compliance with those controls demonstrates that the EPOs are met.

EPOs, EPS and MC			
EPO	***Controls***	***PS***	***MC***
EPO 7 Emissions to atmosphere associated with fuel combustion, incineration, flaring and venting limited to those necessary to complete the Petroleum Activity.	**C 7.1** Comply with Marine Order 97 (Marine Pollution Prevention – Air Pollution) including: • All vessels having an IAPP Certificate as required by vessel class. • Fuel should be low sulphur fuel, not exceeding 0.50% m/m. • Vessels have a Ship Energy Efficiency Management Plan, where required by vessel class. • Any onboard incinerator complies with Marine Order 97.	**PS 7.1** MODU and project vessels compliant with Marine Order 97 (marine pollution prevention – air pollution) to restrict emissions to those necessary to perform the activity. Vessel marine assurance process conducted prior to contracting vessels, to ensure suitability and compliance with vessel combustion certification/Marine Order requirements.	**MC 7.1.1** Marine Assurance inspection records demonstrate compliance with Marine Order 97.

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EPOs, EPS and MC			
EPO	***Controls***	***PS***	***MC***
	C 7.2 Reporting of atmospheric and GHG emissions as required by regulatory requirements.	**PS 7.2** GHG emission regulatory reporting undertaken as required.	**MC 7.2.1** Records demonstrate required regulatory GHG emission reported.
	C 7.3 Offshore Petroleum and Greenhouse Gas Storage (Resource Management and Administration) Regulations 2011: Accepted Well Operations Management Plan (WOMP). The WOMP describes the well integrity outcomes, control measures and performance criteria used to demonstrate how the risk of loss of well integrity is managed to ALARP including the well design and barriers to be used to prevent a loss of well integrity, which aligns with industry guidance and good practice.	**PS 7.3** Wells permanently plugged in compliance with the accepted WOMP.	**MC 7.3.1** Acceptance letter from NOPSEMA demonstrates the WOMP was accepted by NOPSEMA before the activity commenced.
			MC 7.3.2 Records demonstrate the verification documentation as listed in the WOMP is available.
	C 7.4 Subsea BOP installed and function tested during permanent plugging operations. The BOP shall meet the Woodside Well Control Procedure, Woodside Engineering Standard – Rig Equipment and shall be subject to API Standard 53 BOP Risk Assessment. (Contingency in event of well kick).	**PS 7.4** Subsea BOP specification, installation and testing compliant with internal Woodside Standards and international requirements (API Standard 53 5th Edition) as agreed by Woodside and MODU contractor.	**MC 7.4.1** Records demonstrate that BOP and BOP control system specifications and testing were in accordance with minimum standards for the expected drilling conditions as agreed by Woodside and MODU contractor.
	C 7.5 Well control bridging document for alignment of Woodside and the MODU contractor to manage the equipment and procedures for preventing and handling a well kick. (Contingency in event of well kick).	**PS 7.5** Well is drilled in accordance with the contractor WCBD to reduce the likelihood of emissions to air from a well kick during drilling operations.	**MC 7.5.1** Records demonstrate well drilled in accordance with WCBD.
	C 1.8 Refer to Section 6.8.1.	**PS 1.8** Refer to Section 6.8.1.	**MC 1.8.1** Refer to Section 6.8.1.
	C 5.7 Refer to Section 6.8.3.	**PS 5.**7 Refer to Section 6.8.3.	**MC 5.7.1** Refer to Section 6.8.3.

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6.8.6 Routine and non-routine discharges: MODU and project vessels

Context		
Project vessels – Section 3.6 Permanent plugging activities – Section 3.12	Physical environment – Section 4.4 Habitats and biological communities – Section 4.5	Stakeholder consultation – Section 5

Impact evaluation summary

Source of impact	*Environmental value potentially impacted*						*Evaluation* •						
	Marine Sediment	Water Quality	Air Quality (incl Odour)	Ecosystems/Habitat	Species	Socio-economic	Decision Type	Consequence/Impact	Likelihood	Risk Rating	ALARP Tools	Acceptability	Outcome
Routine discharge of sewage, grey water and putrescible wastes to marine environment from MODU and project vessels.		X					A	F	-	-	LCS GP PJ	Broadly Acceptable	EPO 8
Routine discharge of food waste.		X					A	F					
Routine discharge of deck and bilge water to marine environment from MODU and support vessels.		X					A	F					
Routine discharge of brine and cooling water.		X					A	F					

Description of source of impact

The MODU and project vessels routinely generate/discharge:

- Small volumes of treated sewage, putrescible wastes and grey water to the marine environment (impact assessment based on approximate discharge of 15 m³ per vessel/MODU per day), using an average volume of 75 L/person/day and a maximum of 200 persons on board. However, it is noted that vessels such as project vessels will have considerably less persons on board.
- Routine/periodic discharge of relatively small volumes of bilge water. Bilge tanks receive fluids from many parts of the project vessels or MODU. Bilge water can contain water, oil, detergents, solvents, chemicals, particles and other liquids, solids or chemicals.
- Variable water discharge from MODU/vessel decks directly overboard or via deck drainage systems. Sources could include rainfall events and/or deck activities such as cleaning/wash-down of equipment/decks.
- Cooling water from machinery engines or mud cooling units and brine water produced during the desalination process of reverse osmosis to produce potable water onboard the MODU and project vessels.
- Non-routine project vessel discharges may include firefighting media. The MODU and project vessels may be equipped with firefighting foam systems which typically supply 3% AFFF concentrates. These concentrates may be mixed with seawater and discharged where MODU/project vessel helideck testing requirements (typically annual) fall within the on-hire period, and/or in the event of an emergency.

Environmental risks relating to the unplanned disposal/discharges from the MODU/project vessels are addressed in Section 6.9.6 and Section 6.9.7.

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Impact assessment

Environmental value(s) potentially impacted

Water Quality

Routine discharges generated from the Petroleum Activity have the potential to cause temporary and localised reduction in water quality. The principal environmental impact associated with ocean disposal of sewage and other organic wastes (i.e. putrescible waste) is eutrophication. Eutrophication occurs when the addition of nutrients, such as nitrates and phosphates, causes adverse changes to the ecosystem, such as oxygen depletion and phytoplankton blooms. Other contaminants of concern occurring in these discharges may include ammonia, *E. coli*, faecal coliform, volatile and semi-volatile organic compounds, phenol, hydrogen sulphide, metals, surfactants and phthalates.

Woodside conducted monitoring of sewage discharges at its Torosa-4 Appraisal Drilling campaign which demonstrated that a 10 m³ sewage discharge reduced to about 1% of its original concentration within 50 m of the discharge location. In addition to this, monitoring at distances 50 m, 100 m and 200 m downstream of the platform and at five different water depths confirmed that discharges were rapidly diluted; no elevations in water quality monitoring parameters (e.g. total nitrogen, total phosphorous and selected metals) were recorded above background levels at any station (Woodside 2011). Mixing and dispersion would be further facilitated in deep offshore waters, consistent with the location of the Operational Area, through regional wind and large-scale current patterns resulting in the rapid mixing of surface and near surface waters where sewage discharges may occur. Studies investigating the effects of nutrient enrichment from offshore sewage discharges indicate that the influence of nutrients in open marine areas is much less significant than that experienced in enclosed areas (McIntyre and Johnston 1975).

Furthermore, open marine waters do not typically support areas of increased ecological sensitivity, due to the lack of nutrients in the upper water column and lack of light penetration at depth. Therefore, presence of other receptors such as fish, reptiles, birds and cetaceans in significant numbers, and in proximity to the Operational Area, is unlikely. Research also suggests that zooplankton composition and distribution are not affected in areas associated with sewage dumping grounds (McIntyre and Johnston 1975). Plankton communities are expected to rapidly recover from any such short-term, localised impact, as they are known to have naturally high levels of mortality and a rapid replacement rate.

Additional discharges outlined, which may include other non-organic contaminants (e.g. bilge water, deck drainage and cooling water), will be rapidly diluted through the same mechanisms as above. They are expected to be intermittent and in very small quantities and concentrations as to not pose any significant risk to any relevant receptors.

AFFFs are typically comprised of a mix of organic and fluorinated surfactants, however novel and emerging AFFF products may also be comprised of fluorine-free formulations. When discharged in bodies of water, both fluorine containing and fluorine-free AFFF formulations may deplete dissolvable oxygen content. However, when diluted in low concentrations such as in the event of helideck system testing, or use in an emergency to suppress fire, these foams are considered to have relatively low toxicity (Department of Environmental and Heritage Protection, 2016). Further, concerns regarding toxicity of AFFF discharges are typically associated with land and waterways near to sites with frequent or prolonged applications. This includes military sites such as defence areas and civilian sites such as airports and industrial areas (Moody et al., 2000, Hu et al. 2016). The non-routine discharge of AFFF in open water environment of the Operational Area during helideck system testing or in the emergency event of a fire are not consistent with these conditions.

Given the toxicological effects of AFFFs are associated with sites of frequent or prolonged applications and the notion that non-routine AFFF discharges during the activity would be expected to rapidly disperse in the open water environment of the Operational Area, it is expected that any impacts would be localised and short-term in nature. Additionally, potential impacts of AFFF discharge through helideck system testing or in the event of an emergency are outweighed by the environmental and health and safety benefits that are achieved through the prevention of more severe adverse impacts that could result from an uncontrolled emergency.

Activities associated with the Petroleum Activity may occur over a period of up to five years (2026 to 2031), however actual P&A and NWBM remediation activities expected to take up to approximately seven months, therefore project vessels and the MODU will not be continuously in the Operational Area during this five year period. Project vessels will also be transient throughout the duration of the activities (i.e. not in a single location for an extended period of time). As such, these routine MODU and vessel-based discharges are expected to be intermittent in nature for the duration of the Petroleum Activity. Therefore, cumulative impacts to water quality within the Operational Area are expected to be localised with no lasting effect.

It is possible that marine fauna transiting the localised area may come into contact with discharges (e.g. marine turtles, pygmy blue whales, whale sharks, as they traverse the Operational Area, Section 4.6). However, given the localised extent of cumulative impacts from multiple vessel discharges within the Operational Area, significant impacts to marine fauna are not expected.

There are two KEFs that overlap the Operational Area: Ancient Coastline at 125 m depth contour and Continental Slope Demersal Fish Communities (Section 4.7). The Ancient Coastline is defined by a depth range of 115 to 135 m, and the Continental Slope Demersal Fish Communities on shares an overlap of less than 1% of the Operational Area.

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Given the water depths and open ocean environment, impacts to the values of these KEFs are not expected. As such, no significant impacts from the planned discharges that are listed above are anticipated because of the minor quantities involved, the expected localised mixing zone and high level of dilution into the open water marine environment of the Operational Area.

Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[54]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
Legislation, codes and standards				
Marine Order 96 – pollution prevention – sewage (as appropriate to vessel class), specifically: • A valid International Sewage Pollution Prevention Certificate, as required by vessel class. • An AMSA-approved sewage treatment plant. • Sewage comminuting and disinfecting system. • A sewage holding tank sized appropriately to contain all generated waste (black and grey water). • Discharge of sewage that is not comminuted or disinfected to only occur at a distance of more than 12 nm from the nearest land. • Discharge of sewage that is comminuted or disinfected using a certified approved sewage treatment plant to only occur at a distance of more than 3 nm from the nearest land. • Discharge of sewage to occur at a moderate rate while the vessel is proceeding (more than 4 knots), to avoid discharges in environmentally sensitive areas.	F: Yes. CS: Minimal cost. Standard practice.	No reduction in likelihood or consequence would result.	Controls based on legislative requirements – must be adopted.	Yes **C 8.1**

[54] *Qualitative measure*

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[54]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
Marine Order 95 – pollution prevention – garbage (as appropriate to vessel class), which requires putrescible waste and food scraps to pass through a macerator, so it is capable of passing through a screen with no opening wider than 25 mm.	F: Yes. CS: Minimal cost. Standard practice.	No reduction in likelihood or consequence would result.	Controls based on legislative requirements – must be adopted.	Yes **C 8.2**
Marine Order 91 – Marine pollution prevention – oil (as relevant to vessel class) requirements, which include mandatory measures for the processing of oily water prior to discharge: • Machinery space bilge/oily water to have International Maritime Organization (IMO) approved oil filtering equipment (oil/water separator) with an online monitoring device to measure oil in water (OIW) content to be less than 15 ppm prior to discharge. • IMO-approved oil filtering equipment to also have an alarm and an automatic stopping device or be capable of recirculating in the event OIW concentration exceeds 15 ppm. • A deck drainage system capable of controlling the content of discharges for areas of high risk of fuel, oil, grease or hazardous chemical contamination. • A waste oil storage tank available, to restrict oil discharges. • In the event that machinery space bilge discharges cannot meet the oil content standard of more than 15 ppm without dilution or be treated by an IMO-approved oil/water separator, to be contained on-board and disposed of onshore.	F: Yes. CS: Minimal cost. Standard practice.	No reduction in likelihood or consequence would result.	Controls based on legislative requirements – must be adopted.	Yes **C 8.3**

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[54]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
• A valid International Oil Pollution Prevention (IOPP) Certificate, as required by vessel class.				
Good practice				
Maintain and locate spill kits in close proximity to hydrocarbon storage areas and deck areas for use to contain and recover deck spills.	F: Yes. CS: Minimal cost. Standard practice.	Reduces the likelihood of a deck spill from entering the marine environment. The consequence is unchanged.	Benefits outweigh cost/sacrifice.	Yes **C 8.4**
Where there is potential for loss of primary containment of oil and chemicals on the project vessels, deck drainage must be collected via a deck drainage water management system.	F: Yes. CS: Minimal cost. Standard practice.	Reduces the likelihood of contaminated deck drainage water being discharged to the marine environment. No change in consequence would occur.	Benefits outweigh cost/sacrifice.	Yes **C 8.5**
Fluids and additives intended or likely to be discharged to the marine environment will have an environmental assessment completed before use.	F: Yes. CS: Minimal cost. Standard practice.	Reviews will ensure chemicals selected for drilling and completions fluids remain ALARP.	Benefits outweigh cost/sacrifice.	Yes **C 8.6**
For project activity fluids, six-monthly chemical reviews are performed during active campaigns.				Yes **C 8.7**
Vessel marine assurance process conducted prior to contracting vessels, to ensure suitability and compliance with Marine Order requirements.	F: Yes. CS: Minimal cost. Standard practice.	Ensures safe interaction with other marine users by verifying vessel suitability and regulatory compliance before operations begin.	Benefits outweigh cost/sacrifice.	Yes **C 1.8**
Professional judgement – Eliminate				
Storage, transport, disposal and onshore treatment of sewage, greywater, putrescible and bilge wastes.	F: Not feasible. Would present additional safety and hygiene hazards resulting from the storage, loading and transport of the waste material. Distance of activity offshore also makes implementing this control not feasible. CS: Not considered – control not feasible.	Not considered – control not feasible.	Not considered – control not feasible.	No

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[54]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
Professional judgement – Substitute				
No additional controls identified.				
Professional judgement – Engineered Solution				
No additional controls identified.				
ALARP statement: On the basis of the assessment outcomes, use of the relevant tools appropriate to the decision type (i.e. Decision Type A; Section 2.3.4.2) and Woodside's criteria for demonstrating ALARP (Section 2.4.1), Woodside considers the adopted controls appropriate to manage potential impacts/risks associated planned (routine and non-routine) MODU and vessel discharges. As no reasonably practicable additional/alternative controls were identified that would further reduce the impacts without disproportionate sacrifice, the impacts/risks are considered ALARP.				

Demonstration of acceptability
Acceptability statement: The impact/risk assessment has determined that, given the adopted controls, planned (routine) discharges from project vessels may result in localised, temporary impacts on environmental feature/s or area/s of low significance 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 that the adopted controls are appropriate to manage impacts/risks to a level that is broadly acceptable, and that compliance with those controls demonstrates that the EPOs are met.

EPOs, EPS and MC			
EPO	***Controls***	***PS***	***MC***
EPO 8 Vessel and MODU discharges shall meet requirements defined by Marine Orders.	**C 8.1** Marine Order 96 – pollution prevention – sewage (as appropriate to vessel class), specifically: • A valid International Sewage Pollution Prevention Certificate, as required by vessel class. • An AMSA-approved sewage treatment plant. • Sewage comminuting and disinfecting system. • A sewage holding tank sized appropriately to contain all generated waste (black and grey water). • Discharge of sewage that is not comminuted or disinfected to only occur at a distance of	**P 8.1** MODU and project vessels compliant with Marine Order 96 – Pollution prevention – Sewage (as appropriate to vessel class).	**MC 8.1.1** Environmental and MARPOL inspection records demonstrate MODU and project vessels are compliant with Marine Order 96 – Pollution prevention – Sewage (as appropriate to vessel class).

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EPOs, EPS and MC			
EPO	***Controls***	***PS***	***MC***
	more than 12 nm from the nearest land. • Discharge of sewage that is comminuted or disinfected using a certified approved sewage treatment plant to only occur at a distance of more than 3 nm from the nearest land. • Discharge of sewage to occur at a moderate rate while the vessel is proceeding (more than 4 knots), to avoid discharges in environmentally sensitive areas.		
	C 8.2 Marine Order 95 – pollution prevention – garbage (as appropriate to vessel class), which requires putrescible waste and food scraps to pass through a macerator, so it is capable of passing through a screen with no opening wider than 25 mm.	**P 8.2** MODU and project vessels compliant with Marine Order 95 – Pollution prevention – Garbage.	**MC 8.2.1** Environmental and MARPOL inspection records demonstrate MODU and project vessels are compliant with Marine Order 95 – Pollution prevention (as appropriate to vessel class).
	C 8.3 Marine Order 91 – Marine pollution prevention – oil (as relevant to vessel class) requirements, which include mandatory measures for the processing of oily water prior to discharge: • Machinery space bilge/oily water to have International Maritime Organization (IMO) approved oil filtering equipment (oil/water separator) with an online monitoring device to measure oil in water (OIW) content to be less than 15 ppm prior to discharge. • IMO-approved oil filtering equipment to also have an alarm and an automatic stopping device or be capable of recirculating in the event OIW	**P 8.3** Discharge of machinery space bilge/oily water will meet oil content standard of <15 ppm without dilution.	**MC 8.3.1** Environmental and MARPOL inspection records demonstrate discharge specification met for MODU and project vessels.

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EPOs, EPS and MC			
EPO	***Controls***	***PS***	***MC***
	concentration exceeds 15 ppm. • A deck drainage system capable of controlling the content of discharges for areas of high risk of fuel, oil, grease or hazardous chemical contamination. • A waste oil storage tank available, to restrict oil discharges. • In the event that machinery space bilge discharges cannot meet the oil content standard of more than 15 ppm without dilution or be treated by an IMO-approved oil/water separator, to be contained on-board and disposed of onshore. • A valid International Oil Pollution Prevention (IOPP) Certificate, as required by vessel class.		
	C 8.4 Maintain and locate spill kits in close proximity to hydrocarbon storage areas and deck areas for use to contain and recover deck spills.	**P 8.4** Spill kits to be available for use to clean up deck spills.	**MC 8.4.1** Spill kits to be available for use to clean up deck spills.
	C 8.5 Where there is potential for loss of primary containment of oil and chemicals on the project vessels, deck drainage must be collected via a deck drainage water management system.	**P 8.5** Contaminated drainage contained, treated and/or separated prior to discharge.	**MC 8.5.1** Environmental inspection records demonstrate MODU has a functioning bilge/oily water management system.
	C 8.6 Fluids and additives intended or likely to be discharged to the marine environment will have an environmental assessment completed before use.	**PS 8.6** All chemicals, planned to be used and intended or likely to be discharged to the marine environment reduced to ALARP using the chemical assessment process.	**MC 8.6.1** Records demonstrate chemical selection, assessment and approval process is followed.
	C 8.7 For project activity fluids, six-monthly chemical	**PS 8.7** Acceptability of previously approved chemicals are re-	**MC 8.7.1** Records confirm six-monthly reviews have

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EPOs, EPS and MC			
EPO	***Controls***	***PS***	***MC***
	reviews are performed during active campaigns.	evaluated on a six-monthly basis during active campaigns to ensure ALARP and alternatives are considered.	occurred during active campaigns, and any actions/changes are implemented.
	C 1.8 Refer to Section 6.8.1.	**PS 1.8** Refer to Section 6.8.1.	**MC 1.8.1** Refer to Section 6.8.1.

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6.8.7 Routine and non-routine discharges: Drilling and well clean-out fluids (WBM drilling/milling fluids/brine), well kill fluids, cement cuttings, hydraulic fluid, swarf, formation rock and wellhead removal fluids (grit and flocculant)

Context		
Mooring installation and anchor hold testing – Section 3.11.2 Permanent plugging activities – Section 3.12 Project fluids – Section 3.16	Physical environment – Section 4.4 Habitats and biological communities – Section 4.5	Stakeholder consultation – Section 5

Impact evaluation summary

Source of impact	***Environmental value potentially impacted***						• Evaluation						
	Marine Sediment	Water Quality	Air Quality (incl Odour)	Ecosystems/Habitat	Species	Socio-economic	Decision Type	Consequence/Impact	Likelihood	Risk Rating	ALARP Tools	Acceptability	Outcome
Discharge of well kill fluids and well clean out fluids (weighted brine, surfactants, lost circulation material).	X	X		X			A	F	-	-	LCS GP	Broadly Acceptable	EPO 9
Discharge of WBM, swarf, cement cuttings and formation rock cuttings during milling.	X	X		X			A	F					
Discharge of WBM and cement cuttings during drilling out of a cement plug.	X	X		X			A	F					
Discharge of grit, flocculant and/or metal swarf during removal of well infrastructure.	X	X		X			A	F					
Discharge during inspection and maintenance activities.	X	X		X			A	F					

Description of source of impact

Permanent plugging program and removal of well infrastructure

Wells requiring P&A (i.e. all wells with the exception of the Balnaves Deep-1 well) already have a cement-based suspension plug installed. Therefore, it is unlikely that a connection exists between the reservoir interval and the wellbore, and the most likely fluids contained in the wellbore are suspension fluids rather than hydrocarbons.

Permanently plugging the wells includes the use of wet cement and will produce well annulus fluids (Section 3.16.1). These fluids will be generated during well bore clean out, circulation of the annulus and washing out of the mud pit.

Potential additional activities that may be required as part of the Petroleum Activity include milling, marine riser cleanout and well kill, which will produce metal swarf, drilled cement cuttings, well kill fluids and formation rock that will be discharged overboard. Another potential additional activity is drilling out a cement plug (Section 3.12.1.3), with WBM, if it does not pass the verification test, resulting in cement cuttings.

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

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The following describes the source of impact with respect to discharge of cement cuttings, drilling fluids, clean-up fluids, well kill fluids, grit and flocculant only (see Section 6.8.8 for residual NWBM, cement, cementing fluids and subsea control fluids). For the purposes of this impact assessment, the indicative dimensions, discharge locations and approximate volumes are provided in Table 6-6.

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

Description	*Discharge point*	*Discharge*	*Approximate cuttings discharged (m^3)**	*Approximate fluid discharged (m^3)**	*Potential additional cuttings (m^3)**	*Potential additional fluid discharge (m^3)**
Discharge from bleed off package.	Below the sea surface.	Well kill and well bore fluids.	0	155^,**	0	0
Discharge from mud system operations.	Below the sea surface.	B-annulus NWBM.	0	0**	0	0
Discharge from mud system operations.	Below the sea surface	WBM#.	0	0	0	635
Milling (potential activity using WBM).	Below the sea surface.	WBM, swarf, cement and formation rock.	0	0	2 (swarf) 3 (cement) 3.5 (formation rock)	1600 (WBM)
Drilling out cement plug (potential additional activity using WBM).	Below the sea surface.	WBM, cement cuttings.	0	0	25 (cement cuttings)	250 (WBM)
AWJ cutting to remove wellheads (removal option).	Within the well below the mudline.	Flocculant and grit.	4 tonnes per well (planned to be released within the well above the top permanent plug with small volumes entering sediments at the cutting depth).	250 L per well (planned to be released within the well above the top permanent plug with small volumes entering sediments at the cutting depth).	Small volumes may be released to surface sediments if cut is made at or close to the mudline.	
Mechanical cutting of wellheads (removal option).	Within the well, 3-5 m below the mudline.	Metal and cement cuttings from the well infrastructure and lubrication for the cutting tool.	0	0	Negligible volumes may be released to surface sediments.	

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

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

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

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

Wellbore, well kill and circulation fluids

During permanent plugging activities, fluids will generally be displaced from one well to another. During such operations, fluids will be returned to the MODU via bleeding off fluids from the well or by circulated through the well during various operations (e.g. well kill, well-bore clean-out, NWBM removal, milling operations). Depending on the operation, returned fluids may include reservoir fluids, annulus fluids, brine, WBM, NWBM or solids. This includes a number of chemicals that are already present in the well from previous well abandonment activities (Section 3.10.2). The majority of chemicals that may be present are low toxicity and biodegradable, with the exception of NWBM.

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

Fluids returned to the fluid handling bleed-off package

If well kill is required following removal of the shallow cement plug within the well, well kill fluid will be circulated into the well or pumped into the formation. This is to control the residual pressure from the formation and/or to bullhead well fluids into the reservoir. The well kill fluid will be a weighted brine, mud or seawater which may contain additives to reduce reservoir permeability post well kill. Fluids returned to the MODU during well kill operations will pass through the rig well control package or fluid handling bleed-off package (if fitted). The primary method will be though the rig well control package. The bleed-off package is designed to handle fluids and cannot handle solids. It will be used for well kill operation only where the well status allows line-up to the bleed-off package.

Fluids and solids returned to the mud system

Where fluids are circulated from the well and the bleed-off package cannot be used, the MODU's mud system will be utilised to manage any returns. This system includes mud pits (tanks) capable of containing and handling WBM, and brine. Fluids required for the permanent plugging activities may include a series of fluid pills (e.g. high-viscosity pills and surfactants) pumped ahead of brine. WBM may also be used during contingency operations such as milling (Section 3.13.4, Table 6-6) where additional fluid properties are required, and the fluids will be circulated through the MODU fluids handling system on a closed loop basis. In such instances, well returns handled by the mud system may be re-circulated or re-used where feasible. To facilitate re-use, solids are removed using solids control equipment (SCE), with solids handling and discharge processes described below. Where re-use is not feasible, WBM fluids will be discharged to sea (Section 3.16.1.1).

During the permanent plugging operation, WBM will be used to drill out the shallow cement plug to enable wellbore re-entry, or to drill out deep cement plugs if required to meet current guidelines (Section 3.12.1.3). WBM and associated cement cuttings will be processed through the MODU's drilling mud process equipment and discharged overboard. Approximately 25 m^3 of cement cuttings and approximately 250 m^3 of WBM will be processed through the MODU's shakers and mud system before being discharged. Given the small volumes and the fact that drilling would be performed with WBM, no oil on cuttings (OOC) discharge limits have been applied. Chemicals used in the WBM are assessed under the Woodside Chemical Selection and Assessment Environment Guideline. As the NWBM from the annulus at Balnaves Deep-1 is currently in situ within the well, it will not undergo assessment.

Milling

Milling is typically performed at a controlled rate (1 to 1.5 m/hr), to enable steel swarf to be removed effectively from the milling site to minimise the risk of 'birds nesting' of steel swarf, which may block fluid returns and jam equipment. The primary solids control equipment (including shale shakers and ditch magnets, both upstream and downstream of the shakers) will separate swarf from the fluid system, however, any swarf particles which pass through this system will remain. Milling fluids including ~2 m^3 of swarf, ~3 m^3 of drilled cement and ~3.5 m^3 of formation rock, will be discharged overboard per 100 m intervals (Section 3.13.4). Given the small volumes of solids and only limited drilling into formation rock, no oil on cuttings (OOC) discharge limits have been applied, as would be the case for a drilling activity. As a result of restricted milling speeds, the rate of swarf and cement will be generated over several days (the rate is expected to be about 50 m per 18 hours).

Removal (cutting) of well infrastructure

Discharges from cutting of well infrastructure using an internal cutting method, such as an AWJ cutting method or a mechanical cutting tool, are expected to be confined predominately within the well and settle on the top of the permanent plug. During final cut through the conductor pipe, small amounts of flocculant and grit will be released below the mudline to sediments immediately surrounding the well.

Should an external cutting method be required (i.e. above the mudline), these discharges may be released onto the seabed. For the mechanical cutting tool, discharges will be limited to small quantities of metal and cement cuttings from the infrastructure itself as well as small quantities of lubricant. For the AWJ cutting method, discharges include a small amount of grit and flocculant. Depending on the cutting depth, pressure from the jet cutting could push some of the material up to the seabed surface causing localised smothering of benthic communities as well as create localised and temporary increases in turbidity around the well.

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Impact assessment
Environmental value(s) potentially impacted

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

Direct and indirect impact pathways are identified for these discharges includes:

- temporary increase in total suspended solids (TSS) in the water column
- sediment deposition to the seabed, leading to the alteration of the physico-chemical composition of sediments, and burial and potential smothering effects to sessile benthic biota
- potential contamination and toxicity effects to benthic and in-water biota.

The Operational Area is situated in offshore waters (about 43 km from the nearest shoreline of the Montebello Islands) in water depths of ~120 to ~210 m. The abiotic habitat in the area is mostly comprised of deep, soft, unconsolidated sediment, which is relatively flat and featureless. However, the Ancient Coastline at 125 m Depth Contour KEF overlaps the Operational Area, therefore, there may be areas of hard substrate associated with this KEF.

The permanent plugging activities occur with a riser fitted, creating a closed loop system. Small volumes of cement cuttings and/or formation cuttings with unrecoverable fluids are brought to the surface via the riser and discharged below the water line from the MODU, resulting in drilled cement and drilling fluids (WBMs and/or brine) rapidly diluting and dispersing through the water column.

The dispersion and fate of the solids are determined by particle size and density of the unrecoverable fluids; the larger solid particles will drop out of suspension and deposit in proximity to the well site (tens of metres) with potential for localised spreading downstream, while the fluids and finer particles will remain in suspension and will be transported away from the well site, rapidly diluting and eventually depositing over a larger area (hundreds of metres) downstream of the well site. Temporary elevated TSS will occur and will be highest at the point of discharge in the water column, rapidly decreasing with depth and distance over a period of short duration (minutes). The finer particles (associated with the drilling fluids) will remain in suspension and are transported further before settling on the seabed over a wider area (hundreds of metres) downstream of the well site (defined as an area of influence). They will form an undetectable thin sediment veneer with negligible ecological impact to benthic biota. Within the area of influence, drilling fluids are likely to be naturally reworked into surface sediment layers through bioturbation (US Environmental Protection Agency 2000).

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

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

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

Ecological impacts to sessile benthic organisms are typically associated with sediment deposition of 6.5 mm or more in thickness (IOGP 2016). Given the expected low discharge volumes and the discharge point from the MODU at the sea surface, sediment deposition of this magnitude is unlikely to occur as sediment will be subject to dispersion in the water column prior to deposition on the seabed.

The Operational Area overlaps two KEFs: the ancient coastline at 125 m depth contour KEF and the Continental Slope Demersal Fish Communities KEF (Section 4.7). The ecological values of the KEFs are described in Appendix C. No hard coral habitat or other light-dependent benthic primary producer communities are expected to be present within the Operational Area given the water depths. Within the Ancient Coastline KEF, several discrete areas of hard substrate exist, which play host to sessile filter feeding communities. Demersal fish associated with the Continental Slope Demersal Fish Communities KEF will likely avoid the immediate area of disturbance and are unlikely to be impacted (IOGP 2016). Discharges are expected to be in small volumes, therefore the potential ecological impacts will be localised and would have negligible impact on the whole KEF.

Water quality

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

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replenishment characteristics. It is expected that there may be impacts to plankton populations limited to within tens of metres of the discharge point which will not impact populations on a regional scale given the nature of the discharges. Populations are expected to recover within a short timeframe.

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

Indicative components of the WBM system outlined in Section 3.16.1.1 have a low toxicity. Barite, bentonite and a chemical from the family of XC polymers (Xanthan Gum or similar) are listed as 'E' category fluids under the OCNS and are included on the OSPAR list of chemicals used and discharged offshore that are considered to 'pose little or no risk to the environment' (PLONOR). These metals are present primarily as insoluble mineralised salts. Consequently, they are not released in significant amounts to the pore water of marine sediments and have low bioavailability to benthic fauna that may come into contact with drilling fluids (Crecelius et al., 2007; Neff 2008).

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

Fluids released during wellhead removal

After permanent plugging and NWBM remediation at Balnaves Deep-1 activities are complete, the wellhead will be cut and recovered. Upon removal, the remaining water-based casing and annulus fluids become exposed to the sea. The small volumes and non-instantaneous nature of the release of the well fluids is expected to result in rapid dilution to a no-effect concentration within metres of the release location. Therefore, impacts will be limited to negligible.

Cumulative impacts

No cumulative impacts to water quality are expected to occur, as discharged sediments are predicted to settle in the immediate vicinity each well.

Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[55]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
Legislation, codes and standards				
No additional controls identified.				
Good practice				
Fluids and additives intended or likely to be discharged to the marine environment will have an environmental assessment completed before use.	F: Yes. CS: Minimal cost. Standard practice.	Environmental assessment of chemicals will reduce the consequence of impacts resulting from discharges to the marine environment by ensuring chemicals have been assessed for environmental acceptability. Planned discharges are required for the safe execution of activities and therefore no reduction in likelihood can occur.	Benefits outweigh cost/sacrifice.	Yes **C 8.6**
For project activity fluids, six-monthly chemical reviews are performed during active campaigns.	F: Yes. CS: Minimal cost. Standard practice.	Reviews will ensure chemicals selected for drilling and completions fluids remain ALARP.	Benefits outweigh cost/sacrifice.	Yes **C 8.7**

[55] *Qualitative measure*

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[55]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
Drilled cement formation rock and swarf cuttings returned to the MODU will be discharged below the water line.	F: Yes. CS: Minimal cost. Standard practice.	Discharge below the water line will reduce carriage and dispersion of solids, thereby reducing the consequence of solids discharges during the Petroleum Activity.	Benefits outweigh cost/sacrifice.	Yes **C 9.1**
Bulk operational discharges conducted under MODU's Permit to Work (PTW) system (to operate discharge valves/pumps).	F: Yes. CS: Minimal cost. Standard practice.	The MODU's PTW may slightly reduce the likelihood of bulk discharges occurring, but it is unlikely to be significant, given that bulk discharges are often operationally required and cannot be eliminated.	Benefits outweigh cost/sacrifice.	Yes **C 9.2**
Brine, WBM and clean-up fluids routed via the MODU mud system which are contaminated with NWBM, will be captured on the MODU for discharge if oil concentration is less than 1% by volume. If discharge contains greater than 1% OIW volume, fluid will be returned to shore or injected into the well and isolated from the environment.	F: Yes. CS: Minimal cost. Standard practice.	By taking the fluid with >1% NWBM onshore the consequence of the release on the environment is eliminated. The decrease in consequence results in an environmental benefit.	Benefits outweigh cost/sacrifice.	Yes **C 9.3**
Daily operations reports, or similar, record volumes of overboard drilling discharges.	F: Yes. CS: Minimal cost. Standard practice.	Record of daily volume reports will assist in maintaining and managing discharge volumes.	Benefits outweigh cost/sacrifice.	Yes **C 9.4**
Mud pit wash residue and fluids received to the MODU during well kill will be measured for oil content and treated by the bleed off package before discharge or retained and disposed onshore.	F: Yes. CS: Minimal cost. Standard practice.	Ensuring less than 1% oil content, will provide a small reduction in consequence and toxicity when residue is discharged to the environment.	Benefits outweigh cost/sacrifice.	Yes **C 9.5**
Professional judgement – Eliminate				
No additional controls identified.				
Professional judgement – Substitute				
No additional controls identified.				
Professional judgement – Engineered Solution				
Water quality and/or sediment monitoring of drilling fluids and	F: Yes. CS:	No environmental benefit would be gained by implementing monitoring during the	Disproportionate. Cost/sacrifice outweighs benefit	No

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[55]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
cement/formation cuttings to verify impact during activity.	For in-water sampling using ROV – Time and logistics for tool change-out from operational tools to specialised scientific sampling tools. Additional personnel onboard to operate ROV and coordinate sampling program. Low ROV availability due to operations can limit time to perform environment monitoring. If additional ROV is required on the MODU, deck space and resources to run, store, service ROV. Resources for sample processing (space, equipment, personnel).	activity. Monitoring could be used to inform additional control measures in future drilling activities; however, there is a considerable body of scientific literature about potential impacts of drilled cement and impacts are generally well understood. Furthermore, it is not guaranteed that additional controls would be feasible, or if they would provide any environmental benefit, and the volumes that are proposed to be discharged are so small that meaningful monitoring may not be possible.	to be gained in the context of existing environment (deepwater, open ocean communities with no proximity to sensitive benthic communities or receptors). Although adoption of this control could be used to verify EPOs associated with drilling mud and cutting discharge, alternative controls identified achieve an appropriate outcome.	
ALARP statement: On the basis of the assessment outcomes, use of the relevant tools appropriate to the decision type (i.e. Decision Type A; Section 2.3.4.2) and Woodside's criteria for demonstrating acceptability (Section 2.4.1), Woodside considers the adopted controls appropriate to manage potential impacts/risks associated with routine and non-routine discharges: drilling and well cleaning fluids, well kill fluids, cement, wellhead cleaning fluids, hydraulic fluid, swarf, formation rock and drilling fluids. As no reasonably practicable additional/alternative controls were identified that would further reduce the impacts without disproportionate sacrifice, the impacts/risks are considered ALARP.				

Demonstration of acceptability
Acceptability statement: The impact/risk assessment has determined that, given the adopted controls, routine and non-routine discharges: drilling and well cleaning fluids, well kill fluids, cement, wellhead cleaning fluids, hydraulic fluid, swarf, formation rock and drilling fluids will have no lasting effect on environmental feature/s or area/s. 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/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 Impacts from routine and non-routine discharges from well clean-out fluids, well kill fluid, cement cuttings, swarf, formation	**C 8.6** • Refer to Section 6.8.2.	**PS 8.6** Refer to Section 6.8.2.	**MC 8.6.1** Refer to Section 6.8.2.
	C 8.7 Refer to Section 6.8.2.	**PS 8.7** Refer to Section 6.8.2.	**MC 8.7.1** Refer to Section 6.8.2.

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EPOs, EPS and MC			
EPO	***Controls***	***PS***	***MC***
rock, drilling fluids (water-based and non-water based muds), and wellhead removal fluids (grit and flocculant) will be limited to planned activities and impacts described as part of the Petroleum Activity.	**C 9.1** Drilled cement formation rock and swarf cuttings returned to the MODU will be discharged below the water line to reduce carriage and dispersion of solids by surface currents.	**PS 9.1** Drilled cement, formation rock and swarf discharged below the water line.	**MC 9.1.1** Records confirm solids discharge chute/line is below the water line.
	C 9.2 Bulk operational discharges conducted under MODU's PTW system (to operate discharge valves/pumps).	**PS 9.2** All bulk operational discharges conducted under MODU's PTW system.	**MC 9.2.1** Records demonstrate that bulk discharges are conducted under the MODU PTW system.
	C 9.3 Brine, WBM and clean-up fluids routed via the MODU mud system which are contaminated with NWBM, will be captured on the MODU for discharge if oil concentration is less than 1% by volume. If discharge contains greater than 1% OIW volume, fluid will be returned to shore.	**PS 9.3** Fluids containing >1% OIW taken onshore or injected into the well and isolated from the marine environment.	**MC 9.3.1** Records demonstrate fluids containing >1% OIW have been taken onshore or injected into the well and isolated from the marine environment.
	C 9.4 Daily operations reports, or similar, record volumes of overboard drilling discharges.	**PS 9.4** Overboard drilling discharges are recorded.	**MC 9.4.1** Daily operations reports, or similar, show volumes of overboard drilling discharges.
	C 9.5 Mud pit wash residue and fluids received to the MODU during well kill will be measured for oil content and treated by the bleed off package before discharge or retained and disposed onshore.	**PS 95.** Less than 1% by volume oil content achieved before discharge of mud pit wash residue.	**MC 9.5.1** Records after pit clean-out (for pits potentially contaminated with base oil) demonstrate mud pit wash residue was less than 1%.

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6.8.8 Routine and non-routine discharges: Residual NWBM, wet cement, cementing fluids, subsea control fluids (BOP control fluids), unused bulk products and marine riser clean-out

Context		
Marine growth removal – Section 3.11.7.1 Preparation and Support activities – Section 3.11.7 BOP and subsea control systems – Section 3.12.1.1 NWBM Remediation – Section 3.12.3 Cement, barite and bentonite discharge – Section 3.12.4 Marine riser clean out – Section 3.11.1 Project fluids Section – 3.16	Physical environment – Section 4.4 Habitat and biological communities – Section 4.5	Stakeholder consultation – Section 5

Impact evaluation summary

Source of impact	***Environmental value potentially impacted***						***Evaluation***						
	Marine Sediment	Water Quality	Air Quality (incl Odour)	Ecosystems/Habitat	Species	Socio-economic	Decision Type	Consequence/Impact	Likelihood	Risk Rating	ALARP Tools	Acceptability	Outcome
Routine and non-routine discharges of wet cement and cementing fluids, subsea control fluids (e.g. BOP control fluids, umbilicals, tethering clump weights), marine growth cleaning fluids, marine riser clean-out debris, dummy cement test and swarf at seabed from wellhead cutting and machining.	X	X		X			A	F	-	-	GP PJ	Broadly Acceptable	EPO 10
Routine and non-routine discharges of riser-less drilling cement plug and NWBM isolation in Balnaves Deep-1.	X	X		X			A	F					
Non-routine discharge of unused bulk products at end of drilling campaign.	X	X		X			A	F					
Degradation of a up to 1m length of well infrastructure left in situ resulting in the non-routine discharge of trace amounts of metals to the marine environment.	X	X		X			A	F					

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Description of source of impact

Wet cement and cementing fluids

During the permanent plugging operation, drilling out of the shallow cement plug using WBM will be required so the wellbore can be re-entered, or deep cement plug(s) if required to be installed to meet current guidelines. WBM and cement cuttings will be processed through the drilling muds process equipment on board the MODU and discharged overboard. Cementing operations are undertaken to ensure permanent well integrity during well abandonment. Cementing fluids will generally consist of Portland cement with additives (such as inorganic salts, lignins, bentonite, barite, silicates, defoamers and surfactants). Cement spacers can be used as part of the cementing process, within the well casing, to assist with cleaning the casing sections before cement flows through. Cementing fluids are not routinely discharged to the marine environment, however, volumes maybe discharged to the environment:

- When testing the cementing unit aboard the MODU (approximately 1–10 m^3).
- When abandoning the motherbore of the well (approximately 10 m^3).
- When disposing of excess slurry due to a failed cement job (approximately 55 m^3 based upon 9-5/8" casing).
- After each cement job, leftover cement slurry within the cement pump unit and surface lines is flushed and discharged to prevent equipment blockages (approximately 5 m^3 per well).

If a cement job does not meet barrier integrity requirements, the cement may be drilled out and the operation repeated.

Cement unit testing

Upon arrival at the Operational Area, the MODU is typically required to perform a cement unit test to test the functionality of the cement unit and the MODU bulk cement delivery system before performing barrier installation. Once functionality of the cement unit and delivery system has been confirmed, the slurry is discharged through the cement unit discharge line or through drill pipe below sea level. The slurry is usually a mix of cement and water; however, may contain stabilisers or chemical additives in low concentrations.

Unused bulk products

Adequate stocks of dry bulk product are required to be stored on the MODU for the duration of the drilling activity for safe operations and well control purposes, as defined in the Woodside Well Control Bridging Document. Products typically required are as follows:

- Cement is used to secure casing and isolate well zones.
- Barite is added to drilling fluids to control formation pressure.
- Bentonite improves the fluid properties, aiding in cuttings transport and wellbore stability.

At the end of the drilling activity and prior to demobilisation, Woodside is contractually obliged to remove the dry bulk product from the MODU. Numerous options for removing excess product from the MODU exist, with the least favourable option being to discharge to the marine environment. Woodside have developed a process to assess all safe and technically feasible options for the excess product before a decision is made to discharge overboard, this includes the considering the following options, as described below and illustrated in Figure 6-1:

- Retaining products on the MODU to be used for subsequent Woodside drilling activities where the Petroleum Activity is not the last in the Woodside MODU sequence.
- Retaining products on the MODU to be used by the next titleholder who has the MODU on hire.
- Transferring to another Woodside-contracted MODU operating in the region.
- Transferring to another titleholder-contracted MODU operating in the region.
- Returning to shore for onshore storage and/or disposal if a facility is available that is both safe and technically feasible to transfer to.

Only if none of these options are viable will be discharged to the marine environment be considered. In such cases, excess dry bulk material may be discharged as a slurry. The maximum conservative discharge estimates are:

- Cement: 150 tonnes.
- Barite: 150 tonnes.
- Bentonite: 150 tonnes.

However, these volumes are highly conservative and discharge volumes (if required) are likely to be much smaller. The process that will be followed to determine discharge is the last option is presented in Figure 6-1.

Woodside's base plan is to retain dry bulk product on board the MODU at the end of the campaign, either for reuse by Woodside (if a subsequent Woodside drilling activity is contracted after the petroleum activity), or transfer the dry bulks to the next titleholder who has the MODU on hire. At the time this EP was written it was not yet confirmed whether Woodside would be contracting the MODU for subsequent petroleum activities or if there was another titleholder who planned to contract it. If there are no available options to leave the dry bulk products on the MODU,

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Woodside would look to transfer excess dry bulk product to another MODU operating in the region, either for Woodside use or for another titleholder.

The backload of dry bulks to shore at the end of the campaign has been explored with Woodside's fluids providers. However, current onshore infrastructure does not support the safe transfer of bulk product at high pressure. When the MODU receives bulk product from a shore base, it involves the pneumatic transfer of product from a lower pressure container/tank to the higher pressure MODU or supply vessel container/tank. However, transfer of bulk product from the MODU to shore would involve the transfer of that material, which is powder, from a high pressure to low pressure mobile tank. These high to low pressure transfers of dry powder carry safety risk as the pressure differential between the two systems can result in an uncontrolled, or rapid fluid flow causing pressure build up, beyond safe limits. Dry bulk products can be transported from shore when initially processed given the manufacturing locations have necessary infrastructure to package bulks in bags for transportation and sale, including bagging machines. These dry bulk products cannot be returned to shore in this same manner. Once the product is transported offshore, it is stored in tanks under high pressure conditions. To return product to shore, the product would need to be high-pressure transferred from the MODU or project vessel tanks to bags, which is not considered to be feasible.

During the Petroleum Activity Woodside will continue exploring the feasibility of installing appropriate infrastructure including pressure release valves and other transfer equipment to enable safe transfer of dry bulk product to shore at the end of the P&A activities.

If reuse of excess bulks for subsequent activities in the region is not possible and no feasible options for safe transfer of dry bulk product are identified by completion of the campaign, excess dry bulk will be discharged to the marine environment in the form of a slurry. This will only occur if it can be demonstrated that there are no other options identified in Figure 6-1. Use and discharge of all chemicals and products will be conducted in line with Woodside's internal guidelines (Section 7.2).

Dry bulk materials generally pose little or no risk to the environment (PLONOR), though barite may contain traces of heavy metals, such as mercury and cadmium. Woodside requires that concentrations of mercury and cadmium in barite be <1 mg/kg and <3 mg/kg, respectively. This conforms to the American Petroleum Institute (API) specification for drilling barite. Heavy metal analysis is conducted on individual batches of stock barite prior to mobilisation offshore. This sampling confirms that heavy metals of concern (cadmium and mercury) are within limits prescribed by API standards.

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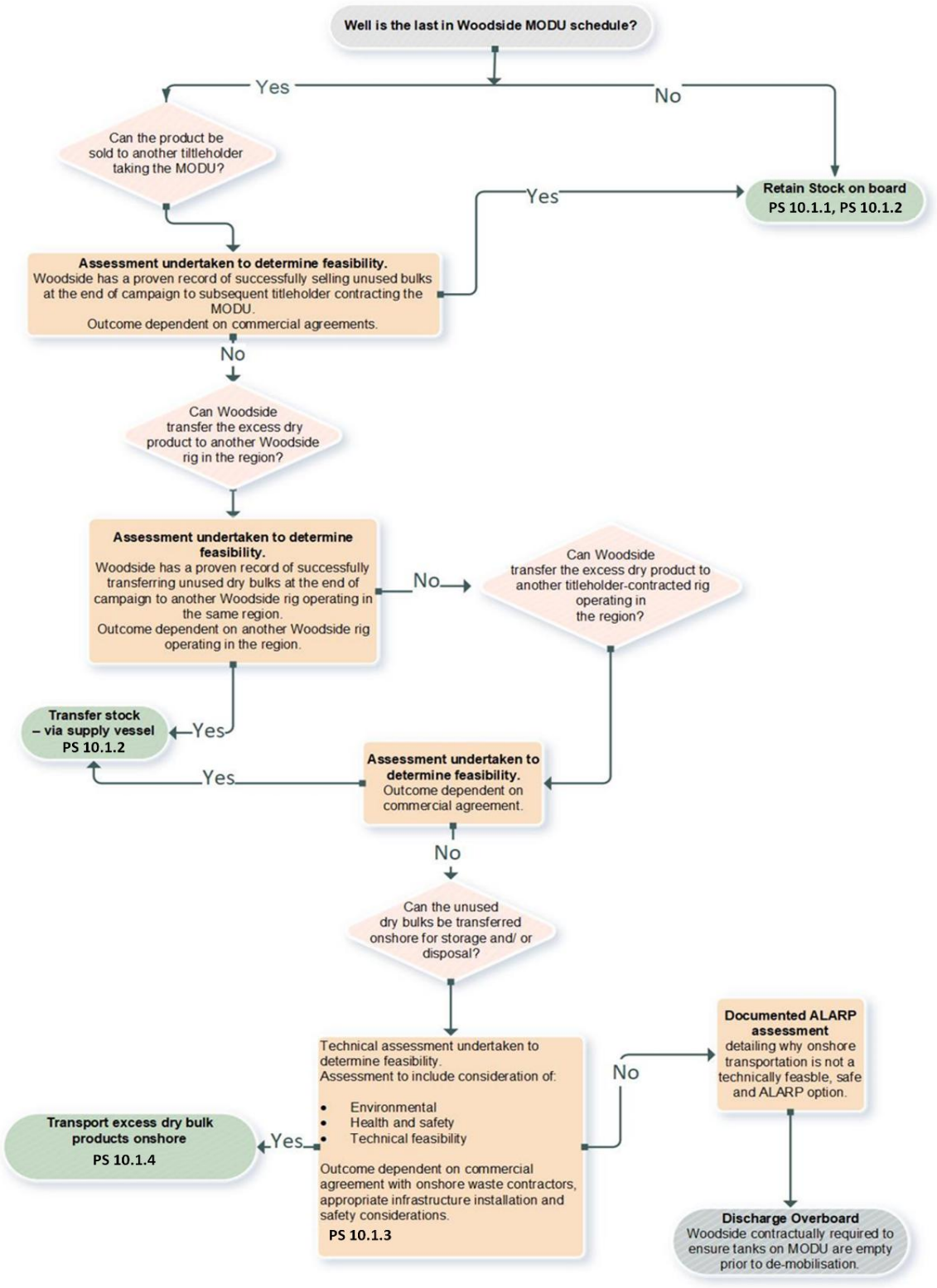

Figure 6-1: Management process for excess bulk product

NWBM remediation

Reservoir abandonment activities were previously completed on the Balnaves Deep-1 well and the reservoir has been accepted as abandoned. At this time, a finite volume of NWBM (103 m^3 Saraline 185V NWBM of which 67 m^3 is

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paraffin synthetic base oil) was left in the 10-3/4 x 13-3/8" casing annulus. NWBM remediation will be performed to the well annulus from inside the wellbore. As a result, there may be a pocket of residual NWBM remaining between the wellhead and the location of the remediation. Consequently, there is the potential for loss of this residual NWBM (up to 5 m^3) to the marine environment at the seabed during wellhead severance activities.

During the annulus clean-out activity, the recovered NWBM and interface fluids will be captured in mud pits onboard the MODU. Clean-up brine contaminated with NWBM, will be discharged if content is less than 1% by volume oil. Bulk fluids returned from the well to the MODU that contain more than 1% NWBM will be retained and disposed of onshore Section 3.12.3).

At the conclusion of the permanent plugging activities, the mud pits will be cleaned, typically using seawater. Mud pit wash residue, including any remaining NWBM where pits were used to collect annulus fluids, will be discharged to sea only if the oil content is less than 1% by volume (Section 3.12.5). Where the residue exceeds this threshold, it will be retained and disposed of onshore.

BOP and subsea control fluids

The operation of the BOP/subsea PCE components uses open hydraulic systems, using water-based BOP control and hydraulic fluids. The BOP is required to be regularly function tested when subsea, as defined by legislative requirements. The BOP is function tested during assembly and maintenance and during operation on the seabed. As part of this testing, small volumes of BOP control fluid (generally consisting of water mixed with a glycol based detergent or equivalent water based anti-corrosive additive) is released to the marine environment. The BOP will be function tested about every seven days (when a pressure test is not occurring) and pressure tested about every 21 days as per API 53 (an American Petroleum Institute standard for Well Control Equipment Systems for Drilling Wells). The maximum volume of BOP control fluid per function is up to about 90 L per test. A small volume of hydraulic fluid, up to circa. 50 L for the entire system may also be discharged to marine environment due to actuation of BOP tethering system.

Planned chemical discharges may occur during preparation and support activities including marine growth removal. Chemicals may be released during inspection and maintenance activities, these may include:

- Acid (sulfamic or equivalent) – approximately 250 L per well.
- Oxygen scavenger – approximately 100 g per well.
- Biocide – approximately 100 g per well.
- Corrosion inhibitor – approximately 300 g per well.

Riser clean out

There is potential for the marine riser and BOP to be susceptible to rust and other minor build up between wells. This can lead to operational issues. To avoid this, the marine riser or the IRS will be cleaned by running riser brushes through it while the riser and BOP are suspended in open water. The BOP cavities will also be cleaned before deployment and, if equipment needs to be cleaned following deployment, large diameter brushes, clean drill pile and high rate circulation subs will be available to enable riser cleaning/flushing. Cleaning will be completed over a bunded area, with fluids returned to tanks on the MODU.

Well infrastructure left in situ (contingency)

Well infrastructure may be left in situ (potentially up to 0.5 m heigh above the seabed) where removal at or below the mudline is not achievable (as described in Section 3.12.2). Over time, steel components inevitably undergo corrosion driven by saline exposure, dissolved chloride ions, low dissolved oxygen, and high hydrostatic pressure, common in deeper marine environments (Hao et al. 2024). Localised corrosion in the form of pitting and microbial-induced corrosion may result in the release of trace metals typically at very low concentrations.

Impact assessment

Environmental value(s) potentially impacted

Pelagic and benthic habitats in the Operational Area are considered to be of low sensitivity (no known significant benthic habitat or infauna habitat). Although the Ancient Coastline at 125 m Depth Contour KEF overlaps with the Operational Area, the values and sensitivities of this KEF occur on a broad scale outside of the Operational Area (Section 4.5). The Operational Area also overlaps with the Continental Slope Demersal Fish Communities KEF, but overlap is restricted to less than 1% of the Operational Area. Coupled with the low toxicity of the fluids to be used for the Petroleum Activity, the likelihood of any significant impact to marine biota is considered to be negligible.

Cement, barite and bentonite

Impacts of cement, barite and bentonite discharges on the marine environment are primarily associated with the smothering of surrounding benthic and infaunal communities. Cement is the most commonly used material in artificial reefs globally (Carral et al. 2020), and is not expected to pose toxicological impacts to marine receptors through leaching or direct contact, as it is considered chemically inert once set. The impact of any cement discharge at the seabed will therefore be limited to localised smothering of benthic and infaunal organisms in a small area immediately surrounding the wells.

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Minimum cement (50 t), barite (60 t) and bentonite (60 t) volumes are required to be stored on the MODU for use in well control and plug and abandon activities. While volumes are calculated before use to minimise excess, the requirement for additional volumes on the MODU for operational contingencies means there may be greater than the minimum onboard at the end of campaign. The requirement for additional volumes on the MODU means some excess bulk products may require discharge. Discharge of excess cement, barite, and bentonite (if required) may occur as a dry bulk or a slurry. Dry bulk has the potential to disperse across a wider area, but at lower concentration, compared to slurry which would have a greater tendency to settle on the seabed closer to the well location. In either case, discharges are not expected to widely disperse before settling on the seabed.

Reduction in water quality from bulk discharges will be temporary and subject to rapid dispersion and dilution by prevailing currents away from the discharge location. Impacts to plankton populations will therefore be localised and limited to the duration of the plume and are expected to return to previous conditions within a relatively short period of time.

Potential impacts to benthic communities caused by smothering from a surface release of cement are expected to be minimal due to rapid dispersion by ocean currents and the short-term duration of the release. Cement, once cured, is chemically inert and does not pose a toxicological risk. Both barite and bentonite have very low toxicities and are considered by OSPAR to pose little or no risk to the environment (PLONOR). These materials may, however, cause physical harm to benthic organisms through abrasion, clogging, or changes to sediment characteristics, which can inhibit the settlement of planktonic polychaete and mollusc larvae (Swan et al. 1994). Such impacts are considered negligible due to the low volumes involved, the one-off nature of the discharge, and the expected rapid dispersion of materials (Terrens et al. 1998). Any effects on soft sediment communities are expected to be minor, highly localised, and not detrimental to biodiversity or ecosystem function.

Given any required discharges of unused bulk product will be non-routine, minor, of short duration, and the low toxicity and expected high dispersion, any impacts to the marine environment are considered to have no lasting effect.

BOP and subsea control fluids

All chemicals that may be operationally released or discharged to the marine environment must be selected and approved as per the Chemical Selection and Assessment Environment Guideline (Section 7.2.1). Therefore, any chemicals selected and potentially released are expected to be of low toxicity and biodegradable. Additionally, where cements have been mixed in excess and cannot be reused or returned to shore, these will be turned into a slurry. As chemicals have initially been chosen based on the environmental performance and an ALARP assessment, additional dilution before discharge further reduces the environment impact to water quality, sediment quality and marine benthic and/or infauna communities. Given the minor quantities of routine and non-routine planned discharges, short discharge durations and the low toxicity and high dispersion in the open, offshore environment, any impacts on the marine environment are expected to be negligible.

Cumulative impacts

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

NWBM Remediation

Base fluids for NWBM (which may be recovered from the wells during Balnaves Deep-1 remediation activities) are designed to be low toxicity and biodegradable in offshore marine sediments. Biodegradation can result in a low oxygen (anoxic) environment, resulting in changes in benthic community structure. However, given the small volumes that may be discharged, impacts to benthic habitats and communities will be negligible.

One chemical within the existing residual NWBM was identified as non-biodegradable (Shell Saraline 185V (Section 6.9.1.2.3); however, it would only be discharged to the marine environment as residual contamination in the mud pit wash and due to the negligible volume, it is expected to rapidly dilute within the vicinity of the release location with no lasting effect.

Well infrastructure left in situ

The long-term presence of well infrastructure left in situ may result in localised environmental impacts to marine benthic biota. As steel components corrode over time due to exposure to saline conditions, low oxygen, and high pressure, trace amounts of metals may be released into surrounding sediments and water. These releases typically occur at very low concentrations and are unlikely to pose significant toxicological risk. However, the accumulation of corrosion products in sediments may lead to subtle changes in sediment chemistry, which could affect sensitive infaunal species. Given the limited scale of infrastructure and the gradual nature of corrosion, any impacts are expected to be minor, localised, and not detrimental to broader benthic ecosystem function.

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[56]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
Legislation, codes and standards				
No additional controls identified.				
Good practice				
Fluids, flocculant and additives intended or likely to be discharged to the marine environment will have an environmental assessment completed before use.	F: Yes. CS: Minimal cost. Standard practice.	Environmental assessment of chemicals will reduce the consequence of impacts resulting from discharges to the marine environment, by ensuring chemicals have been assessed for environmental acceptability. Planned discharges are required for the safe execution of activities and therefore no reduction in likelihood can occur.	Benefits outweigh cost/sacrifice.	Yes **C 10.1**
Daily operations reports, or similar, record volumes of drilling discharges.	F: Yes. CS: Minimal cost. Standard practice.	Record of daily volume reports will assist in maintaining and managing discharge volumes.	Benefits outweigh cost/sacrifice.	Yes **C 10.2**
For project activity fluids, six-monthly chemical reviews are performed during active campaigns.	F: Yes. CS: Minimal cost. Standard practice.	Reviews will ensure chemicals selected for Drilling and Completions fluids remain ALARP.	Benefits outweigh cost/sacrifice.	Yes **C 3.9**
Bulk operational discharges conducted under MODU's PTW system (to operate discharge valves/pumps).	F: Yes. CS: Minimal cost. Standard practice.	The MODU's PTW may slightly reduce the likelihood of bulk discharges occurring, but it is unlikely to be significant, given that bulk discharges are often operationally required and cannot be eliminated.	Benefits outweigh cost/sacrifice.	Yes **C 9.2**
Brine, WBM and clean-up fluids routed via the MODU mud system which are contaminated with NWBM, will be captured on the MODU for discharge if oil concentration is less than 1% by volume. If discharge contains greater than 1% OIW volume, fluid will be returned to shore or injected into the well and isolated from the environment.	F: Yes. CS: Minimal cost. Standard practice.	By taking the fluid with >1% NWBM onshore or reinjecting it into the well and isolating it from the marine environment the consequence of the release on the environment is eliminated. The decrease in consequence results in an environmental benefit.	Benefits outweigh cost/sacrifice.	Yes **C 9.3**

[56] *Qualitative measure*

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[56]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
Professional judgement – Eliminate				
Do not use subsea pressure control system control fluids.	F: No. subsea pressure control system control fluids are critical to the operation of the system. CS: Not considered – control not feasible.	Not considered – control not feasible.	Not considered – control not feasible.	No
Return wet cement and other down-well products onshore for treatment/disposal.	F: Yes. However, cement slurry may harden during transport, introducing difficulty in handling and transportation. CS: The cost involved in transporting cement for shore-based disposal is significant.	No discharge of cement to the marine environment would eliminate the consequence of impacts from such activities.	Disproportionate. Given the non-toxic nature of cement, the cost/sacrifice outweighs the benefit gained.	No
Sampling/analysis of stock barite to ensure acceptable levels of heavy metals (i.e. concentrations of mercury and cadmium in barite are <1 mg/kg and <3 mg/kg, respectively).	F: Yes. CS: Minimal cost. Standard practice.	Barite may contain heavy metals, such as cadmium and mercury, depending on their geological origin. Limiting the concentrations of cadmium and mercury is consistent with industry good practice. Limiting cadmium and mercury concentrations in barite reduces the environmental risk from discharges of barite to the environment, in the event barite is discharged to the marine environment in accordance with Figure 6-1.	Benefits outweigh cost/sacrifice.	Yes **C 10.3**
Excess dry bulk products will be managed as per Figure 6-1.	F: Yes. However, the cement may not meet the required technical specifications, and hence not be usable. CS: Minor administrative costs associated with coordinating reuse opportunities. Cost savings associated with the re-use of dry bulk products. Moderate cost associated with	Reusing bulk products or identifying an opportunity for it to be returned to shore may eliminate any environmental impacts associated with discharge to the marine environment, where these options are safe and technically feasible. Furthermore, following the process outlined in Figure 6-1 confirms that discharge to the marine environment only occurs when there are no other	Benefits outweigh cost/sacrifice.	Yes **C 10.4**

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[56]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
	onshore transportation and/or disposal, if deemed feasible.	safe or technically feasible options and therefore when ALARP.		
Professional judgement – Substitute				
No additional controls identified.				
Professional judgement – Engineered solution				
No additional controls identified.				
ALARP statement: On the basis of the assessment outcomes, use of the relevant tools appropriate to the decision type (i.e. Decision Type A; Section 2.3.4.2) and Woodside's criteria for demonstrating ALARP (Section 2.4.1), Woodside considers the adopted controls appropriate to manage potential impacts/risks associated with routine and non-routine discharge of wet cement, cementing fluids, subsea control fluids, marine growth cleaning fluids and marine riser clean-out debris. As no reasonably practicable additional/alternative controls were identified that would further reduce the impacts without disproportionate sacrifice, the impacts/risks are considered ALARP.				

Demonstration of acceptability
Acceptability statement: The impact/risk assessment has determined that, given the adopted controls, routine and non-routine discharge of wet cement, cementing fluids, subsea control fluids, marine growth cleaning fluids and marine riser clean-out debris are expected to have no lasting effect on environmental feature/s or area/s due to minor discharge quantities and rapid dispersion and dilution of discharges. The adopted controls are considered consistent with industry good practice and professional judgement. When considering the broader acceptability of the potential impacts, consideration has been given to the legislative context, including international conventions such as the Minamata Convention on Mercury (Minamata Convention). While there are currently no specific legislative requirements relating to the Minamata Convention relevant to the management of mercury in this EP, Woodside has undertaken an assessment of the Petroleum Activity and the Minamata Convention (including the measures in Article 9(5), see Table 6-1 and considers that the Petroleum Activity is not inconsistent with the Minamata Convention.

Table 6-12: Consideration of control measures outlined in Article 9(5) of the Minamata Convention

Measures in Article 9(5) of the Minamata Convention	Justification for Implementation or Rejection
Release limit values to control and, where feasible, reduce releases from relevant sources.	The performance standard limiting the concentration of mercury in barite aligns with API standards and limits the release of mercury to the environment. Woodside will only discharge bulk barite if it cannot be used for subsequent drilling activities and where technical assessment outcomes demonstrate that onshore disposal is not feasible.

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Demonstration of acceptability	
The use of best available techniques[57] and best environmental practices[58] to control releases from relevant sources[59].	Woodside has reviewed the Releases of mercury: adoption of guidance on best available techniques and best environmental practices to control releases of mercury from relevant sources (article 9)[60] which was adopted at the 5Th CoP 2023. The measures included, are for gas processing and therefore not relevant to offshore oil and gas drilling. Woodside is committed to implementing the process shown in Figure 6-1: which demonstrates ALARP and is consistent with the Minamata Convention. Woodside's bulk excess discharge process (as defined in Figure 6-1) meets the definition of "available" in that it provides the opportunity to identify options that are "technically and economically viable" and which are "accessible by the operator of the facility".
A multi-pollutant control strategy that would deliver co-benefits for control of mercury releases.	Woodside implements a management process to re-use barite where practicable, shown in Figure 6-1. This process reduces bulk discharges of barite to the environment. Woodside's performance standard limiting mercury concentrations in barite also limits the concentration of cadmium, which is also a recognized toxicant. This performance standard hence is a multi-pollutant strategy.
Alternative measures to reduce releases from relevant sources.	No other opportunities to reduce releases of mercury were identified.
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 that the adopted controls are appropriate to manage impacts/risks to a level that is broadly acceptable, and that compliance with those controls demonstrates that the EPOs are met.	

[57] "Best available techniques" are defined in the Minamata Convention as: "(b) "Best available techniques" means those techniques that are the most effective to prevent and, where that is not practicable, to reduce emissions and releases of mercury to air, water and land and the impact of such emissions and releases on the environment as a whole, taking into account economic and technical considerations for a given Party or a given facility within the territory of that Party. In this context:

(i) "Best" means most effective in achieving a high general level of protection of the environment as a whole;

(ii) "Available" techniques means, in respect of a given Party and a given facility within the territory of that Party, those techniques developed on a scale that allows implementation in a relevant industrial sector under economically and technically viable conditions, taking into consideration the costs and benefits, whether or not those techniques are used or developed within the territory of that Party, provided that they are accessible to the operator of the facility as determined by that Party; and

(iii) "Techniques" means technologies used, operational practices and the ways in which installations are designed, built, maintained, operated and decommissioned.

[58] "Best environmental practices" are defined in the Minamata Convention as: "(c) "Best environmental practices" means the application of the most appropriate combination of environmental control measures and strategies."

[59] Australia has not yet identified "relevant sources" in the context of this article.

[60] NATIONS UNITES (minamataconvention.org)

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EPOs, EPS and MC			
EPO	***Controls***	***PS***	***MC***
EPO 10 Impacts from routine and non-routine discharges from wet cement, cementing fluids, NWBM remediation, subsea fluids, marine growth cleaning fluids, unused bulk products and marine riser clean-out will be limited to planned activities and impacts described as part of the Petroleum Activity.	**C 10.1** Fluids, flocculant and additives intended or likely to be discharged to the marine environment will have an environmental assessment completed before use.	**PS 10.1** All chemicals, planned to be used and intended or likely to be discharged to the marine environment reduced to ALARP using the chemical assessment process.	**MC 10.1.1** Records demonstrate chemical selection, assessment and approval process is followed.
	C 10.2 Daily operations reports, or similar, record volumes of drilling discharges.	**PS 10.2** All drilling discharges recorded in daily operations reports or similar.	**MC 10.2.1** Records validate volumes of drilling discharges.
	C 10.3 Sampling/analysis of stock barite to ensure acceptable levels of heavy metals (i.e. concentrations of mercury and cadmium in barite are <1 mg/kg and <3 mg/kg, respectively).	**PS 10.3** Sampling/analysis of stock barite to ensure that heavy metals of concern (cadmium and mercury) are within limits prescribed by API standards: • Mercury (Hg): max 1 mg/kg (<1 ppm) dry weight in stock barite. Cadmium (Cd): max 3 mg/kg (<3 ppm) dry weight in stock barite.	**MC 10.3.1** Records demonstrate that concentrations of heavy metals within stock barite used during the activity did not exceed: • Mercury (Hg): max 1 mg/kg (<1 ppm) dry weight in stock barite. Cadmium (Cd): max 3 mg/kg (<3 ppm) dry weight in stock barite.
	C 10.4 Excess dry bulk products will be managed as per Figure 6-1.	**PS 10.4.1** Where the MODU is contracted for a subsequent Woodside drilling activity immediately following the Petroleum Activity, bulk cement, bentonite and barite is retained on-board for reuse.	**MC 10.4.1** Records demonstrate that if the MODU is contracted for subsequent drilling activity immediately following the Petroleum Activity, dry bulk cement, bentonite and barite retained on board MODU for reuse at the conclusion of drilling campaign.
		PS 10.4.2 Where activity is last in Woodside MODU schedule, assess feasibility to transfer unused dry bulk cement, bentonite and barite to next titleholder who has the MODU on hire, or another Woodside- or other titleholder-contracted MODU operating in the region. If deemed feasible, bulks to be retained on board or transferred for reuse.	**MC 10.4.2** Records demonstrate that where activity is the last in the Woodside MODU schedule, feasibility of transfer of unused dry bulk cement, bentonite and barite to next operator of the MODU, another Woodside or other titleholder rig in the region assessed and implemented if feasible.

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EPOs, EPS and MC			
EPO	***Controls***	***PS***	***MC***
		PS 10.4.3 Technical assessment of elimination of dry bulk discharge of barite on completion of drilling campaign undertaken, where options for reuse of bulk products on MODU or other MODUs in the region are not feasible. Assessment to consider: • environmental risk, • health and safety risk, and feasibility and timeframes for onshore disposal.	**MC 10.4.3** Records demonstrate study undertaken where other options for reuse are not applicable.
		PS 10.4.4 No discharge of bulk barite at completion of the drilling campaign, where assessment deems onshore transportation considered technically feasible and ALARP.	**MC 10.4.4** Records demonstrate bulk barite transported onshore where transportation options are feasible and ALARP.
	C 3.9 Refer to Section 6.8.6.	**PS 3.9.1** Refer to Section 6.8.6.	**MC 3.9.1** Refer to Section 6.8.6.
	C 9.2 Refer to section 6.8.7.	**PS 9.2** Refer to section 6.8.7.	**MC 9.2.1** Refer to section 6.8.7.
	C 9.3 Refer to Section 6.8.7.	**PS 9.3** Refer to Section 6.8.7.	• MC 9.3.1 Refer to Section 6.8.7.

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6.8.9 Solid waste generation and management

Context		
Project vessels – Section 3.6 Permanent plugging activities – Section 3.12 Removal and recovery of wellheads – Section 3.12.2	Physical environment – Section 4.4 Habitats and biological communities – Section 4.5 Protected species – Section 4.6 Socio-economic environment – Section 4.9	Stakeholder consultation – Section 5

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
Hazardous and non-hazardous solid waste generated during MODU and project vessel operations.	X	X		X	X	X	A	F	-	-	LCS GP	Broadly Acceptable	EPO 11
Recovered well infrastructure.	X	X		X	X	X	A	F	-	-			

Description of source of impact

MODU and project vessels

The MODU and project vessels generate a variety of hazardous and non-hazardous solid wastes, including domestic and industrial wastes. These include aluminium cans, bottles, paper and cardboard, scrap steel, chemical containers, batteries, and medical wastes. Wastes on-board are managed in accordance with an on-board waste management plan.

Solid waste is segregated on-board the project vessels and stored in designated skips and waste containers. Wastes are segregated into the categories of:

- non-hazardous waste (or general waste),
- hazardous waste, and
- recyclables (further segregation is conducted in line with practices at existing Woodside operations in the region).

General non-hazardous waste includes domestic and galley waste, and recyclables such as scrap materials, packaging, wood and paper and empty containers. Volumes of non-hazardous waste generated on vessels are generally minor. Hazardous wastes are defined as those that are or contain ingredients harmful to health or the environment.

Hazardous wastes likely to be generated on-board the project vessels include oil-contaminated materials (such as sorbents, filters, and rags), chemical containers and batteries. The volumes of generated hazardous wastes are also generally minor.

Recovered Well Infrastructure

Well infrastructure may be recovered to the MODU or project vessel and transported to shore for reuse or disposal in an acceptable manner, or required, wellheads may be cut and wet parked within the Operational Area. Wet parked

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wellheads will then be removed at a later date by a construction support vessel operating under the NWS and Julimar Exploration Wellhead Decommissioning Environment Plan[61].

The recovery of well infrastructure will generate industrial waste mainly comprising of steel, polymers and smaller quantities of other materials that will require onshore handling and disposal at licenced facilities. Waste generated from decommissioning of well infrastructure could contribute to the increasing pressure on local landfills if not managed appropriately through consideration of the waste hierarchy and alternative means of disposing to landfill. There is also the potential for recovered infrastructure to be incorrectly classified and disposed of inappropriately leading to contamination of waste streams.

Woodside is committed to re-use, repurposing and recycling as much of the decommissioning infrastructure as practicable. Any wastes generated during the Petroleum Activity, including recovery of well infrastructure, will be disposed in accordance with a Waste Management hierarchy shown in Figure 6-2.

- Reduce,
- Reuse,
- Recycle,
- Waste to energy,
- Disposal to landfill, and
- Entombment.

This hierarchy ranks disposal options from the most preferred (re-use and repurposing) to the least preferred (entombment).

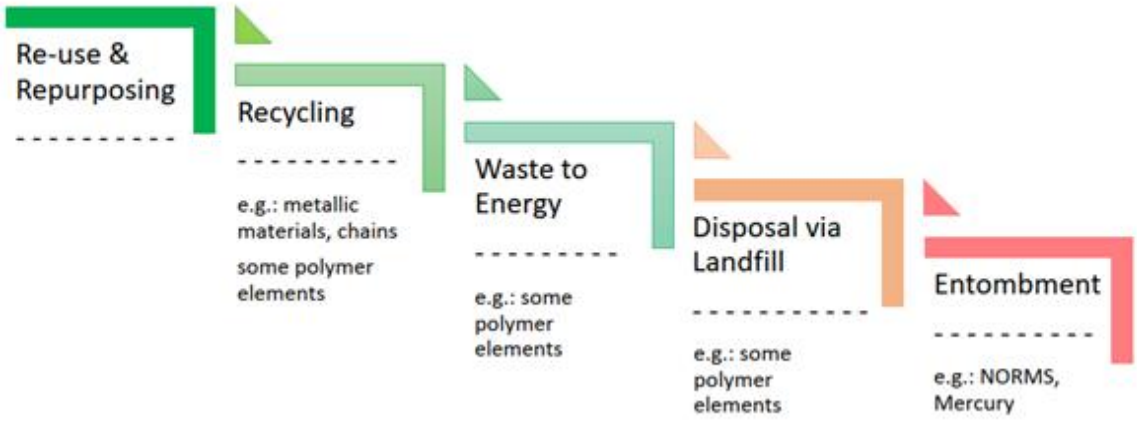

Figure 6-2: Equipment removal waste management hierarchy

All waste streams will be managed in accordance with applicable legislative requirements, or in accordance with international guidance where applicable, for example:

- *Hazardous Waste (Regulation of Exports and Imports) Act 1989 (Cth)* which implements the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal.
- *Navigation Act 1912* (Cth), the *Protection of the Sea (Prevention of Pollution from Ships) Act 1983* (Cth) and associated Marine Order 95 – Marine Pollution Prevention–Garbage.
- Environmental Protection (Controlled Waste) Regulations 2004 (WA).
- MARPOL: International Convention for the Prevention of Pollution from Ships.
- International Finance Corporation: EHS Guidelines: Environmental Waste Management.
- Minamata Convention on Mercury (United Nations Environment Programme).

[61] *Vessel based IMR activities and wellhead removal may take place within the same campaign as the MODU-based P&A activity, or in a separate campaign prior to the arrival of the MODU and may be managed under the accepted NWS and Julimar Exploration Wellhead Decommissioning Environment Plan.*

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Impact assessment
Environmental value(s) potentially impacted
MODU and project vessels Waste generated during the petroleum activity will be transported to and managed appropriately by third parties. Environmental impacts associated with onshore disposal relate to the small incremental increase in waste volumes received at the onshore licensed waste recycling and disposal sites. The environmental impacts associated with waste disposal onshore are anticipated to be minor, based on the minor quantities involved and recycling of some materials. Hazardous wastes generated by vessels will be classified and managed in accordance with the waste management procedures. This will include ensuring hazardous materials are disposed of by suitable waste management facilities. ***Recovered well infrastructure*** Environmental impacts associated with recovered well infrastructure disposal will depend on the classification of the waste in accordance with the waste management hierarchy (Figure 6-2). • Reuse of well infrastructure has no or very minor environmental impact; however, there is little potential for reuse of recovered well infrastructure. • Recycling of well infrastructure requires energy use associated with a recycling process (e.g., use of heat etc). The use of energy for the recycling process has very minor environmental impact. Woodside's recent decommissioning experience indicates almost all the recovered well infrastructure will be recycled. • The disposal of well infrastructure to landfill contributes to the overall volume of waste going to landfill each year. Whilst the volumes of waste material associated with the well infrastructure are relatively minor compared to the volume of waste going to landfill in Australia each year (estimated at 20 million tonnes each year (Australian Bureau of Statistics 2020)), the exploration of reducing waste to landfill through recycling and other waste management practices is part of the National Waste Policy Action Plan 2019 (CoA 2019). Whilst Woodside's waste management philosophy follows the waste management hierarchy (Figure 6-2), in some instances reuse and recycling of well infrastructure waste is not feasible. Should well infrastructure waste goes to landfill the environmental impacts are anticipated to be minor, based on the relatively small quantities involved. Hazardous waste materials will be classified and managed in accordance with the waste management procedures. This will include ensuring hazardous materials are transported in accordance with waste classification requirements and disposed of at suitably licensed waste management facilities. Woodside will provide appropriate assurance over final disposal of recovered equipment. The disposal of recovered well infrastructure may result in indirect impacts. Recovered steel, which comprises almost all the recovered material by mass, is expected to be recycled. Recycling may indirectly reduce demand for new steel, resulting in less consumption of energy and metals used to create steel. Material that cannot be recycled will be disposed of in accordance with the waste management hierarchy shown in Figure 6-2. Most non-recyclable wastes are expected to be disposed of in either inert waste or intractable waste landfill facilities. Given the infrastructure has not been used in hydrocarbon production, it is not expected to contain mercury or NORMS. Landfill facilities are limited in volume, and disposal of non-recyclable material by landfill will reduce the capacity of existing landfill facilities. Given the nature of the material that may be disposed of as landfill and the management of landfill facilities, indirect impacts such as groundwater contamination will not credibly occur. Transportation of recovered materials for recycling or disposal will have indirect impacts from the logistics chain, such as greenhouse gas emissions from transportation. Indirect impacts from management of recovered subsea equipment are a measurable but limited impact to the environment.

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[62]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
Legislation, codes and standards				
Project vessels compliant with Marine Orders for safe vessel operations: • Marine Order 94 (Marine pollution prevention – packaged harmful substances) 2014. • Marine Order 95 (Pollution prevention – Garbage).	F: Yes. CS: Minimal cost. Standard practice.	Legislative requirements to be followed reduce the likelihood of an unplanned release. The consequence is unchanged.	Benefits outweigh cost/sacrifice.	Yes **C 11.1**
Drilling and completions waste arrangements, which require: • Dedicated space for waste segregation and skips to be provided on the MODU. • Records of all waste to be disposed, treated or recycled. • Waste streams to be handled and managed according to their hazard and recyclability class. • All non-putrescible waste (excludes all food, greywater or sewage waste) to be transported from the MODU and disposed onshore.	F: Yes. CS: Minimal cost. Standard practice.	Controls outlined in the management plan will reduce the likelihood of an unplanned release. The consequence is unchanged.	Benefits outweigh cost/sacrifice.	Yes **C 11.2**
Disposal of any hazardous waste associated with the well infrastructure will comply with relevant State and Commonwealth legislation, including: • Commonwealth Hazardous Waste (Regulation of Exports and Imports) Act 1989. • WA Environmental Protection (Controlled Waste) Regulations 2004.	F: Yes. CS: Minimal cost. Standard practice.	Legislative requirements to be followed reduce the likelihood of incorrect disposal of infrastructure. The control is based on a legislative requirement and therefore must be adopted.	Benefits outweigh cost/sacrifice.	Yes **C 11.3**

[62] *Qualitative measure*

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[62]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
Good practice				
Project vessels waste arrangements, which require: • Dedicated space for waste segregation bins and/or skips to be provided. • Records of all waste to be disposed, treated or recycled. • Waste streams to be handled and managed according to their hazard and recyclability class. • All non-putrescible waste (excludes all food, greywater or sewage waste) to be disposed of onshore.	F: Yes. CS: Minimal cost. Standard practice.	Reduces the likelihood of an unplanned release. The control is feasible, standard practice with minimal cost. Benefits outweigh any cost sacrifice.	Benefits outweigh cost/sacrifice.	Yes **C 11.4**
Implement an infrastructure disposal and resource recovery strategy that: • monitors and tracks waste from recovery to end state, • considers the waste hierarchy when determining appropriate end state for waste, and • describes contingency procedures for dealing with contaminants offshore and onshore.	F: Yes. CS: Moderate cost. Standard practice.	Reduces the risk of unsuitable disposal through efficient use of resources and reduces the risk of unplanned contamination of waste streams during disposal. Control is feasible and can be implemented with minimal cost. Control considered standard practice. Benefits outweigh cost sacrifice.	Benefits outweigh cost/sacrifice.	Yes **C 11.5**
Waste management contractor evaluation and selection will include a preference for contractors who are able to follow the waste management hierarchy philosophy, including achieving recycling targets and minimising waste volumes disposed to landfill.	F: Yes. CS: Minimal cost. Standard practice.	Waste management practices will aim to reduce the volume of waste to landfill. Control is feasible and can be implemented with minimal cost. Control considered standard practice. Benefits outweigh cost sacrifice.	Benefits outweigh cost/sacrifice.	Yes **C 11.6**
Environmental awareness induction provided to vessel crews to include waste management requirements for the project.	F: Yes. CS: Minimal cost. Standard practice.	Providing awareness inductions to personnel assists in understanding obligations.	Benefits outweigh cost/sacrifice.	Yes **C 11.7**
Professional judgement – Eliminate				
No additional controls identified.				

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[62]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
Professional judgement – Substitute				
No additional controls identified.				
Professional judgement – Engineered Solution				
No additional controls identified.				
ALARP statement: On the basis of the assessment outcomes, use of the relevant tools appropriate to the decision type (i.e. Decision Type A; Section 2.3.4.2) and Woodside's criteria for demonstrating ALARP (Section 2.4.1), Woodside considers the adopted controls appropriate to manage potential impacts/risks associated with solid waste generation derived from vessels and recovered well infrastructure. As no reasonably practicable additional/alternative controls were identified that would further reduce the impacts without disproportionate sacrifice, the impacts/risks are considered ALARP.				

Demonstration of acceptability
Acceptability statement: The impact/risk assessment has determined that, given the adopted controls waste generation will have no lasting effect to environmental feature/s or area/s due to the material handled onshore for disposal or recycling. Relevant recovery plans, conservation advice and threat abatement plans have been considered during the impact assessment, and the Petroleum Activity is not considered to be inconsistent with the overall recovery objectives and actions of these plans and advice (refer to Section 1.7.2). 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 that the adopted controls are appropriate to manage impacts/risks to a level that is broadly acceptable, and that compliance with those controls demonstrates that the EPOs are met.

EPOs, EPS and MC			
EPO	***Controls***	***PS***	***MC***
EPO 11 Waste generated is segregated and disposed of onshore in accordance with relevant legislation.	**C 11.1** Project vessels compliant with Marine Orders for safe vessel operations: • Marine Order 94 (Marine pollution prevention –packaged harmful substances) 2014. • Marine Order 95 (Pollution prevention – Garbage).	**PS 11.1** Project Vessels compliant with Marine Order 94 and 95.	**MC 11.1.1** Records demonstrate Project Vessels are compliant with Marine Order 94 and 95.
	C 11.2 Drilling and completions waste arrangements, which require: • Dedicated space for waste segregation bins and skips to be provided on the MODU.	**PS 11.2** Hazardous and non-hazardous waste will be managed in accordance with the Drilling and Completions waste arrangements.	**MC 11.2.1** Records demonstrate compliance against Drilling and Completions waste arrangements.

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EPOs, EPS and MC			
EPO	***Controls***	***PS***	***MC***
	• Records of all waste to be disposed, treated or recycled. • Waste streams to be handled and managed according to their hazard and recyclability class. • All non-putrescible waste (excludes all food, greywater or sewage waste) to be transported from the MODU and disposed onshore.		
	C 11.3 Disposal of any hazardous waste associated with the well infrastructure will comply with relevant State and Commonwealth legislation, including: • Commonwealth Hazardous Waste (Regulation of Exports and Imports) Act 1989. • WA Environmental Protection (Controlled Waste) Regulations 2004.	**PS 11.3** Disposal of any hazardous waste associated with the well infrastructure is compliant with the *Commonwealth Hazardous Waste (Regulation of Exports and Imports) Act 1989* and the WA Environmental Protection (Controlled Waste) Regulations 2004.	**MC 11.3.1** Records demonstrate disposal of hazardous waste associated with the well infrastructure was compliant with relevant Commonwealth and State legislation.
	C 11.4 Project vessels waste arrangements, which require: • Dedicated space for waste segregation bins and/or skips to be provided. • Records of all waste to be disposed, treated or recycled. • Waste streams to be handled and managed according to their hazard and recyclability class. • All non-putrescible waste (excludes all food, greywater or sewage waste) to be disposed of onshore.	**PS 11.4** Hazardous and non-hazardous waste will be managed in accordance with the Project Vessel waste arrangements.	**MC 11.4.1** Records demonstrate compliance against Project Vessel waste arrangements.

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EPOs, EPS and MC			
EPO	***Controls***	***PS***	***MC***
	C 11.5 Implement an infrastructure disposal and resource recovery strategy that: • monitors and tracks waste from recovery to end state, • considers the waste hierarchy when determining appropriate end state for waste, and • describes contingency procedures for dealing with contaminants offshore and onshore.	**PS 11.5** Decommissioning waste generated from infrastructure removal is managed in accordance with the infrastructure disposal and resource recovery strategy.	**MC 11.5.1** Records demonstrate compliance against an infrastructure disposal and resource recovery strategy.
	C 11.6 Waste management contractor evaluation and selection will include a preference for contractors who are able to follow the waste management hierarchy philosophy, including achieving recycling targets and minimising waste volumes disposed to landfill.	**PS 11.6** Engagement with relevant waste contractors to identify potential waste disposal pathways will be undertaken and inform the infrastructure.	**MC 11.6.1** Records demonstrating relevant waste contractors have been engaged.
	C 11.7 Environmental awareness induction provided to vessel crews to include waste management requirements for the project.	**PS 11.7** MODU and vessel crew shall undertake a project-specific induction covering waste management requirements for the project.	**MC 11.7.1** Environment induction attendance records demonstrate MODU and vessel crews are aware of project waste management requirements.

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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 Petroleum Activity.

Quantitative hydrocarbon spill modelling was undertaken by RPS, on behalf of Woodside, using a three-dimensional (3D) hydrocarbon spill trajectory and weathering model, Spill Impact Mapping and Analysis Program (SIMAP), which is designed to simulate the transport, spreading and weathering of specific hydrocarbon types under the influence of changing meteorological and oceanographic forces. Near-field subsurface discharge modelling was performed using OILMAP, which predicts the droplet sizes that are generated by the turbulence of the discharge as well as the centreline velocity, buoyancy, width and trapping depth (if any) of the rising gas and oil plumes. The OILMAP output parameters were used as input into SIMAP.

The algorithms in the SIMAP model are based on the best available scientific knowledge and are updated when necessary in response to significant advances in knowledge. Recent improvements have been implemented to the entrainment algorithm, which have been adjusted to implement the findings of published data based on field research performed during the Macondo spill event in the Gulf of Mexico (Spaulding et al. 2017; Li et al. 2017; French McCay et al. 2018).

A stochastic modelling scheme was followed in this study, whereby SIMAP was applied to repeatedly simulate the defined credible spill scenarios using different samples of current and wind data. These data samples were selected randomly from an historic time-series of wind and current data representative of the study area. Results of the replicate simulations were then statistically analysed and mapped to define contours of percentage probability of contact at identified thresholds around the hydrocarbon release point. The simulations that show something unusual or unexpected make an important contribution to the overall outcomes and fate of the hydrocarbon.

The model simulates surface releases and uses the unique physical and chemical properties of a hydrocarbon type to calculate rates of evaporation and viscosity change, including the tendency to form oil-in-water emulsions. Moreover, the unique transport and dispersion of surface slicks and in-water components (entrained and dissolved) are modelled separately. Thus, the model can be used to understand the wider potential consequences of a spill, including direct contact of hydrocarbons due to surface slicks (floating hydrocarbon) and exposure of organisms to entrained and dissolved aromatic hydrocarbons in the water column. The model also calculates the accumulation of hydrocarbon mass that arrives on each section of shoreline over time, taking into account any mass that is lost to evaporation and/or subsequent removal by current and wind forces.

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

The collective records from all simulations are then analysed by dividing the study region into a 3D grid. For surface hydrocarbons (floating oil), the sum of the mass in all hydrocarbon particles located within a grid cell, divided by the area of the cell, provides hydrocarbon concentration estimates in that grid cell at each model output time interval. For entrained and dissolved aromatic hydrocarbon particles, concentrations are calculated at each time step by summing the mass of particles within a grid cell and dividing by the volume of the grid cell. The process is also subject to the application of spreading filters that represent the expected mass distribution of each distinct particle. The concentrations of hydrocarbons calculated for each grid cell, at each time step, are then analysed to determine whether concentration estimates exceed defined threshold concentrations.

Hydrocarbon spill modelling assessments undertaken by RPS undergo initial sensitivity modelling to determine appropriate time to add to the simulation after the cessation of the spill. The amount of time following the spill is based on the time required for the modelled concentrations to practically drop below threshold concentrations anywhere in the model domain in the test cases. This assessment is done by post-

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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 Worst-case scenarios

In assessing the potential impacts of an unplanned hydrocarbon release, representative worst-case scenarios (in terms of volume and location) were assessed. A summary of the credible hydrocarbon spill scenarios that could occur during the Petroleum Activity are provided in Table 6-7.

Table 6-7: Credible hydrocarbon spill scenarios

Scenario	Hydrocarbon type	Duration (days)	Maximum credible volume (m^3)	Modelled Location
Scenario 1 Hydrocarbon release caused by loss of well containment during P&A operations.	Julimar Condensate	91[63]	2,679	Subsea release at Julimar East-1 wellhead location.
Scenario 2 Marine fuel release caused by loss of marine vessel separation or vessel collision.	Marine diesel oil	Instantaneous	500	Surface release at Balnaves Deep-1 wellhead location (closest wellhead to Tryal Rocks).
Scenario 3 Marine fuel loss during fuel bunkering.	Marine diesel oil	Release over 15 minutes (1.6 m^3/min)	24	Surface Release.
Scenario 4 Release of NWBM contained in annuli caused by remediation system failure.	Shell Saraline 185V (NWBM)	Instantaneous	67	Seabed release at Balnaves Deep-1 wellhead location .

6.9.1.2 Hydrocarbon characteristics

Table 6-8 summarises the characteristics of the hydrocarbons used as the basis for the modelling studies and subsequently used to inform the assessment of credible hydrocarbon spills. Additional detail on the characteristics of these hydrocarbons is also provided in the sections below.

[63] *91 days has been modelled as the worst-case duration for a loss of well containment where mobilisation of a MODU from southeast Australia is required for executing a relief well. Mobilisation of a locally available MODU is estimated to result in a loss of well containment duration of ~63 days and, from southeast Asia, ~78 days.*

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Table 6-8: Characteristics of the hydrocarbon types used for modelling and ecotoxicological studies

Hydrocarbon Type	Density (g/m^3)	Viscosity (cP)	Component	Volatile (%)	Semi-volatile (%)	Low volatility (%)	Residual (%)	Aromatics (%)
			Boiling Point (°C)	<180	180–265	265–380	>380	Of whole oil <380
Julimar Condensate	0.798 @ 15 °C	1.39 @ 20 °C	% of total	43.6	22.9	27.1	6.5	19.9
			% aromatics	8.8	5.1	6.0	-	-
Marine diesel	0.829 @ 25 °C	4.0 @ 25 °C	% of total	6.0	34.6	54.4	5.0	3.0
			% aromatics	1.8	1.0	0.2	-	-
Shell Saraline 185V	0.781 @ 15 °C	3.124 @ 25 °C	% of total	1.8	28.5	61.9	7.8	1.1
			% aromatics	0.4	0.2	0.5	-	-

6.9.1.2.1 Julimar condensate

Julimar condensate contains a low proportion (6.5% by mass) of hydrocarbon compounds that will not evaporate at atmospheric temperatures. These compounds will persist in the marine environment. The unweathered mixture has a dynamic viscosity of 1.39 cP (1.742 cSt). The pour point (-24 °C) of the whole oil ensures that it will remain in a liquid state over the annual temperature range observed in NWS waters.

The mixture is composed of hydrocarbons that have a wide range of boiling points and volatilities at atmospheric temperatures, and which will begin to evaporate at different rates on exposure to the atmosphere. Evaporation rates will increase with temperature, but in general about 43.6% of Julimar Condensate mass has the capacity to evaporate within the first 12 hours (BP < 180 °C); a further 22.9% could evaporate within the first 24 hours (180 °C < BP < 265 °C); and a further 27.1% could evaporate over several days (265 °C < BP < 380 °C).

Selective evaporation of the lower boiling-point components will lead to a shift in the physical properties of the remaining mixture, including an increase in the viscosity and pour point. Although removal of the volatile compounds through evaporation and dissolution will result in an increase in density of the remaining oil, the mixture is unlikely to solidify or sink as it weathers.

The whole oil has low asphaltene content (< 0.5%), indicating a low propensity for the mixture to take up water to form water-in-oil emulsion over the weathering cycle.

Soluble aromatic hydrocarbons contribute approximately 15.4% by mass of the whole oil, with a significant proportion (8.9%) in the C4-C10 range of hydrocarbons. These compounds will evaporate rapidly, reducing the potential for dissolution of a proportion of them into the water.

6.9.1.2.2 Marine diesel

Marine diesel is a mixture of volatile and persistent hydrocarbons with low proportions of highly volatile and residual components. In general, about 6% of the oil mass should evaporate within the first 12 hours (BP < 180 °C); a further 35% should evaporate within the first 24 hours (180 °C < BP < 265 °C); and a further 54% should evaporate over several days (265 °C < BP < 380 °C) (RPS 2022). Approximately 5% of the oil is shown to be persistent. The aromatic content of the oil is approximately 3%. The characteristics of the marine diesel are given in Table 6-8.

6.9.1.2.3 Shell Saraline 185V

The synthetic base oil/NWBM contains a low proportion (7.8% by mass) of hydrocarbon compounds that will not evaporate at atmospheric temperatures. These compounds will persist in the marine environment. The unweathered mixture has a dynamic viscosity of 3.124 cP (4 cSt). The pour point (-20 °C) of the whole oil ensures that it will remain in a liquid state over the annual temperature range observed in NWS waters.

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The base oil is composed of hydrocarbons that have a wide range of boiling points and volatilities at atmospheric temperatures, and which will begin to evaporate at different rates on exposure to the atmosphere. Evaporation rates will increase with temperature, but in general about 1.8% of the base oil mass has the capacity to evaporate within the first 12 hours (BP < 180 °C); a further 28.5% could evaporate within the first 24 hours (180 °C < BP < 265 °C); and a further 61.9% could evaporate over several days (265 °C < BP < 380 °C).

Selective evaporation of the lower boiling-point components will lead to a shift in the physical properties of the remaining mixture, including an increase in the viscosity and pour point. Although removal of the volatile compounds through evaporation and dissolution will result in an increase in density of the remaining oil, the mixture is unlikely to solidify or sink as it weathers.

The whole oil has low asphaltene content (< 0.5%), indicating a low propensity for the oil to take up water to form water-in-oil emulsion over the weathering cycle.

There is a very low amount of soluble aromatic hydrocarbons at approximately 1.1% by mass of the whole oil. These compounds will evaporate rapidly, reducing the potential for dissolution of a proportion of them into the water.

6.9.1.3 Environment that may be affected and hydrocarbon contact thresholds

The outputs of the quantitative hydrocarbon spill modelling are used to assess the environmental consequence by delineating which areas of the marine environment could be exposed to hydrocarbon levels that exceed selected hydrocarbon threshold concentrations if a credible hydrocarbon spill scenario occurs. The summary of the locations where hydrocarbon thresholds could be exceeded by any of the simulations modelled is defined as the EMBA.

The EMBA covers a larger area than the area that is likely to be affected during any single spill event, as the model was run for various weather and metocean conditions. The EMBA represents the total extent of all the locations where hydrocarbon thresholds could be exceeded from all modelling runs. Furthermore, as the weathering of different fates of hydrocarbons (surface, entrained and dissolved) differs due to the influence of the metocean mechanism of transportation, a different EMBA is presented for each hydrocarbon fate. Together, these EMBA have defined the spatial extent for the existing environment described in Section 4.

Hydrocarbon contact below the defined thresholds may occur outside the EMBA; however, the effects of these low exposure values will be limited to temporary exceedance of water quality triggers. The area within which this may occur in the event of a worst-case credible spill is presented in Appendix G. Given the EMBA comprises the results of many individual simulations, the total area covered at the thresholds has been smoothed to create a continuous boundary for the purpose of describing the environment within it (Figure 4-1).

The spill modelling outputs are presented as areas that meet threshold concentrations for surface, entrained and dissolved hydrocarbons for the modelled scenarios. Surface spill concentrations are expressed as grams per square metre (g/m^2), with entrained and dissolved aromatic hydrocarbon concentrations expressed as parts per billion (ppb). A conservative approach to selecting thresholds was taken by adopting the guideline impact thresholds (NOPSEMA 2019) for surface, entrained, dissolved and accumulated hydrocarbons to define the EMBA for Julimar condensate, marine diesel and Shell Saraline 185V. An additional threshold has been included to define the boundary within which socio-cultural impacts may occur, based on visible surface oil (1 g/m^2) impacting on the visual amenity of the marine environment. Each of these hydrocarbon thresholds are presented in Table 6-9 and described in the subsections below.

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Table 6-9: Summary of thresholds applied to the quantitative hydrocarbon spill risk modelling results

Hydrocarbon type	EMBA				Socio-cultural EMBA	
	Dissolved hydrocarbon (ppb)	Entrained hydrocarbon (ppb)	Surface hydrocarbon (g/m^2)	Accumulated/ shoreline hydrocarbon (g/m^2)	Surface hydrocarbon (g/m^2)	Accumulated/ shoreline hydrocarbon (g/m^2)
Julimar Condensate	50	100	10	100	1	10
Marine diesel	50	100	10	100	1	10
Shell Saraline 185V	50	100	10	100	1	10

6.9.1.3.1 Surface hydrocarbon threshold concentrations

The spill modelling outputs defined the EMBA for surface hydrocarbons resulting from a spill (contact on surface waters) using a threshold of ≥10 g/m² (dull metallic colours) based on the relationship between film thickness and appearance (Bonn Agreement 2015) (Table 6-10). This threshold concentration is used to define an area within which ecological impacts to the marine environment may occur from surface hydrocarbons. It represents the minimum oil thickness (0.01 mm) at which ecological impacts (e.g. to birds and marine mammals) are expected to occur.

Thresholds for registering biological impacts resulting from contact of surface slicks have been estimated by different researchers at about 10–25 g/m² (French et al. 1999; Koops et al. 2004; NOAA 1996). Potential impacts of surface slick concentrations in this range for floating hydrocarbons may include harm to seabirds through ingestion from preening of contaminated feathers, or the loss of the thermal protection of their feathers. The 10 g/m² threshold is the reported level of oiling to instigate impacts to seabirds and is also applied to other wildlife, though it is recognised that 'unfurred' animals, where hydrocarbon adherence is less, may be less vulnerable. 'Oiling' at this threshold is taken to be of a magnitude that can cause a response from the most vulnerable wildlife such as seabirds. Due to weathering processes, surface hydrocarbons will have a lower toxicity due to change in their composition over time. Potential impacts to shoreline sensitive receptors may be markedly reduced in instances where there is extended duration until shoreline contact.

Woodside recognises that hydrocarbons may be present beyond the ecological impact EMBA at low concentrations that may be visible but are not expected to cause ecological impacts. The threshold for visible surface oil (1 g/m²) has therefore been used to define an additional boundary within which socio-cultural impacts to the visual amenity of the marine environment may occur. This area is referred to as the socio-cultural EMBA. Any ecological impacts from dissolved and entrained hydrocarbons above prescribed thresholds, as in Table 6-9, may also result in socio-cultural impacts. Potential impacts to socio-cultural values assessed within these EMBAs include:

- protected areas,
- national and Commonwealth Heritage Listed places,
- tourism and recreation, AND
- fisheries.

Table 6-10: The Bonn Agreement oil appearance code

Appearance (following Bonn visibility descriptors)	Mass per area (g/m^2)	Thickness (µm)	Volume per area (L/km^2)
Discontinuous true oil colours	50 to 200	50 to 200	50,000 to 200,000
Dull metallic colours	5 to 50	5 to 50	5000 to 50,000
Rainbow sheen	0.30 to 5.00	0.30 to 5.00	300 to 5000
Silver sheen	0.04 to 0.30	0.04 to 0.30	40 to 300

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6.9.1.3.2 Dissolved hydrocarbon threshold concentrations

Dissolved hydrocarbons present a narcotic effect resulting from uptake into the tissues of marine organisms. This effect is additive, increasing with exposure concentration or with time of exposure (French-McCay 2002; NRC 2005). The dissolved aromatic threshold of 50 ppb has been selected as a medium level threshold to approximate the potential toxic effects, particularly sublethal effects to sensitive species, as consistent with the NOPSEMA Oil Spill Modelling Guidance Bulletin (NOPSEMA 2019).

6.9.1.3.3 Entrained hydrocarbon threshold concentrations

This threshold is used to define an area within which ecological impacts to the marine environment may occur from entrained hydrocarbons. Therefore, it may also be associated with socio-cultural impacts.

Entrained hydrocarbons present a number of possible mechanisms for toxic exposure to marine organisms. The entrained hydrocarbon droplets may contain soluble compounds, hence have the potential for generating elevated concentrations of dissolved aromatic hydrocarbons (e.g. if mixed by breaking waves against a shoreline). Physical and chemical effects of the entrained hydrocarbon droplets have also been demonstrated through direct contact with organisms; for example, through physical coating of gills and body surfaces, and accidental ingestion (NRC 2005).

The entrained threshold has been selected to be consistent with the NOPSEMA Oil Spill Modelling Guidance Bulletin (NOPSEMA 2019). An entrained threshold of 100 ppb is considered to be appropriate given the oil characteristics for informing potential impacts to receptors.

6.9.1.3.4 Accumulated hydrocarbon threshold concentrations

Owens et al. (1994) define accumulated hydrocarbon <100 g/m² to have an appearance of a stain on shorelines. French-McCay (2009) defines accumulated hydrocarbons ≥100 g/m² to be the threshold that could impact the survival and reproductive capacity of benthic epifaunal invertebrates living in intertidal habitat. A threshold of ≥100 g/m² has been adopted as the threshold for shoreline accumulation and has been included in the EMBA. Further, any ecological impacts at the shoreline accumulation threshold may also result in socio-cultural impacts.

6.9.1.4 Operational and scientific monitoring

A planning area for scientific monitoring is also described in Annex C of the Oil Spill Preparedness and Response Mitigation Assessment (OSPRMA) (Appendix G). This planning area has been set with reference to the low exposure entrained value of 10 ppb detailed in the NOPSEMA (2019) bulletin Oil Spill Modelling (NOPSEMA 2019).The low exposure threshold is based on the potential for exceeding water quality triggers.

An operational 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 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		
Project vessels – Section 3.6	Physical environment – Section 4.4 Habitats and biological communities – Section 4.5 Protected species – Section 4.6 Socio-economic environment – Section 4.9	Stakeholder consultation – Section 5

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
Loss of hydrocarbons to marine environment due to a vessel collision (e.g. project vessels or other marine users).		X		X	X	X	A	C	1	M	LCS GP PJ	Broadly Acceptable	EPO 12

Description of source of impact

Background

The temporary presence of the MODU and project vessels in the Operational Area during the Petroleum Activity will result in a navigational hazard for other marine users (such as commercial shipping) within the immediate area (as discussed in Section 6.8.1). This navigational hazard could result in a third-party vessel colliding with the MODU or a project vessel, resulting in a release of hydrocarbons.

A moored MODU typically has a total marine diesel capacity of approximately 966 to 1,400 m³ (up to 3,640 m³ for DP MODU) that is distributed through numerous isolated tanks. Spill scenarios involving the MODU are not considered credible for a hydrocarbon release given the collision points, vessel speeds and locations of the fuel tanks. MODU fuel tanks are typically located on the inner sides of MODU pontoons and can be over 10 m below the waterline.

A typical project vessel is likely to have multiple isolated marine diesel tanks distributed throughout the hull of the vessel. The marine diesel storage capacity of a typical offshore or general support vessel can be in the order of 1,000 m³ (total) that is distributed through multiple isolated tanks typically located mid-ship and can range in size from 22 to 250 m³ each. A worst-case loss of containment of these types of vessels is expected to be no greater than 500 m³, considering the volumes of the following vessels: Skandi Hercules (325 m³) and Seven Pegasus (361 m³).

In the highly unlikely event of a vessel collision involving a support vessel during the Petroleum Activity, the vessel will have the capability to pump fuel from a ruptured tank to a tank with spare volume in order to reduce the potential volume of fuel released to the environment.

Industry experience

Registered vessels or foreign flag vessels in Australian waters are required to report events to the Australian Transport Safety Bureau (ATSB), AMSA or Australian Search and Rescue (AusSAR).

From a review of the ATSB marine safety and investigation reports, one vessel collision occurred in 2011/12 that resulted in a spill of 25–30 L of oil into the marine environment as a result of a collision between a tug and support vessel off Barrow Island. Two other vessel collisions occurred in 2010, one in the port of Dampier, where a support vessel collided with a barge being towed. Minor damage was reported and no significant injury to personnel or pollution occurred. The second 2010 vessel collision involved a vessel under pilot control in port connecting with a vessel alongside a wharf, causing it to sink. No reported pollution resulted from the sunken vessel. These incidents

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demonstrate the likelihood of only minor volumes of hydrocarbons being released during the highly unlikely event of a vessel collision occurring.

From 2010 to 2011, the ATSB's annual publication defines the individual safety action factors identified in marine accidents and incidents: 42% related to navigation action (2011). Of those, 15% related to poor communication and 42% related to poor monitoring, checking and documentation (ATSB 2011). The majority of these related to the grounding instances.

Credible scenario

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

- The identified causes of vessel interaction must result in a collision.
- The collision must have enough force to penetrate the vessel hull.
- The collision must be in the exact location of the fuel tank.
- The fuel tank must be full, or at least of volume which is higher than the point of penetration.

The environmental risk analysis and evaluation identified and assessed a range of potential scenarios that could result in a loss of vessel structural integrity, resulting in damage to fuel storage tank(s) and a loss of marine diesel to the marine environment. The scenarios considered damage to single and multiple fuel storage tanks in a support vessel and MODU due to dropped objects and various combinations of vessel to vessel and vessel to MODU collisions. In summary:

- It is not a credible scenario that the total storage volume of the MODU would be lost, as fuel is stored in more than one tank.
- It is not a credible scenario that a storage tank on the MODU would be damaged due to the location of the tanks within the hull, behind the bilge tanks, below the waterline.
- It is not a credible scenario that a collision between the support vessel and MODU would damage any storage tanks, due to the location of the tanks on both vessel types and secondary containment.
- It is highly unlikely that the full volume of the largest storage tank on a support vessel would be lost.

The last scenario considered was a collision between a support vessel with a third-party vessel (i.e. commercial shipping, other petroleum related vessels and commercial fishing vessels). This was assessed as being credible but highly unlikely, given the standard vessel operations and equipment in place to prevent collision at sea and the construction and placement of storage tanks. The worst-case volume for a loss of containment from a project vessel is 500 m³ as described above. Given the offshore location of the Operational Area, vessel grounding is not considered a credible risk.

Quantitative hydrocarbon risk assessment

Modelling of a short-term (instantaneous) uncontrolled surface release of 500 m³ of marine diesel due to a vessel collision at the Balnaves Deep-1 wellhead location (closest wellhead to Tryal Rocks) was available for Woodside's Julimar Joint Venture Decommissioning, conducted in 2022 (RPS 2022). The release location used for the spill modelling lies within the Operational Area and is located approximately 60 km from Tryal Rocks. The modelling assessed the extent of a marine diesel spill volume of 500 m³ for all seasons, using an historic sample of wind and current data for the region. For each scenario, a total of 200 replicate simulations were run over an annual period. Tabulated probabilities were assessed to a minimum level of 0.5%. The modelling was conducted by RPS using a three-dimensional hydrocarbon spill trajectory and weathering model (SIMAP, Spill Impact Mapping and Analysis Program) which is designed to simulate the transport, spreading and weathering of specific oil types under the influence of changing meteorological and oceanographic forces.

Hydrocarbon weathering characteristics

The mass balance forecast for the constant-wind case for marine diesel (Figure 6-3) shows that approximately 41% of the oil is predicted to evaporate within 24 hours. Under these calm conditions the majority of the remaining oil on the water surface will weather at a slower rate due to being comprised of the longer-chain compounds with higher boiling points. Evaporation of the residual compounds will slow significantly, and they will then be subject to more gradual decay through biological and photochemical processes. Under the variable-wind case (Figure 6-4), where the winds are of greater strength, entrainment of marine diesel into the water column is indicated to be significant. Approximately 24 hours after the spill, around 72% of the oil mass is forecast to have entrained and a further 24% is forecast to have evaporated, leaving only a small proportion of the oil floating on the water surface (<1%). The residual compounds will tend to remain entrained beneath the surface under conditions that generate wind waves (approximately >6 m/s). The hydrocarbon characteristics of marine diesel are described in Sections 6.9.1.2 and 6.9.3. The hydrocarbon characteristics of marine diesel are described in Section 6.9.1.2 and Table 6-11.

Given the environmental conditions experienced in the Operational Area, marine diesel is expected to undergo rapid spreading and this, together with evaporative loss, is likely to result in a rapid dissipation of the spill. Marine diesel distillates tend not to form emulsions at the temperatures found in the region.

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Table 6-11: Characteristics of marine diesel

Hydrocarbon type	Initial density (g/cm³) at 25 °C	Viscosity (cP @ 25 °C)	Component BP (°C)	Volatiles % <180	Semi volatiles % 180 to 265	Low volatility (%) 265 to 380	Residual (%) >380
				Non-Persistent			Persistent
Marine diesel	0.829	4.0	% of total	6	34.6	54.4	5

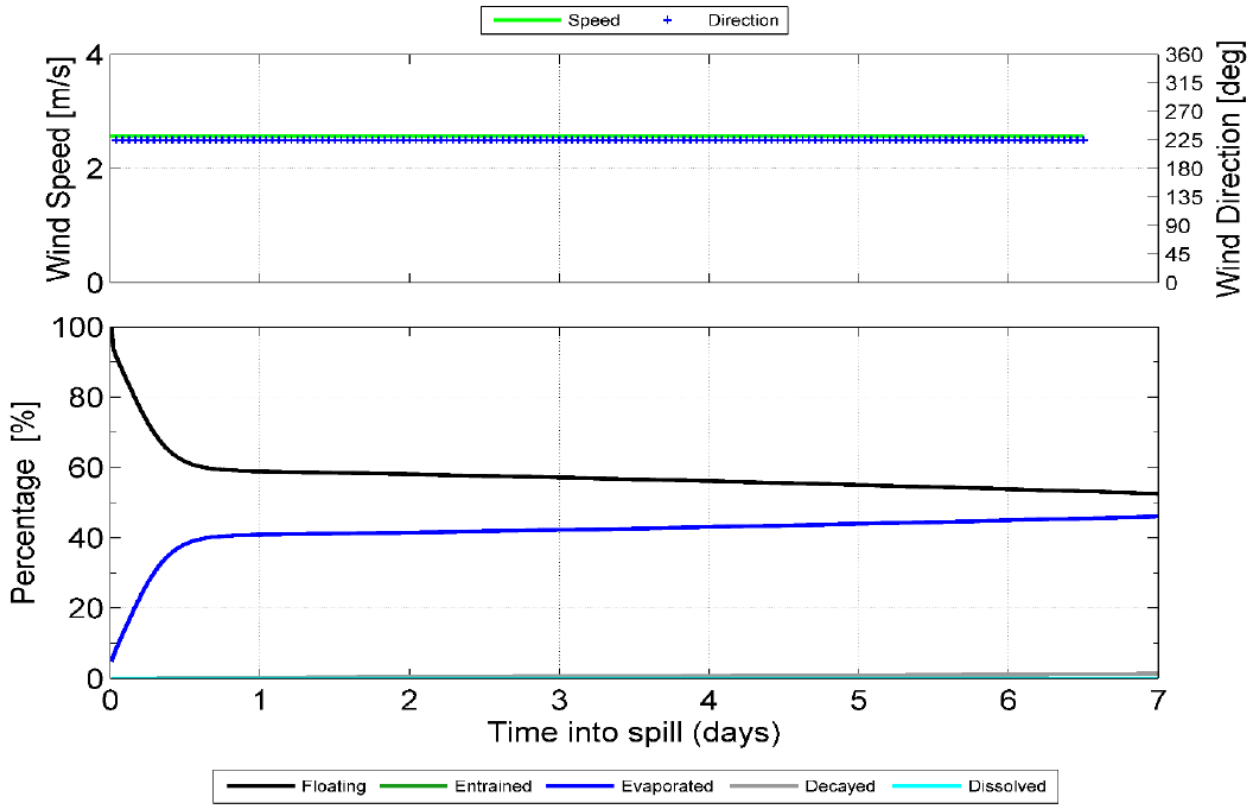

Figure 6-3: Proportional mass balance plot representing the weathering of marine diesel spilled onto the water surface as a one-off release (50 m³) and subject to a constant 5 kn (2.6 m/s) wind at 27 °C water temperature and 25 °C air temperature.

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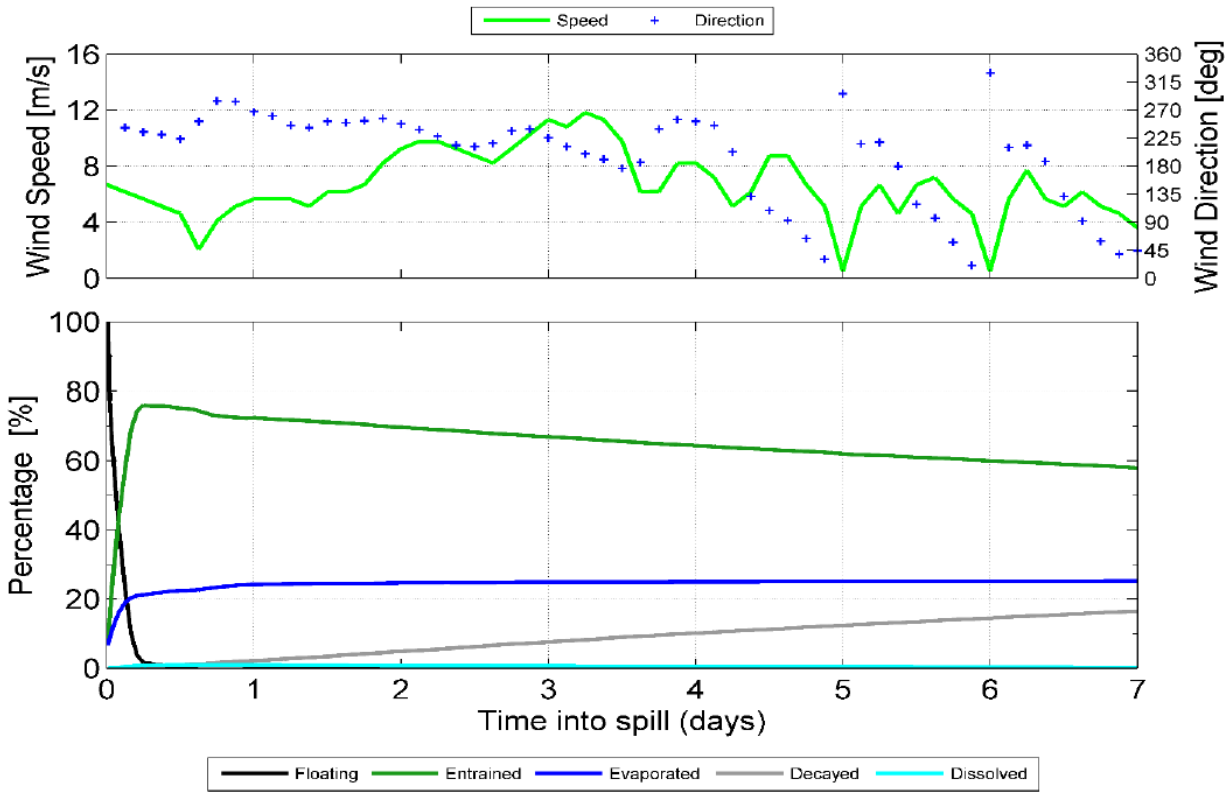

Figure 6-4: Proportional mass balance plot representing weathering of marine diesel spilled onto the water surface as a one-off release (50 m³) and subject to variable wind at 27 °C water temperature and 25 °C air temperature

Source: (RPS 2022)

Impact assessment

Environmental value(s) potentially impacted

Environment that may be affected

The socio-cultural and ecological EMBA for the Petroleum Activity is based on stochastic modelling of a short-term (instantaneous) uncontrolled surface release of 500 m³ of marine diesel due to a vessel collision at the Balnaves Deep-1 wellhead location (closest wellhead to Tryal Rocks) and was assessed over an annual period. The results of the modelling for the scenario are outlined below. The extent of the EMBA from the modelling has been outlined to quantify the movement and fate of spilled hydrocarbons that would result from an accidental, uncontrolled release; and to investigate the risk to sensitive receptors (emergent features, submerged features and shorelines) posed by the release.

Oil spill modelling was undertaken using a three-dimensional oil spill trajectory and weathering model, SIMAP, which is designed to simulate the transport, spreading and weathering of specific oil types under the influence of changing meteorological and oceanographic forces. These fates have been outlined below.

Surface hydrocarbons

Quantitative hydrocarbon spill modelling results for surface hydrocarbons are shown in Table 6-12. If this scenario occurred, a surface hydrocarbon slick would form down current of the release location, with the trajectory dependent on prevailing wind and current conditions at the time. The modelling indicates that the EMBA would be confined to open water, with surface hydrocarbons extending up to approximately 47 km south from the release location at or above the 10 g/m² impact threshold. A socio-cultural EMBA for surface hydrocarbons which includes the threshold for visible surface hydrocarbons of 1 g/m^2 may extend up to approximately 53 km south from the release site.

Floating oil at concentrations equal to or greater than 1 g/m^2 are not predicted to contact any shoreline receptors. Montebello Marine Park receptor, which is submerged, is the only receptor where floating oil equal to or greater than the 1 g/m^2 threshold was predicted to arrive to the surface waters (above these receptors), with a probability of 4%.

At the 10 g/m^2 threshold for floating oil concentrations, Montebello Marine Park is the only receptor predicted to be contacted by floating oil with a probability of 1.5% (Table 6-12).

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No receptors are predicted to be contacted by shoreline oil concentrations at or greater than 10 g/m^2 for the socio-cultural EMBA or 100 g/m^2 for the ecological EMBA.

Entrained hydrocarbons

Quantitative hydrocarbon spill modelling results for entrained hydrocarbons are shown in Table 6-12. If this vessel collision scenario occurred, a plume of entrained hydrocarbons would form downcurrent of the release location, with the trajectory dependent on prevailing current conditions at the time. The modelling indicates that locations exposed to entrained hydrocarbons at concentrations equal to or greater than the 100 ppb threshold is predicted to be found up to 305 km south-west from the spill site. The greatest probabilities of contact by entrained oil concentrations equal to or greater than the 100 ppb threshold are predicted at the Montebello Marine Park (19.5%), Tryal Rocks (8.5%), Barrow Island Marine Management Area (MMA) (3.5%) and Barrow Island Marine Park (State) (3.5%), as well as several other sensitive receptors with probabilities of, or less than 2.5% (Table 6-12).

Dissolved aromatic hydrocarbons

Dissolved aromatic hydrocarbon concentrations equal to or greater than the 50 ppb threshold are predicted to be found up to around 166 km south-west from the spill site. The greatest probabilities of contact by dissolved aromatic hydrocarbon concentrations equal to or greater than 50 ppb are predicted at the Montebello Marine Park (5%) as well as several other sensitive receptors with probabilities of, or less than 0.5% (Table 6-12).

Accumulated hydrocarbons

Accumulated hydrocarbons above threshold concentrations (≥100 g/m²) were not predicted by the modelling to occur at any location and therefore no receptors were detected to be impacted by accumulated hydrocarbons (Table 6-12).

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Table 6-12: Probability of hydrocarbon spill contact above impact thresholds within the EMBA with key receptor locations and sensitivities for a 500 m³ instantaneous release of marine diesel

Environmental setting	Location/name	Environmental, Social, Cultural, Heritage and Economic Aspects presented as per the Environmental Risk Definitions in Woodside's Risk Management Procedure																												Probability of hydrocarbon contact (diesel) (%) Note: the probability is based on stochastic modelling of 200 hypothetical worst-case spills under a variety of weather and metocean conditions					
		Physical		Biological																						Socio-economic and cultural						Socio-cultural EMBA		Ecological EMBA			
		Water quality	*Sediment quality*	*Marine primary producers*			*Other communities/habitats*								*Protected species*									*Other species*												
		Open water (pristine)	Marine sediment (pristine)	Coral reef	Seagrass beds/macroalgae	Mangroves	Spawning/nursery areas	Open water – productivity/upwelling	Non-biogenic coral reefs	Offshore filter feeders and/or deepwater benthic communities	Nearshore filter feeders	Sandy shores	Estuaries/tributaries/creeks/lagoons (including mudflats)	Rocky shores	Cetaceans – migratory whales	Cetaceans – dolphins and porpoises	Dugongs	Pinnipeds (sea lions and fur seals)	Marine turtles (including foraging and internesting areas and significant nesting beaches)	Sea snakes	Whale sharks	Sharks and rays	Sea birds and/or migratory shorebirds	Pelagic fish populations	Resident/demersal fish	Fisheries – commercial	Fisheries – traditional	Tourism and recreation	Protected areas/heritage – European and Indigenous/shipwrecks	Offshore oil & gas infrastructure (topside and subsea)	Surface hydrocarbon (1-10 g/m²)	Accumulated hydrocarbons (10–100 g/m²)	Surface hydrocarbon (≥10 g/m²)	Entrained hydrocarbon (≥100 ppb)	Dissolved aromatic hydrocarbon (≥50 ppb)	Accumulated hydrocarbons (>100 g/m²)
Australian Marine Parks	Gascoyne MP	✓	✓					✓							✓	✓			✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	-	-	-	1	-	-
	Montebello MP	✓	✓	✓			✓	✓							✓	✓			✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		4	-	1.5	19.5	5	-
	Ningaloo MP	✓	✓					✓		✓					✓	✓			✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	-	-	-	2.5	-	-
Coastlines	Exmouth	✓	✓	✓	✓	✓	✓					✓			✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		-	-	-	1	-	-
Islands	Airlie Island	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		-	-	-	0.5	-	-
	Barrow Island	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		-	-	-	2.5	0.5	-
	Boodie Island	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		-	-	-	1	-	-
	Middle Island	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		-	-	-	1	-	-
	Hermite Island	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		-	-	-	0.5	-	-
	Montebello Islands	✓	✓	✓	✓	✓	✓	✓				✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		-	-	-	1	0.5	-
	Muiron Islands	✓	✓	✓	✓		✓	✓		✓		✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓			✓	✓		-	-	-	0.5	-	-
	Southern Pilbara – Islands	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		-	-	-	1.5	-	-
	Thevenard Island	✓	✓		✓		✓		✓			✓		✓		✓	✓		✓	✓		✓	✓	✓	✓	✓		✓	✓	✓	-	-	-	0.5	-	-
Marine Parks	Barrow Island MP (State)	✓	✓	✓	✓	✓	✓	✓				✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		-	-	-	3.5	-	-
	Barrow Island MMA	✓	✓	✓	✓	✓	✓	✓				✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	-	-	-	3.5	-	-
	Montebello Islands MP	✓	✓	✓	✓	✓	✓	✓				✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		-	-	-	1.5	-	-

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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)
	Muiron Islands MP	✓	✓	✓	✓		✓	✓		✓		✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		-	-	-	2.5	-	-
	Ningaloo Coast WH	✓	✓	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		-	-	-	2.5	-	-
	Ningaloo MP (State)	✓	✓	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		-	-	-	1.5	-	-
National Parks	Cape Range	✓	✓	✓	✓		✓	✓		✓					✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		-	-	-	0.5	-	-
Nature Reserves	Boodie, Double Middle Islands Nature Reserve NR																													-	-	-	1	-	-
	Thevenard Island NR																													-	-	-	0.5	-	-
Reefs, Shoals, and Banks	Montebello Shoals	✓	✓	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		-	-	-	1	-	-
	Ningaloo Reef	✓	✓	✓	✓		✓	✓		✓				✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		-	-	-	1	-	-
	North West Reef																													-	-	-	0.5	-	-
	Outtrim Patches	✓	✓	✓			✓	✓		✓					✓	✓			✓	✓	✓	✓		✓	✓						-	-	-	0.5	-	-
	Penguin Bank	✓	✓		✓		✓		✓							✓	✓		✓	✓		✓	✓	✓	✓	✓		✓	✓	✓	-	-	-	1.5	-	-
	Poivre Reef	✓	✓	✓	✓		✓	✓							✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	-	-	-	1	-	-
	Rankin Bank[64]	✓	✓	✓			✓	✓		✓						✓	✓		✓	✓		✓	✓	✓	✓	✓		✓			-	-	-	-	0.5	-
	Rosily Shoals	✓	✓		✓		✓		✓							✓	✓		✓	✓		✓	✓	✓	✓	✓		✓	✓	✓	-	-	-	0.5	-	-

[64] *Probabilities and maximum concentrations calculated at depth of submerged feature.*

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		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)
	Trap Reef	✓	✓		✓		✓		✓			✓		✓		✓	✓		✓	✓		✓	✓	✓	✓	✓		✓	✓		-	-	-	0.5	-	-
	Tryal Rocks	✓	✓	✓	✓		✓	✓						✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-	8.5	0.5	-

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Summary of potential impacts to protected species	
Setting	**Receptor group**
Offshore	**Cetaceans** A range of cetaceans were identified as potentially occurring within the Operational Area and wider EMBA (Section 4.6.3). In the event of a marine diesel spill from a vessel collision, surface, entrained, and dissolved hydrocarbons exceeding environmental impact threshold concentrations may drift across habitat for cetacean species. Migratory routes and BIAs of cetaceans considered to be MNES may be affected, including humpback whales migration BIAs, pygmy blue whales migration and foraging BIAs, dugongs foraging, calving, breeding and nursing BIAs, and southern right whales migration and reproduction BIAs (refer to Table 4-10). Cetaceans that have direct physical contact with surface, entrained, or dissolved aromatic hydrocarbons may suffer surface fouling, ingestion of hydrocarbons (from prey, water and sediments), aspiration of oily water or droplets, and inhalation of toxic vapours (Deepwater Horizon Natural Resource Damage Assessment Trustees [DHNRDT] 2016). This may result in the irritation of sensitive membranes such as the eyes, mouth, digestive and respiratory tracts, and organs. Other potential impacts include impairment of the immune system, neurological damage (Helm et al. 2015), reproductive failure, other adverse health effects (e.g. lung disease, poor body condition), and mortality (DHNRDT 2016). Physical contact with hydrocarbons is likely to have biological consequences for these species. Given cetaceans maintain thick skin and blubber, external exposure to hydrocarbons may result in irritation to skin and eyes. Hydrocarbons may also be ingested, particularly by baleen whales (e.g. pygmy blue whales and humpback whales), which feed by filtering large volumes of water. Geraci (1988) has identified behavioural disturbance through avoidance of spilled hydrocarbons in several species of cetacean, suggesting that cetaceans have the ability to detect surface slicks. However, observations during spills have recorded larger whales (both mysticetes and odontocetes) and smaller delphinids travelling through and feeding in oil slicks. During the Deepwater Horizon spill, cetaceans were routinely seen swimming in surface slicks offshore and nearshore (Aichinger Dias et al. 2017). In a review of the impacts of large-scale hydrocarbon spills on cetaceans, it was found that exposure to oil from the Deepwater Horizon resulted in increased mortality to cetaceans in the Gulf of Mexico (DHNRDT 2016), and long-term population level impacts to killer whales were linked to the Exxon Valdez tanker spill (Matkin et al. 2008). Cetacean populations that are resident within the EMBA may be susceptible to impacts from spilled hydrocarbons if they interact with an area affected by a spill. Such species are more likely to occupy coastal waters (refer to the Mainland and Islands section below for additional information). Suitable habitat for oceanic toothed whales (e.g. sperm whales) and dolphins is broadly distributed throughout the region and as such, impacts are unlikely to affect an entire population. Other species identified in Section 4.6.3 may also have possible transient interactions with the EMBA (refer to Table 4-10 for lists of receptor locations for cetaceans). Southern right whales and humpback whales are known to migrate seasonally through the EMBA; however, the migration BIAs in the region for these whales do not overlap with the Operational Area. A major spill in May to November would coincide with humpback whale migration through the waters off the Pilbara and North West Cape (Figure 4-9). A major spill in April–August or October would coincide with pygmy blue whale migration (Figure 4-8). A major spill in April–October would coincide with southern right whale migration along Australian coastlines extending up to the Exmouth Gulf breeding BIA (Figure 4-10). Pygmy blue, southern right, and humpback whales are all baleen whales, so are most likely to be significantly impacted by toxic effects when feeding. However, feeding during migrations is low level and opportunistic, with most feeding for all species occurring in the Southern Ocean. Fresh hydrocarbons (i.e. typically in the vicinity of the release location) may have a higher potential to cause toxic effects when ingested, while weathered hydrocarbons are considered to be less likely to result in toxic effects. As such, the risk of ingestion of hydrocarbons resulting in toxic effects is low. Pygmy blue whale and humpback whale migrations are protracted through time and space (i.e. the whole population will not be within the EMBA), and as such, a spill from a vessel collision is highly unlikely to affect an entire population. The humpback whale calving BIA in Camden Sound is not predicted to be contacted by hydrocarbons above threshold concentrations. Entrained hydrocarbons above threshold levels are not predicted to extend into Exmouth Gulf, which is a resting BIA for humpback whales during their southern migration. Therefore, a worst-case hydrocarbon spill scenario has the potential to result in moderate, medium-term impacts to offshore cetacean species, with consequence severity dependent on the timing, duration and extent of a spill in relation to species' migratory movements and

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	distributions. Potential impacts to inshore cetaceans and other marine mammals are discussed in the Mainland and Islands (nearshore) impacts discussion below.
	Marine turtles Adult sea turtles exhibit no avoidance behaviour when they encounter hydrocarbon spills (NOAA 2010). Therefore, contact with surface slicks or entrained hydrocarbon can result in hydrocarbons adhering to body surfaces (Gagnon and Rawson 2010) causing irritation of mucous membranes in the nose, throat and eyes, leading to inflammation and infection (NOAA 2010). Oiling can also irritate and injure skin, which is most evident on pliable areas such as the neck and flippers (Lutcavage et al. 1995). A stress response associated with this exposure includes an increase in the production of white blood cells, and even a short exposure to hydrocarbons may affect the functioning of the salt gland (Lutcavage et al. 1995). Hydrocarbons in surface waters may also impact turtles when they surface to breathe as they may inhale toxic vapours. Their breathing pattern, involving large 'tidal' volumes and rapid inhalation before diving, results in direct exposure to petroleum vapours, which are the most toxic component of the hydrocarbon spill (Milton and Lutz 2003). This can lead to lung damage and congestion, interstitial emphysema, inhalant pneumonia, and neurological impairment (NOAA 2010). Contact with entrained hydrocarbons can result in hydrocarbons adhering to body surfaces, causing irritation of mucous membranes in the nose, throat and eyes and leading to inflammation and infection (Gagnon and Rawson 2010). One flatback turtle internesting buffer BIA and one habitat critical to the survival of flatback turtles overlap the Operational Area (Section 4.6.2). There are significant nesting and foraging sites along the mainland coast and islands of the region, including Dampier Archipelago and the Montebello Islands, and a number of BIAs overlap the EMBA (Section 4.6.2 and Figure 4-5). In particular the internesting BIAs and habitat critical to the survival of a species for green, loggerhead and hawksbill turtles extend for ~20 km from known nesting locations, and for ~60 km for flatback turtles. However, hydrocarbons from an instantaneous loss of containment could be present during nesting season depending on the timing of a spill. In summary, a worst-case hydrocarbon spill scenario has the potential to result in moderate, medium-term impacts to offshore foraging marine turtles, with consequence severity dependent on the timing, duration and extent of a spill in relation to species' migratory movements and distributions. Potential impacts to nesting marine turtles are discussed in the Mainland and Islands (nearshore) impacts discussion below.
	Sea snakes Impacts to sea snakes from direct contact with hydrocarbons are likely to result in similar physical effects to those recorded for marine turtles. They may include potential damage to the dermis and irritation to mucus membranes of the eyes, nose and throat (International Tanker Owners Pollution Federation [ITOPF] 2011a). They may also be impacted when they return to the surface to breathe and inhale the toxic vapours associated with the hydrocarbons, resulting in damage to their respiratory system. In general, sea snakes frequent the waters of the continental shelf area around offshore islands and potentially submerged shoals (water depths <100 m; see Submerged Shoals below). It is acknowledged that sea snakes may be present in the Operational Area and are present in the wider EMBA. Their abundance is however, not expected to be high in the deepwater and offshore environment. Therefore, a worst-case hydrocarbon spill scenario has the potential to result in minor, short-term impacts to offshore sea snakes, with consequence severity dependent on the duration and extent of a spill in relation to the distribution of sea snakes. Potential impacts to inshore and offshore reef associated sea snakes are discussed in the Submerged Shoals and Banks and Mainland and Islands (nearshore) impacts discussion below.
	Sharks, sawfish and rays Hydrocarbon contact may affect whale sharks through ingestion of entrained or dissolved hydrocarbons, particularly if feeding. Whale sharks may transit offshore open waters when migrating to and from Ningaloo Reef, where they aggregate for feeding from March to July (see Mainland and Islands (nearshore waters) below). Whale sharks may carry out opportunistic feeding in offshore waters and the Operational Area. The Operational Area and EMBA overlaps the whale shark foraging BIA identified in 4.6.1, within

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	which whale sharks are seasonally present between April and October (Section 4.6.5). Impacts to sharks and rays may occur through direct contact with hydrocarbons, or through contamination of the tissues and internal organs, either through direct contact or through consumption of prey. As gill breathing organisms, sharks and rays may be vulnerable to toxic effects of dissolved hydrocarbons entering the body via the gills, and entrained hydrocarbons via coating of the gills inhibiting gas exchange. Therefore, a worst-case hydrocarbon spill scenario has the potential to result in moderate, medium-term impacts to offshore shark, sawfish and ray species, with consequence severity dependent on the actual timing, duration and extent of a spill in relation to species' migratory movements and distributions. Potential impacts to inshore and offshore reef associated sharks, sawfish and rays are discussed in the Submerged Shoals and Banks and Mainland and Islands (nearshore) impacts discussion below.
	Seabirds and/or migratory shorebirds Offshore waters are potential foraging grounds for seabirds associated with the coastal roosting and nesting habitat (e.g. Ningaloo, Muiron Islands and the Barrow/Montebello/Lowendal Island Group). There are confirmed foraging grounds off Ningaloo and the Barrow/Montebello/Lowendal Island Group. Foraging and breeding BIAs for a number of seabirds and migratory shorebirds overlap with the EMBA (Section 4.6.4): • wedge-tailed shearwater (peak use August to April), • fairy tern, • lesser crested tern, and • roseate tern. Seabirds and migratory birds are particularly vulnerable to contact with floating hydrocarbons, which may mat feathers. This may lead to hypothermia from loss of insulation, and to ingestion of hydrocarbons when preening to remove hydrocarbons; both impacts may result in mortality (Hassan and Javed 2011). Seabirds generally do not exhibit avoidance behaviour to floating hydrocarbons. Physical contact of seabirds with surface slicks is by several exposure pathways – primarily immersion, ingestion, and inhalation. Such contact with hydrocarbons may result in (AMSA 2013, International Petroleum Industry Environmental Conservation Association [IPIECA] 2004): • plumage fouling and hypothermia (loss of thermoregulation), • decreased buoyancy and consequent increased potential to drown, • inability to fly or feed, • anaemia, • pneumonia, and/or • irritation of eyes, skin, nasal cavities and mouths. Longer-term exposures may potentially impact seabird populations through loss of reproductive success, malformation of eggs or chicks (AMSA 2013), or mortality of individuals from oiling of feathers or the ingestion of hydrocarbons. A hydrocarbon spill may result in surface slicks disrupting foraging habitat for seabirds. However, modelling predicts there will be no floating hydrocarbons above the ecological impact threshold of 10 g/m^2 from a vessel collision scenario. Therefore, a worst-case hydrocarbon spill scenario has the potential to result in minor impacts to offshore seabirds and migratory shorebirds, with consequence severity dependent on the actual timing, duration and extent of a spill in relation to species' migratory movements and distributions. Potential impacts to coastal and offshore island associated birds are discussed in the Mainland and Islands (nearshore) impacts discussion below.
Submerged shoals and banks	***Marine turtles*** There is the potential for marine turtles to be present at submerged shoals and reefs such as Montebello Shoals, Ningaloo Reef, Outtrim Patches, Penguin Bank, Poivre Reef, Rosily Shoals, Trap Reef, and Tryal Rocks. These shoals and reefs have a low probability of being contacted by entrained hydrocarbons above the 100 ppb threshold (8.5% probability for Tryal Rocks and 1% or less for other locations). These locations may, at times, be foraging habitat for marine turtles, given the coral and filter feeding biota associated with this area.

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	Therefore, a worst-case hydrocarbon spill scenario has the potential to result in moderate, medium-term impacts to foraging marine turtles, with consequence severity dependent on the actual timing, duration and extent of a spill in relation to species' migratory movements and distributions. Potential impacts to nesting and internesting marine turtles are discussed in the Mainland and Islands (nearshore) impacts discussion below.
	Sea snakes Impacts to sea snakes from direct contact with hydrocarbons are likely to result in similar physical effects to those recorded for marine turtles. They may include potential damage to the dermis and irritation to mucus membranes of the eyes, nose and throat (International Tanker Owners Pollution Federation [ITOPF] 2011a). They may also be impacted when they return to the surface to breathe and inhale the toxic vapours associated with the hydrocarbons, resulting in damage to their respiratory system. In general, sea snakes frequent the waters of the continental shelf area around offshore islands and potentially submerged shoals (water depths <100 m; see Submerged Shoals below). It is acknowledged that there is the potential for sea snakes to be present at submerged shoals in the EMBA as described above for marine turtles. Sea snakes species in Australia generally show strong habitat preferences (Heatwole and Cogger 1993); species that have preferred habitats associated with submerged shoals may be disproportionately affected by a hydrocarbon spill affecting such habitat. Therefore, a worst-case hydrocarbon spill scenario has the potential to result in moderate, medium-term impacts to offshore reef associated sea snakes, with consequence severity dependent on the duration and extent of a spill in relation to the distribution of sea snakes. Potential impacts to inshore sea snakes are discussed in the Mainland and Islands (nearshore) impacts discussion below.
	Sharks, sawfish and rays There is the potential for resident shark and ray populations to be impacted directly from hydrocarbon contact, or indirectly through contaminated prey or loss of habitat. Spill model results indicate Montebello AMP, as shown in Figure 4-14, to be predicted to be contacted by entrained hydrocarbons above threshold concentrations (≥100 ppb) and floating oil above threshold concentrations (≥1 g/m^2 and ≥10 g/m^2). Shark and ray species that have associations with submerged shoals may be more susceptible to a reduction in habitat quality resulting from a hydrocarbon spill. Therefore, a worst-case hydrocarbon spill scenario has the potential to result in moderate, medium-term impacts to offshore reef associated shark, sawfish and ray species, with consequence severity dependent on the actual timing, duration and extent of a spill in relation to species' migratory movements and distributions. Potential impacts to inshore associated sharks, sawfish and rays are discussed in the Mainland and Islands (nearshore) impacts discussion below.
Mainland and islands (nearshore waters)	***All species*** The information provided on protected species in this section is in addition to that provided in the preceding Offshore and Submerged Banks and Shoals sections above. Refer to these preceding sections for additional discussion of protected species.
	Cetaceans and dugongs In addition to a number of whale species that may occur in nearshore waters (refer to Section 4.6.3 for the full list of EPBC listed cetacean species identified by the PMST with potential to occur within the EMBA), coastal waters (see Table 6-12) which populations of small cetaceans and dugongs are known to reside or frequent nearshore may be potentially impacted by surface hydrocarbons exceeding threshold concentrations in the event of a loss of containment. The Exmouth Gulf is a known humpback whale aggregation area on the annual southern migration (September to December); therefore, humpbacks moving into the Gulf may be exposed to entrained hydrocarbons above thresholds levels. However, entrained hydrocarbons concentrations above the threshold are not expected beyond the entrance to Exmouth Gulf. No hydrocarbon contact at or above threshold concentrations is expected for Camden Sound, an important calving area for humpback whales. The potential impacts of exposure are as discussed previously in Offshore – Cetaceans. However, nearshore populations of cetaceans and dugongs are known to exhibit site fidelity and are often resident populations. Therefore, avoidance behaviour may have greater impacts to

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	population functioning. Nearshore dolphin species (e.g. spotted bottlenose dolphins) may exhibit higher site fidelity than oceanic species, although Geraci (1988) observed relatively little impacts beyond behavioural disturbance. Additional potential environment impacts may also include the potential for dugongs to ingest hydrocarbons when feeding on oiled seagrass stands, or indirect impacts to dugongs due to loss of this food source due to dieback in worst-affected areas. Therefore, a worst-case hydrocarbon spill scenario has the potential to result in moderate, medium-term impacts to inshore cetacean species and dugongs, with consequence severity dependent on the actual timing, duration and extent of a spill in relation to species' migratory movements and distributions.
	Marine turtles Several marine turtle species use nearshore waters and shorelines for foraging and breeding (including internesting), with significant nesting beaches along the mainland coast and islands potentially contacted by entrained hydrocarbons (probability <2.5%). A number of BIAs were identified within the EMBA for marine turtles, including nesting, internesting and foraging areas as discussed previously in Offshore – Marine Turtles. There are distinct breeding seasons, as detailed in Section 4.6.5. The nearshore waters of these turtle habitat areas may be exposed to entrained hydrocarbons exceeding the threshold concentration (Table 6-12). The potential impacts of exposure are as discussed above in Submerged shoals and banks – Marine Turtles. In the nearshore environment, turtles can ingest hydrocarbons when feeding (e.g. on oiled seagrass stands/macroalgae) or can be indirectly affected by loss of food source (e.g. seagrass due to dieback from hydrocarbon exposure) (Gagnon and Rawson 2010). In addition, hydrocarbon exposure can impact turtles during the breeding season in nearshore waters and on nesting beaches. Contact with gravid adult females or hatchlings may occur in nearshore waters (entrained hydrocarbons). If entrained hydrocarbons reach internesting coastal waters, there is the potential for impacts to turtles using the affected area. Animals that lay eggs have been shown to pass metabolised oil related compounds into their offspring which has the potential to be toxic to the developing embryos. Similarly, adult female turtles can pass metabolised oil and related products to their eggs, thereby potentially exposing developing embryos and impairing the development and survival of embryos (DWH Natural Resource Damage Assessment Trustees 2016). A worst-case hydrocarbon spill scenario has the potential to result in moderate, medium-term impacts to foraging marine turtles, with consequence severity dependent on the actual timing, duration and extent of a spill in relation to species' migratory movements and distributions.
	Sea snakes Impacts to sea snakes for the mainland and island nearshore waters from direct contact with hydrocarbons may occur and may include potential damage to the dermis and irritation to mucous membranes of the eyes, nose and throat (ITOPF 2011a). Therefore, a worst-case hydrocarbon spill scenario has the potential to result in moderate, medium-term impacts to sea snakes, with consequence severity dependent on the duration and extent of a spill in relation to the distribution of sea snakes.
	Sharks, sawfish and rays Whale sharks and manta rays are known to frequent the Ningaloo Reef system and the Muiron Islands (forming feeding aggregations in late summer/autumn). Whale sharks and manta rays generally transit along the nearshore coastline and are vulnerable to surface, entrained and dissolved aromatic hydrocarbon spill impacts, with both taxa having similar modes of feeding. Whale sharks are versatile feeders, filtering large amounts of water over their gills, catching planktonic and nektonic organisms (Jarman and Wilson 2004). Whale sharks at Ningaloo Reef have been observed using two different feeding strategies, including passive subsurface ram-feeding and active surface feeding (Taylor 2007). Passive feeding involves swimming slowly at the surface with the mouth wide open. During active feeding, sharks swim high in the water with the upper part of the body above the surface with the mouth partially open (Taylor 2007). Individuals that are present in worst- affected spill areas would have the potential to ingest toxic amounts of entrained or dissolved aromatic hydrocarbons into their body. Large amounts of ingested hydrocarbons may affect endocrine and immune systems in the longer term.

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	The presence of hydrocarbons may displace whale sharks from the area where they normally feed and rest, and potentially disrupt migration and aggregations to these areas in subsequent seasons. Whale sharks may also be affected indirectly by surface, entrained or dissolved aromatic hydrocarbons through the contamination of their prey. The preferred food of whale sharks are fish eggs and phytoplankton, which are abundant in the coastal waters of Ningaloo Reef in late summer/autumn, driving the annual arrival and aggregation of whale sharks in this area. If the spill event occurred during the spawning season, this important food supply (in worst spill-affected areas of the reef) may be diminished or contaminated. The contamination of their food supply and the subsequent ingestion of this prey by the whale shark may also result in long-term impacts as a result of bioaccumulation. There is the potential for other resident shark and ray (e.g. sawfish species identified in Section 4.6.1) populations to be impacted directly from hydrocarbon contact or indirectly through contaminated prey or loss of habitat. Table 6-12 indicates the receptor locations predicted to be contacted by entrained hydrocarbons above the threshold concentration where impacts to the benthic communities of nearshore and subtidal communities could occur, potentially resulting in habitat loss. Therefore, the consequences to resident shark and ray populations (if present) from loss of habitat, may result in a disruption to a significant portion of the population; however, it is not expected to impact the overall viability of the population. Therefore, a worst-case hydrocarbon spill scenario has the potential to result in moderate, medium-term impacts to inshore associated shark, sawfish and ray species, with consequence severity dependent on the actual timing, duration and extent of a spill in relation to species' migratory movements and distributions.
	Seabirds and/or migratory shorebirds In the event of a major spill, there is the potential for seabirds, and resident, non-breeding overwintering shorebirds that use the nearshore waters for foraging and resting, to be exposed to entrained and dissolved hydrocarbons. This could result in lethal or sublethal effects. Although breeding oceanic seabird species can travel long distances to forage in offshore waters, most breeding seabirds tend to forage in waters near their breeding colony (Regan et al. 2024). This may result in relatively higher seabird densities along the north west shelf region during the breeding season, making these areas particularly sensitive in the event of a spill. Pathways of biological exposure that can result in impact may occur through ingesting contaminated fish (nearshore waters) or invertebrates (intertidal foraging grounds such as beaches, mudflats and reefs). Ingestion can also lead to internal injury to sensitive membranes and organs (IPIECA 2004). Whether the toxicity of ingested hydrocarbons is lethal or sublethal will depend on the weathering stage and its inherent toxicity. Exposure to hydrocarbons may have longer-term effects, with impacts to population numbers due to decline in reproductive performance and malformed eggs and chicks affecting survivorship, and loss of adult birds (AMSA 2013). Important areas for foraging seabirds and migratory shorebirds are identified in Section 4.6.4. Important areas for foraging seabirds and migratory shorebirds are identified in Section 4.6.4. Refer to Table 4-12 for locations within the predicted extent of the EMBA that are identified as habitat for seabirds/migratory shorebirds. Suitable habitat or seabirds and shorebirds are broadly distributed along the mainland and nearshore island coasts within the EMBA. Of note are important nesting and resting areas, including: • Muiron Islands, • Montebello/Barrow/Lowendal Islands Group (including known nesting habitats on Boodie, Double and Middle Islands), and • Pilbara Islands South Island Group. Given the low probability of entrained hydrocarbons occurring in nearshore environments, a worst-case hydrocarbon spill scenario has the potential to result in moderate, medium-term impacts to nearshore associated seabirds and migratory shorebirds, with consequence severity dependent on the actual timing, duration and extent of a spill in relation to species' migratory movements, breeding seasons and distributions.
All settings	***Pelagic fish populations*** Fish mortalities are rarely observed to occur as a result of hydrocarbon spills (ITOPF 2011b). This has generally been attributed to the possibility that pelagic fish are able to detect and avoid surface waters underneath hydrocarbon spills by swimming into deeper water or away from the affected areas (Volkman et al. 1994). Fish that have been exposed to dissolved aromatic

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	hydrocarbons are capable of eliminating the toxicants once placed in clean water, so individuals exposed to a spill are likely to recover (King et al. 1996). Where fish mortalities have been recorded, the spills (resulting from the groundings of the tankers Amoco Cadiz in 1978 and the Florida in 1969) have occurred in sheltered bays. Laboratory studies have shown that adult fish are able to detect hydrocarbons in water at very low concentrations, and large numbers of dead fish have rarely been reported after hydrocarbon spills (Hjermann et al. 2007). This suggests that juvenile and adult fish are capable of avoiding water contaminated with high concentrations of hydrocarbons. However, sublethal impacts to adult and juvenile fish may be possible, given long-term exposure (days to weeks) to polycyclic aromatic hydrocarbon (PAH) concentrations (Hjermann et al. 2007), which are typically the most toxic components of hydrocarbons. Light molecular weight aromatic hydrocarbons (i.e. one- and two-ring molecules) are generally soluble in water, which increases bioavailability to gill-breathing organisms such as fish. The effects of exposure to oil on the metabolism of fish appears to vary according to the organs involved, exposure concentrations and route of exposure (waterborne or food intake). Oil reduces the aerobic capacity of fish exposed to aromatics in the water and, to a lesser extent, affects fish consuming contaminated food (Cohen et al. 2005). The liver, a major detoxification organ, appears to be the organ where anaerobic activity is most impacted, probably increasing anaerobic activity to help eliminate ingested oil from the fish (Cohen et al. 2005). Fish are perhaps most susceptible to the effects of spilled oil in their early life stages, particularly during egg and planktonic larval stages, which can become entrained in spilled oil. Contact with oil droplets can damage feeding and breathing apparatus of embryos and larvae (Fodrie and Heck 2011). The toxic components of hydrocarbons in water can result in genetic damage, physical deformities and altered developmental timing for larvae and eggs exposed to even low concentrations over prolonged timeframes (days to weeks) (Fodrie and Heck 2011). More subtle, chronic effects on the life history of fish as a result of exposure in early life stages to hydrocarbons include disruption to complex behaviours such as predator avoidance, reproductive and social behaviour (Hjermann et al. 2007). Prolonged exposure of eggs and larvae to weathered concentrations of hydrocarbons in water has also been shown to cause immunosuppression and allows expression of viral diseases (Hjermann et al. 2007). PAHs have also been linked to increased mortality and stunted growth rates of early life history (pre-settlement) of reef fishes, as well as behavioural impacts that may increase predation of post-settlement larvae (Johansen et al. 2017). However, the effect of a hydrocarbon spill on a population of fish in an area with fish larvae and/or eggs, and the extent to which any of the adverse impacts may occur, depends greatly on prevailing oceanographic and ecological conditions at the time of the spill and its contact with fish eggs or larvae. Pelagic and demersal fish species are associated with the Ancient Coastline at 125 m Depth Contour KEF which overlaps the Operational Area. Additional KEFs that may host relatively diverse or abundant fish assemblages compared to relatively featureless continental shelf habitats occur within the wider EMBA: • Continental Slope Demersal Fish Communities KEF (overlaps the Operational Area), which has a highly diverse fish assemblage with a high degree of endemism (DAWE 2021a). • Exmouth Plateau KEF (88 km south-west of Operational Area), which is an important area of biodiversity (DAWE 2021a). • Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula KEF (148 km south-west of Operational Area), which has been shown to host demersal fish (BMT Oceanica 2016). • Commonwealth Waters adjacent to Ningaloo Reef KEF (191 km south-west of Operational Area), which has high biological productivity and hosts a yearly aggregation of whale sharks (DAWE 2021a). Rankin Bank is also on the continental shelf and within the EMBA, approximately 50 km north-east from the Operational Area. While not a KEF, Rankin Bank and Glomar Shoal, are the only large, complex bathymetrical features on the outer western shelf of the West Pilbara and represents habitats that are likely to play an important role in the productivity of the Pilbara region, supporting demersal and pelagic fish populations (AIMS 2014). Mortality and sublethal effects may impact populations located close to a spill from a vessel collision and within the EMBA for entrained/dissolved aromatic hydrocarbons. Additionally, if prey

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	(infauna and epifauna) is contaminated, this can result in the absorption of toxic components of the hydrocarbons (PAHs), potentially impacting fish populations that feed on these. Therefore, a worst-case hydrocarbon spill scenario has the potential to result in moderate, medium-term impacts to pelagic fish species, with consequence severity dependent on the actual timing, duration and extent of a spill in relation to species' migratory movements and distributions.
Summary of potential impacts to other habitats and communities	
Setting	**Receptor group**
Offshore	***Benthic fauna communities*** Impacts to benthic communities in the offshore environment are not predicted given the maximum depth of entrained hydrocarbons above 100 ppb is predicted to be 20 m. Potential impacts to benthic habitats and communities are discussed in the Mainland and Islands (nearshore) impacts discussion below.
	Open water – productivity/upwelling Primary production by plankton (triggered by sporadic upwelling events in the offshore waters) is an important component of the primary marine food web. Planktonic communities are generally mixed, including phytoplankton (cyanobacteria and other microalgae), secondary consuming zooplankton (e.g. copepods), and the eggs and larvae of fish and invertebrates (meroplankton). Exposure to hydrocarbons in the water column can result in changes in species composition, with declines or increases in one or more species or taxonomic groups (Batten et al. 1998). Phytoplankton may also experience decreased rates of photosynthesis (Tomajka 1985). For zooplankton, direct effects of contamination may include suffocation, changes in behaviour, or environmental changes that make them more susceptible to predation. Impacts on plankton communities are likely to occur in areas where surface, entrained or dissolved aromatic hydrocarbon threshold concentrations are exceeded, but communities are expected to recover relatively quickly (within weeks or months). This is due to high population turnover, with copious production within short generation times that also buffers the potential for long-term (i.e. years) population declines (ITOPF 2011a). Therefore, a worst-case hydrocarbon spill scenario has the potential to result in temporary, localised impacts to plankton populations within the EMBA, with impacts predicted to be greatest for habitats closest to the potential release location.
	Filter feeders Entrained hydrocarbons above the 100 ppb ecological thresholds will be limited to the top 20 m of the water column beyond the immediate source. Entrained hydrocarbons are therefore not expected to impact filter feeder habitats in deep offshore waters including filter feed communities associated with KEFs including the Ancient Coastline at 125 m Depth Contour KEF, Continental Slope Demersal Fish Communities KEF, Canyons KEF, Exmouth Plateau KEF, and Commonwealth Waters adjacent to Ningaloo Reef KEF. Refer to 'mainland and islands (nearshore waters)' for a description of potential impacts to filter feeders in shallower waters.
Mainland and islands (nearshore waters)	***Open water – productivity/upwelling*** Nearshore waters and adjacent offshore waters surrounding the offshore islands (e.g. Montebello/Barrow/Lowendal Islands Group) and to the west of the Ningaloo Reef system are known locations of seasonal upwelling events and productivity (Brewer et al. 2007). The seasonal productivity events are critical to krill production, which supports megafauna aggregations such as whale sharks and manta rays in the region. This has the potential to result in lethal and sublethal impacts to a certain portion of plankton in affected areas, depending on concentration and duration of exposure and the inherent toxicity of the hydrocarbon. However, recovery would occur (see Offshore description above). Therefore, a worst-case hydrocarbon spill scenario has the potential to result in temporary, localised impacts to plankton populations within the EMBA.
	Spawning/nursery areas Fish (and other commercially targeted taxa) in their early life stages (eggs, larvae and juveniles) are at their most vulnerable to lethal and sublethal impacts from exposure to hydrocarbons, particularly if a spill coincides with spawning seasons or reaches nursery areas close to the shore (e.g. seagrass and mangroves) (ITOPF 2011a). Fish spawning (including for commercially

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Setting	**Receptor group**
	targeted species such as snapper and mackerel) occurs in nearshore waters at certain times of the year, and nearshore waters are also inhabited by higher numbers of juvenile fishes than offshore waters. Modelling indicated that, in the event of a loss of containment, there is potential for surface hydrocarbons to occur in the surface water layers above threshold concentrations in nearshore waters, including Montebello AMP (see Table 6-12). This has the potential to result in lethal and sublethal impacts to a portion of fish larvae in areas contaminated above impact thresholds, depending on concentration and duration of exposure and the inherent toxicity of the hydrocarbon. Although there is the potential for spawning/nursery habitat to be impacted (e.g. mangroves and seagrass beds, discussed above), loss of fish larvae in worst-affected areas are unlikely to be of major consequence to fish stocks compared with significantly larger losses through natural predation, and the likelihood that most nearshore areas would be exposed is low (i.e. not all areas in the region would be affected). This is supported by a study in the Gulf of Mexico, which used juvenile abundance data from shallow-water seagrass meadows as indices of the acute, population-level responses of young fishes to the Deepwater Horizon spill. Results indicated that there was no change to the juvenile cohorts following the Deepwater Horizon spill. Additionally, there were no significant post-spill shifts in community composition and structure, nor were there changes in biodiversity measures (Fodrie and Heck 2011). Therefore, a worst-case hydrocarbon spill scenario has the potential to result in moderate, medium-term impacts to spawning fish and/or nursery areas within the EMBA, with consequence severity dependent on the actual timing, duration and extent of a spill in relation to key spawning periods and locations.
	Non-biogenic reefs The reef communities fringing the Pilbara region (e.g. Pilbara islands) may be exposed to entrained hydrocarbons (at or above the threshold concentration) and consequently exhibit lethal or sublethal impacts resulting in partial or total mortality of keystone sessile benthos, particularly hard corals; thus, potential community structural changes to these shallow, nearshore benthic communities may occur. If these reefs are exposed to entrained hydrocarbons, impacts are expected to result in localised long-term effects to individual reef systems. Non-biogenic reefs are present throughout the outer shelf and upper slope of the North West Shelf often at considerable depths. The Southern Pilbara Islands, Thevenard Island, and Penguin Bank overlap the EMBA and are also known to contain non-biogenic reefs. Therefore, a worst-case hydrocarbon spill scenario has the potential to result in minor, short-term impacts to non-biogenic reefs within the EMBA.
	Filter feeders Hydrocarbon exposure to shallow nearshore filter feeding communities (<20 m) may occur. Exposure to entrained aromatic hydrocarbons has the potential to result in lethal or sublethal toxic effects. Sublethal impacts, including mucus production and polyp retraction, have been recorded for gorgonians exposed to hydrocarbon (White et al. 2012). Any impacts may result in localised long-term effects to community structure and habitat. Nearshore filter feeders that are present in shallower water <20 m may potentially be impacted by entrained hydrocarbon through lethal/sublethal effects, although given the distance from source hydrocarbons are expected to be less toxic due to the weathering process. Such impacts may result in localised, long-term effects to community structure and habitat. Therefore, a worst-case hydrocarbon spill scenario has the potential to result in minor, short-term impacts to filter feeders within the EMBA.
Key ecological features	***Key ecological features*** KEFs potentially impacted by a hydrocarbon spill from a vessel collision event are detailed in Section 4.7. Although these KEFs are primarily defined by seabed geomorphological features, they can indicate a potential for increased biological productivity and, therefore, ecological significance. The consequences of a hydrocarbon spill from a vessel collision event are predicted to result in minor impacts to values of the KEFs affected (for the values of each KEF, see Section 4.7). Impacts to benthic habitats are not predicted given the maximum depth of entrained hydrocarbons above 100 ppb is predicted to be 20 m. Potential impacts to associated pelagic

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Summary of potential impacts to protected species	
Setting	**Receptor group**
	communities may occur as described above and below. The KEFs within the EMBA have relatively broad-scale distributions and are unlikely to be significantly impacted. Therefore, a worst-case hydrocarbon spill scenario has the potential to result in minor, short-term impacts to the ecological values of KEFs within the EMBA, with impacts predicted to be greatest for habitats closest to the potential release location.
Summary of potential impacts to water quality	
Setting	**Receptor group**
All settings	***Open water – water quality*** Water quality would be affected due to hydrocarbon contamination above impact thresholds. These are defined by the EMBA descriptions for each of the entrained and dissolved hydrocarbon fates and their predicted extent. Therefore, a worst-case hydrocarbon spill scenario has the potential to result in minor, temporary impacts to water quality within the EMBA, with impacts predicted to be greatest for areas closest to the potential release location.
Summary of potential impacts to marine sediment quality	
Setting	**Receptor group**
Mainland and Islands (nearshore waters)	***Marine sediment quality*** Entrained hydrocarbons (at or above the defined threshold) are predicted to potentially contact shallow, nearshore waters of identified islands and mainland coastlines. Hydrocarbons may occur (at or above the ecological impact thresholds) at the Montebello AMP. Such hydrocarbon contact may lead to reduced marine sediment quality through adherence to sediment. However, given the nature of the hydrocarbon and degree of weathering that is expected prior to contact with nearshore seabed habitats, contamination of sediments is expected to be limited and short term. Therefore, a worst-case hydrocarbon spill scenario has the potential to result in minor, temporary impacts to sediment quality within the EMBA.
Summary of potential impacts to protected areas	
The quantitative spill risk assessment results indicate that the Montebello AMP (Table 6-12) may be affected by released hydrocarbons in the event of a loss of containment. In the highly unlikely likelihood of a major spill occurring, entrained hydrocarbons may contact the identified key receptor locations of islands and mainland coastlines and shoreline accumulation may occur above the socio- cultural and ecological thresholds at limited locations, resulting in the actual or perceived contamination of protected areas as identified for the EMBA. Impact on the protected areas is discussed in the sections above for ecological values and sensitivities, and below for socioeconomic values. Additionally, such hydrocarbon contact may alter stakeholder understanding and/or perception of the protected marine environment, given these represent areas are largely unaffected by anthropogenic influences and contain biologically diverse environments.	
Summary of potential impacts to socio-economic values	
Setting	**Receptor group**
Offshore	***Fisheries – commercial*** A hydrocarbon release has the potential to result in direct impacts to target species of Commonwealth and State fisheries within the defined EMBA (Section 4.9.2). Lethal and sublethal effects may impact localised populations of targeted species within the EMBA for entrained/dissolved hydrocarbons. However, entrained hydrocarbons are likely to be confined in the upper water column; therefore, demersal species are less likely to be exposed to hydrocarbons than pelagic species. A major loss of hydrocarbons from the Petroleum Activity may also lead to an exclusion of fishing from the spill-affected area for an extended period. Fish exposure to hydrocarbon can result in 'tainting' of their tissues. Even very low levels of hydrocarbons can impart a taint or 'off' flavour or smell in seafood. Tainting is reversible through the process of depuration, which removes hydrocarbons from tissues by metabolic processes, although its efficacy depends on the magnitude of the hydrocarbon contamination. Fish have a high capacity to metabolise these hydrocarbons, while crustaceans (such as prawns) have a reduced ability (Yender et al. 2002). Seafood safety is a major concern associated with spill incidents. Therefore, actual or potential seafood contamination can affect commercial and

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Summary of potential impacts to protected species	
Setting	**Receptor group**
	recreational fishing and can impact seafood markets long after any actual risk to seafood from a spill has subsided (Yender et al. 2002). A major spill would result in the establishment of an exclusion zone around the spill-affected area. There would be a temporary prohibition on fishing activities for a period of time, and subsequent potential for economic impacts to affected commercial fishing operators. Therefore, a worst-case hydrocarbon spill scenario has the potential to result in moderate, medium-term impacts to commercial fisheries within the EMBA, particularly for pelagic fisheries and fisheries with most of their effort focused within the EMBA (e.g. Pilbara Demersal Scalefish Managed Fishery, Northern Demersal Scalefish Managed Fishery and Mackerel Managed Fishery). Potential impacts to inshore fisheries are discussed in the Mainland and Islands (nearshore) impacts discussion below, and the impact assessment relating to spawning is discussed above.
	Tourism and recreation Recreational fishers predominantly target large tropical species, such as emperor, snapper, grouper, mackerel, trevally and other game fish. Recreational angling activities include shore-based fishing, private boat and charter boat fishing, with peak activity between April and October (Smallwood et al. 2011) for the Exmouth region. Limited recreational fishing takes place in the offshore waters in or around the Operational Area. Impacts on species that are recreationally fished are described above under Summary of Potential Impacts to Other Species. A major loss of hydrocarbons from the Petroleum Activity may lead to exclusion of marine nature-based tourist activities, resulting in a loss of revenue for operators. Tourism is a major industry for the region and visitor numbers would likely reduce if a hydrocarbon spill were to occur, based on the perception of hydrocarbon spills and associated impacts. Therefore, a worst-case hydrocarbon spill scenario has the potential to result in moderate, medium-term impacts to tourism and recreation within the EMBA.
	Offshore oil and gas infrastructure A hydrocarbon release event has the potential to result in disruptions to production at existing petroleum facilities (platforms and FPSOs), as well as activities such as drilling and seismic exploration. For example, facility water intakes for cooling and fire hydrants could be shut off if contacted by floating hydrocarbons, which could in turn lead to the temporary cessation of production activities. Spill exclusion zones established to manage the spill could also prohibit access for activity support vessels as well as offtake tankers approaching facilities off the North West Cape. The impact on ongoing operations of regional production facilities would be determined by the nature and scale of the spill and metocean conditions. Furthermore, decisions on the operation of production facilities in the event of a spill would be based primarily on health and safety considerations. The closest production facilities are: • Pluto (Woodside): 15 km east from the Operational Area. • Wheatstone (Chevron (TAPL) Pty Ltd): 19 km north-east from the Operational Area. • John Brookes (Santos (BOL) Pty Ltd): 34 km south from the Operational Area. • Wonnich (Santos (BOL) Pty Ltd): 49 km south-east from the Operational Area. Operation of these facilities may be affected in the event of a hydrocarbon spill from a vessel collision. Therefore, a worst-case hydrocarbon spill scenario has the potential to result in Moderate impact to oil and gas industry within the EMBA.
Submerged shoals	***Tourism and recreation*** A hydrocarbon release event has the potential to result in a temporary prohibition on charter boat recreational fishing/diving and any other marine nature-based tourism trips to Rankin Bank. Therefore, a worst-case hydrocarbon spill scenario has the potential to result in minor, temporary impacts to tourism and recreational activities within the EMBA.
Mainland and islands (nearshore waters)	***Fisheries – commercial*** **Nearshore fisheries** In the event of a hydrocarbon spill, there is the possibility that target species in some areas used by a number of state fisheries could be affected (refer to Section 4.9.2 for fisheries within the wider EMBA). Targeted fish, prawn, mollusc and lobster species could experience sublethal stress, or in some instances mortality, depending on the concentration and duration of hydrocarbon exposure and its inherent toxicity.

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Summary of potential impacts to protected species	
Setting	**Receptor group**
	Prawn managed fisheries In the event of a major spill, the modelling indicated the entrained EMBA may extend to nearshore waters, including the actively fished areas of the designated Exmouth Gulf Prawn Managed Fishery and Nickol Bay Prawn Managed Fishery. Prawn habitat usage differs between species in the post-larval, juvenile and adult stages (Dall et al. 1990) and direct impacts to benthic habitat due to a major spill have the potential to impact prawn stocks. For example, juvenile banana prawns are found almost exclusively in mangrove-lined creeks (Rönnbäck et al. 2002), whereas juvenile tiger prawns are most abundant in areas of seagrass (Masel and Smallwood 2000). Adult prawns also inhabit coastline areas but tend to move to deeper waters to spawn. In the event of a major spill, a range of subtidal habitats that support juvenile prawns may be exposed to hydrocarbons above impact thresholds, including: • Montebello Islands, • Barrow Island, • Lowendal Islands, • Pilbara Southern Island Group, and • Ningaloo Coast. Localised loss of juvenile prawns in the worst spill-affected areas is possible. Whether lethal or sublethal effects occur will depend on duration of exposure, hydrocarbon concentration and weathering stage of the hydrocarbon, and its inherent toxicity. Furthermore, seafood consumption safety concerns and a temporary prohibition on fishing activities may lead to subsequent potential for economic impacts to affected commercial fishing operators. Therefore, a worst-case hydrocarbon spill scenario has the potential to result in moderate, medium-term impacts to commercial fisheries within the EMBA.
	Tourism and recreation In the event of a major spill, the nearshore waters of offshore islands and reefs as well as the Ningaloo coast could be reached by entrained hydrocarbons depending on prevailing wind and current conditions. As these locations offer a number of amenities such as fishing, swimming and using beaches and surrounds, they have a recreational value for local residents and visitors. In the event of a hydrocarbon spill, tourists and recreational users may also avoid areas due to perceived impacts, including after the oil spill has dispersed. There is the potential for stakeholder perception that this environment will be contaminated over a large area and for the longer term, resulting in a prolonged period of tourism decline. Oxford Economics (2010) assessed the duration of hydrocarbon spill-related tourism impacts and found that, on average, it took 12 to 28 months to return to baseline visitor spending. There is likely to be significant impacts to the tourism industry, wider service industry (hotels, restaurants and their supply chain) and local communities in terms of economic loss as a result of spill impacts to tourism. Recovery and return of tourism to pre-spill levels will depend on the size of the spill, effectiveness of the spill clean-up, and change in any public perceptions regarding the spill (Oxford Economics 2010). Therefore, a worst-case hydrocarbon spill scenario has the potential to result in moderate, medium-term impacts to tourism and recreational activities within the EMBA.
All settings	***Cultural values and heritage*** Through consultation and review of available literature (Section 4.9.1), Woodside understands that Sea Country, including marine ecosystems and species, archaeological heritage and heritage sites, marine parks, as well as intangible cultural heritage may be impacted in the event of a hydrocarbon release from a vessel collision. Cultural features and heritage values that have the potential to be impacted include: **Marine ecosystems and species** Marine ecosystems may hold both cultural and environmental value to Traditional Custodians (see Section 4.9.1), with cultural and environmental values intrinsically linked (DCCEEW 2023, MAC 2021 as cited in Woodside 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. The EMBA is known to include habitat for culturally important species such as whales, whale sharks, turtles, dugongs, plankton, and seagrass (Section 4.9). In the event of a worst-case

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Summary of potential impacts to protected species	
Setting	**Receptor group**
	release of hydrocarbons, individual fauna may be directly impacted or impacted through temporary degradation of their habitats, however, no population level impacts as expected. Impacts are not expected to occur to ecologically significant proportions of the populations of the species, nor expected to result in a decrease of the quality of the habitat such that the extent of these species is likely to decline. As such, cultural values and intangible cultural heritage associated with these species are expected to be maintained. **Heritage sites** The EMBA overlaps Historic Underwater Heritage sites (Table 4-22), the Ningaloo Coast World Heritage, National and Commonwealth Heritage Places, and the Barrow Island and the Montebello-Barrow Islands Marine Conservation Reserves National Heritage Place (Table 4-21). No coastal areas or islands exist within the Operational Area. A review of the DPLH's Aboriginal Heritage Inquiry System identified 5 Registered Heritage Places within the EMBA (Appendix I). A review of the DPLH's Aboriginal Heritage Inquiry System identified 5 Registered Heritage Places within the EMBA (Appendix I). These locations do exist within the EMBA boundary, however given the EMBA is driven by an unplanned hydrocarbon release there is no anticipated impact pathway from this activity to onshore archaeological sites above highest astronomical tide (HAT). Archaeological sites may exist in intertidal landscapes within the EMBA and may be exposed to hydrocarbons from an unplanned release, however there is no anticipated impact pathway from the presence of hydrocarbons on archaeological values, as this is not expected to impact the fabric or context of sites on an exposed shoreline site. Impacts to the heritage value of fish traps from an unplanned hydrocarbon release may occur indirectly through impacts to fish. However, it is expected that continued use of fish traps beyond their archaeological value will be preserved where fish species and distribution are maintained at a population level. With regard to fish, refer to species specific risk assessment above for further information. Four historic shipwrecks were identified as overlapping the Operational Area (Table 4-22). The spill modelling results do not predict surface slicks will contact any identified wrecks. However, shipwrecks occurring in the subtidal zone may be exposed to entrained/dissolved hydrocarbons, and marine life that shelter and take refuge in and around these wrecks may be affected by in-water toxicity of dispersed hydrocarbons. The consequences of such hydrocarbon exposure may include large fish species moving away, and/or resident fish species and sessile benthos such as hard corals exhibiting sublethal and lethal impacts (which may range from physiological issues to mortality). **Intangible cultural heritage** Impacts may occur to intangible cultural values such as songlines; creation/dreaming sites, sacred sites, ancestral beings; cultural obligations to care for Country; knowledge of Country/customary law and transfer of knowledge; connection to Country; Access to Country; kinship systems and totemic species, resource collection. Related intangible cultural heritage may include the transmission of cultural knowledge about whales and whale behaviour, including birthing areas, whale communication and migratory patterns. Such cultural knowledge may be associated with various cultural functions and activities that support the social and economic life of a community (Fijn 2021). Inter-generational transmission of cultural knowledge (including songlines) relating to marine reptiles may be impacted where changes results in reduced sightings (e.g., through population decline, changes to migration routes or changes to migration seasonality). This transfer of knowledge may be integral to managing a group's intangible cultural heritage (UNESCO 2003). In the unlikely event of a hydrocarbon release, intangible cultural heritage values may be impacted. Within the wider EMBA are several designated heritage places (Section 4.9.1). These places are also covered by other designations such as World Heritage Area. Potential impacts are discussed in the sections above. Entrained hydrocarbons above the threshold concentration are predicted to occur (at or above the ecological impact thresholds) at the Montebello AMP (refer to Table 6-12). However, artefacts, scatter and rock shelters are on land above the high-water mark on Barrow and Montebello islands; therefore, no contact is predicted for these areas.
Summary of potential impacts to environmental values	
In the highly unlikely event of a hydrocarbon spill due to a vessel collision in the Operational Area, hydrocarbons may impact multiple environmental settings (Table 6-12). In summary, moderate, medium-term impacts may occur at sensitive nearshore habitats as a result of a major spill of hydrocarbon during permanent plugging activities within the Operational Area.	

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[65]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
Legislation, codes and standards				
Contract vessels compliant with Marine Orders for safe vessel operations: • Marine Order 21 (Safety of navigation and emergency arrangements) 2016. • Marine Order 27 (Safety of navigation and radio equipment) 2023. • Marine Order 30 (Prevention of Collisions) 2016.	F: Yes. CS: Minimal cost. Standard practice.	Marine Orders 21, 27 and 30 are required under Australian regulations; implementation is standard practice for commercial vessels as applicable to vessel size, type and class.	Controls based on legislative requirements – must be adopted.	Yes **C 1.1**
In the event of a spill, emergency response activities implemented in accordance with the OPEP (per Table 7-8).	F: Yes. CS: Costs associated with implementing response strategies, vary dependant on nature and scale of spill event. Standard practice.	This control would not reduce the likelihood, but response activities may reduce the consequence.	Benefits outweigh cost/sacrifice.	Yes **C 12.1**
Arrangements supporting the activities in the OPEP will be tested to ensure the OPEP can be implemented as planned.	F: Yes. CS: Moderate costs associated with exercises. Standard practice.	Testing the OPEP activities would not reduce the likelihood, but response activities may reduce the consequence.	Benefits outweigh cost/sacrifice.	Yes **C 12.2**
Establishment of a 500 m safety exclusion zone around MODU/infrastructure removal vessel and communicated to marine users.	F: Yes. CS: Minimal cost. Standard practice.	Legislative requirements to be followed reduce the likelihood of a collision with a third-party vessel.	Controls based on legislative requirements – must be adopted.	Yes **C 12.3**
Good practice				
Support vessel on standby as per the rig vessel safety case during the Petroleum Activity to assist in third party vessel interactions. When a support vessel is designated for standby it will undertake actions to prevent unplanned interactions, such as: • Maintain a 24-hour radio watch on designated radio channel(s). • Perform continuous surveillance and warn the MODU of any approaching	F: Yes. CS: Minimal cost – support vessels available routinely in Operational Area during Petroleum Activity. Standard practice.	Provides a reduction in likelihood of a collision with a third-party vessel.	Benefits outweigh cost/sacrifice.	Yes **C 12.4**

[65] *Qualitative measure*

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[65]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
vessels reaching 500 m petroleum safety zone. Surveillance shall be conducted by a combination of: – visual lookout, – radar watch, – other electronic systems available including AIS, – monitoring any additional/agreed radio communications channels, and – all other means available. • While complying with Convention on the International Regulations for Preventing Collisions at Sea, 1972 (COLREGS), approach any vessel attempting to transit through the 500 m activity exclusion zone and contact vessel by all available means. • Monitor and advise the MODU if: – MODU navigation signals are defective, or – visibility becomes restricted. Advise if any buoys in the area are not holding position or are not working as expected.				
Notify relevant government departments, fishing industry representative bodies and licence holders, and adjacent titleholders of activities prior to commencement and upon completion of activities.	F: Yes CS: Minimal cost. Standard practice.	Communicating the Petroleum Activity to other marine users ensures they are informed and aware, thereby reducing the likelihood of interfering with other marine users.	Benefits outweigh cost/sacrifice. Control is standard practice.	Yes **C 1.2**
Notify AMSA Response Centre at least 24 – 48 hours prior to commencement of vessel movement and activities.	F: Yes CS: Minimal cost. Standard practice.	Communicating the Petroleum Activity to other marine users ensures they are informed and aware should emergency response be required.	Benefits outweigh cost/sacrifice. Control is standard practice.	Yes **C 1.4**

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[65]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
Vessel marine assurance process conducted prior to contracting vessels, to ensure suitability and compliance with Marine Order requirements.	F: Yes CS: Minimal cost. Standard practice.	Ensures safe interaction with other marine users by verifying vessel suitability and regulatory compliance before operations begin.	Benefits outweigh cost/sacrifice.	Yes **C 1.8**
Develop SIMOPS plan where multiple campaigns occur concurrently within the Operational Area and when MODU working in vicinity of other facilities, vessels or live infrastructure. SIMOPS Plan will contain information on: • Minimum separation distances. • Communications. • MODU/vessels/activities involved in SIMOPS. • Exclusion zone entry and exit processes. • ROV operations. • Helicopter operations. • Key roles, responsibilities and emergency contacts. • PTW arrangements. • Incident reporting and investigation. • Management of Change	F: Yes CS: Minimal cost. Standard practice.	Enhances coordination and safety by managing simultaneous operations, reducing the risk of interference or incidents between multiple marine activities in the same area.	Benefits outweigh cost/sacrifice.	Yes **C 1.9**
Mitigation: Oil spill response.	Refer to Appendix G. Should relevant cultural authorities that may be affected in the unlikely event of a spill be identified, Woodside will engage with those parties as appropriate and in alignment with the Oil Pollution FSP (Appendix H).			
Professional judgement – Eliminate				
Eliminate use of vessels.	F: No. The use of vessels is required to conduct the Petroleum Activity. CS: Not considered – control not feasible.	Not considered – control not feasible.	Not considered – control not feasible.	No
Professional judgement – Substitute				
No additional controls identified.				
Professional judgement – Engineered Solution				
No additional controls identified.				

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[65]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
ALARP statement: On the basis of the assessment outcomes, use of the relevant tools appropriate to the decision type (i.e. Decision Type A; Section 2.3.4.2) and Woodside's criteria for demonstrating ALARP (Section 2.4.1), Woodside considers the adopted controls appropriate to manage potential impacts/risks associated with an unplanned loss of hydrocarbon as a result of vessel collision. As no reasonably practicable additional/alternative controls were identified that would further reduce the impacts without disproportionate sacrifice, the impacts/risks are considered ALARP.				

Demonstration of acceptability
Acceptability statement: The risk assessment has determined that, given the adopted controls, a highly unlikely accidental hydrocarbon release as a result of a vessel collision represents a moderate current risk rating and may result in moderate impacts on environmental feature/s or area/s, such as impact on feature or area of heightened sensitivity with limited ability to recover. BIAs within the Operational Area include flatback turtle internesting buffer, whale shark foraging, pygmy blue whale migration and wedge-tailed shearwater breeding. Relevant recovery plans and conservation advice have been considered during the impact assessment, and the Petroleum Activity is not considered to be inconsistent with the overall recovery objectives and actions of these recovery plans and conservation advice. On the basis of the assessment outcomes, use of the relevant tools appropriate to the decision type (i.e. Decision Type A; Section 2.3.4.2) and Woodside's criteria for demonstrating acceptability (Section 2.4.2), Woodside considers the adopted controls appropriate to manage the impacts/risks to be managed to a level that is broadly acceptable, and compliance with those controls demonstrates that the EPOs are met.

EPOs, EPS and MC			
EPO	***Controls***	***PS***	***MC***
EPO 12 No release of hydrocarbons to the marine environment due to a vessel collision during the Petroleum Activity.	**C 1.1.1** • 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 12.1 In the event of a spill, emergency response activities implemented in accordance with the OPEP (per Table 7-8).	**PS 12.1** In the event of a spill the OPEP (per Table 7-8) requirements are implemented.	**MC 12.1.1** Completed incident documentation.
	C 12.2 Arrangements supporting the activities in the OPEP will be tested to ensure the OPEP can be implemented as planned.	**PS 12.2.**1 Exercises/tests will be conducted in alignment with the frequency identified in Table 7-10.	**MC 12.2.1** Testing of arrangement records confirm that emergency response capability has been maintained.
		PS 12.2.2 Woodside's procedure demonstrates a minimum level of trained personnel, for core roles in the OPEP (Table 7-8), are maintained.	**MC 12.2.2** Emergency Management dashboard confirms that minimum level of personnel trained for core OPEP roles are available.

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EPOs, EPS and MC			
EPO	***Controls***	***PS***	***MC***
	C 12.3 Establishment of a 500 m safety exclusion zone around MODU/ infrastructure removal vessel and communicated to marine users.	**PS 12.3** No adverse interactions between vessels and MODU.	**MC 12.3.1** Records demonstrate breaches by unauthorised vessels within the petroleum safety zone are recorded.
			MC 12.3.2 Consultation records demonstrate that AHO has been notified before commencing the activity to allow generation of navigation warnings (MSIN and NTM (including AUSCOAST warnings where relevant)), which communicate safety exclusion zones to marine users.
	C 12.4 Support vessel on standby as per the rig vessel safety case during the Petroleum Activity to assist in third party vessel interactions. When a support vessel is designated for standby it will undertake actions to prevent unplanned interactions, such as: • Maintain a 24-hour radio watch on designated radio channel(s). • Perform continuous surveillance and warn the MODU of any approaching vessels reaching 500 m petroleum safety zone. Surveillance shall be conducted by a combination of: – visual lookout, – radar watch, – other electronic systems available including AIS, – monitoring any additional/agreed radio communications channels, and – all other means available. • While complying with Convention on the	**PS 12.4** Define role of support vessels in maintaining petroleum safety zone, preventing unplanned third-party vessel interactions, monitoring the effectiveness of navigation controls (e.g. signals), and warning third party vessels of navigation hazards.	**MC 12.4.1** Records of non-conformance against controls maintained.

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EPOs, EPS and MC			
EPO	***Controls***	***PS***	***MC***
	International Regulations for Preventing Collisions at Sea, 1972 (COLREGS), approach any vessel attempting to transit through the 500 m activity exclusion zone and contact vessel by all available means. • Monitor and advise the MODU if: – MODU navigation signals are defective, or – visibility becomes restricted. • Advise if any buoys in the area are not holding position or are not working as expected.		
	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 1.4 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 1.8 Refer to Section 6.8.1.	**PS 1.8** Refer to Section 6.8.1.	**MC 1.8.1** Refer to Section 6.8.1.
	C 1.9 Refer to Section 6.8.1.	**PS 1.9** Refer to Section 6.8.1.	**MC 1.9.1** Refer to Section 6.8.1.
Detailed oil spill preparedness and response performance outcomes, standards and measurement criteria for the Petroleum Activity are presented in Appendix G.			

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6.9.3 Unplanned hydrocarbon release: Loss of well containment during P&A

Context		
Permanent plugging activities – Section 3.12	Physical environment – Section 4.4 Habitats and biological communities – Section 4.5 Protected species – Section 4.6 Socio-economic environment – Section 4.9	Stakeholder consultation – Section 5

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
Loss of hydrocarbons to marine environment due to loss of well containment.	X	X	X	X	X	X	B	C	1	M	LCS GP PJ	Broadly Acceptable	EPO 13

Description of source of impact

Background

Woodside has identified a well blowout as the scenario with the worst-case credible environmental outcome as a result of loss of well containment. A loss of well containment is an uncontrolled release of reservoir hydrocarbons or other well fluids to the environment. A blowout is an incident where formation fluid flows out of the well or between formation layers after all the predefined technical well barriers (e.g. the BOP) or activation of the same has failed.

Industry experience

A risk assessment by AMSA of oil spills in Australian ports and waters (Det Norske Veritas 2011) concluded that:

- overall national exceedance frequency for oil spills from offshore drilling in Australia is 0.033 for spills > 1 tonne/year decreasing to 0.008 for spills > 100 tonnes/year, and
- probability of a blow-out from a well intervention is 1 × 10-4 (0.0001, or 0.01%), considerably lower than drilling activities (IOGP 2010).

Woodside has a good history of implementing industry standard practice in well design and construction. In the company's 60-year history, it has not experienced any loss of well containment events that have resulted in significant releases or significant environmental impacts.

Therefore, in accordance with the Woodside Risk Matrix, Woodside considers a loss of well containment and resulting blowout event a highly unlikely event as it has only occurred a few time's in Australia within the industry, with relevant protection devices installed.

Credible scenarios – loss of well containment

The credible scenarios to be considered during the permanent plugging of the three Julimar-Brunello wells and remediation of the Balnaves Deep-1 well were uncontrolled subsurface releases to the environment due to a loss of well control or containment. All of the wells planned for P&A within this EP already have a cement plug isolating the reservoir installed, and this cement plug will remain in place during P&A activities. The credible release scenario represents a conservative scenario where the cement plug has developed cracks and reservoir fluids are able to pass the cement plug. The associated low release rate results in a total condensate release volume of 2,679 m^3 over the of 91 days. Given that a DP/moored MODU will be utilised that is capable of disconnecting, discharge to the seabed is assumed for the entire discharge duration of the spill scenario.

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Quantitative hydrocarbon spill modelling – loss of well containment

Spill modelling was undertaken by RPS, on behalf of Woodside, to determine the fate of hydrocarbon released from the loss of well containment scenario, based on the assumptions in Table 6-13. P&A operations will be executed on both the Julimar and Brunello fields. However, Julimar condensate has been identified as being worse from a spill scenario perspective and has therefore been used in the modelling.

The modelled release rates provided assumes the worst-case scenarios for the largest oil volume releases of Julimar condensate. Modelling considered metocean conditions throughout the year; this was done to inform the determination of consequence of loss of well control during intervention at any time of the year.

Table 6-13: Summary of modelled credible scenario – loss of well containment at Julimar East-1

Parameter	*Loss of well containment*[66]
Total discharge	2,679 m³ over 91 days[67]
Water depth	171 m
Fluid	Julimar condensate

Hydrocarbon weathering characteristics

The characteristics of the Julimar condensate are presented in Table 6-8.

The results for the constant-wind case (Figure 6-5) indicate that a moderate proportion of Julimar condensate will tend to persist on the sea surface (26.3% after 7 days). Under calm wind conditions, entrainment levels are almost negligible, with < 3% entrained after 7 days, around 66.7% of the spilled volume is expected to evaporate within the first 24 hours under light winds.

Under the variable-wind case (Figure 6-6), entrainment of Julimar condensate into the water column is indicated to be greater than the constant wind case. The variable wind case also indicated a low proportion of condensate that remain on the surface (< 0.5% after 1 day), with a large proportion of oil mass evaporating shortly after release.

The increased level of entrainment in the variable-wind case will result in a higher percentage of biological and photochemical degradation, where the decay of the floating slicks and oil droplets in the water column occurs at an approximate rate of 1.3% per day with an accumulated total of ~9.3% after 7 days, in comparison to a rate of ~0.2% per day and an accumulated total of ~1.6% after 7 days in the constant-wind case.

Under calm conditions where entrainment is restricted, a proportion of the spilled mass of Julimar Condensate will be expected to remain floating on the water surface. In these circumstances, some components of the remaining floating oil will evaporate and/or degrade over time scales of several weeks to a few months, with the entrained oil reducing concentration through degradation over similar time scales. This long weathering duration will extend the area of potential effect, requiring the break-up and dispersion of the slicks to reduce concentrations below the thresholds considered in this study.

[66] The discharge volumes in this table are predicted using reservoir modelling software packages that take into account a number of factors (well design, reservoir properties and environmental conditions (e.g. water depth, temperature and pressure) to provide a production profile over the oil spill modelling period.

[67] 91 days has been modelled as the worst-case duration for a loss of well containment where mobilisation of a MODU from southeast Australia is required for executing a relief well. Mobilisation of a locally available MODU is estimated to result in a loss of well containment duration of ~63 days and, from southeast Asia, ~78 days.

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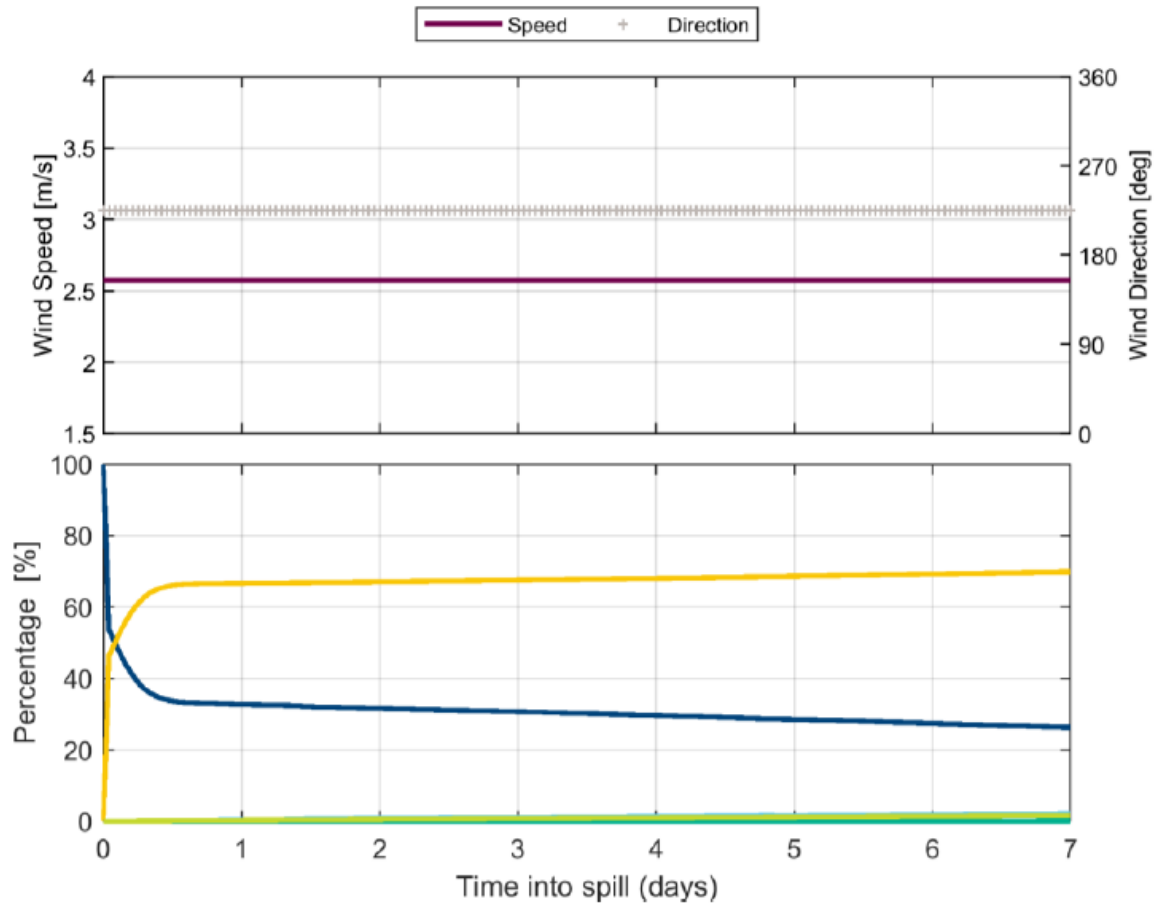

Figure 6-5: Proportional mass balance plot representing the weathering of Julimar condensate spilled onto the water surface as a one-off instantaneous release (50 m³) and subject to constant 5 kn (2.6 m/s) wind at 27 °C water temperature and 25 °C air temperature.

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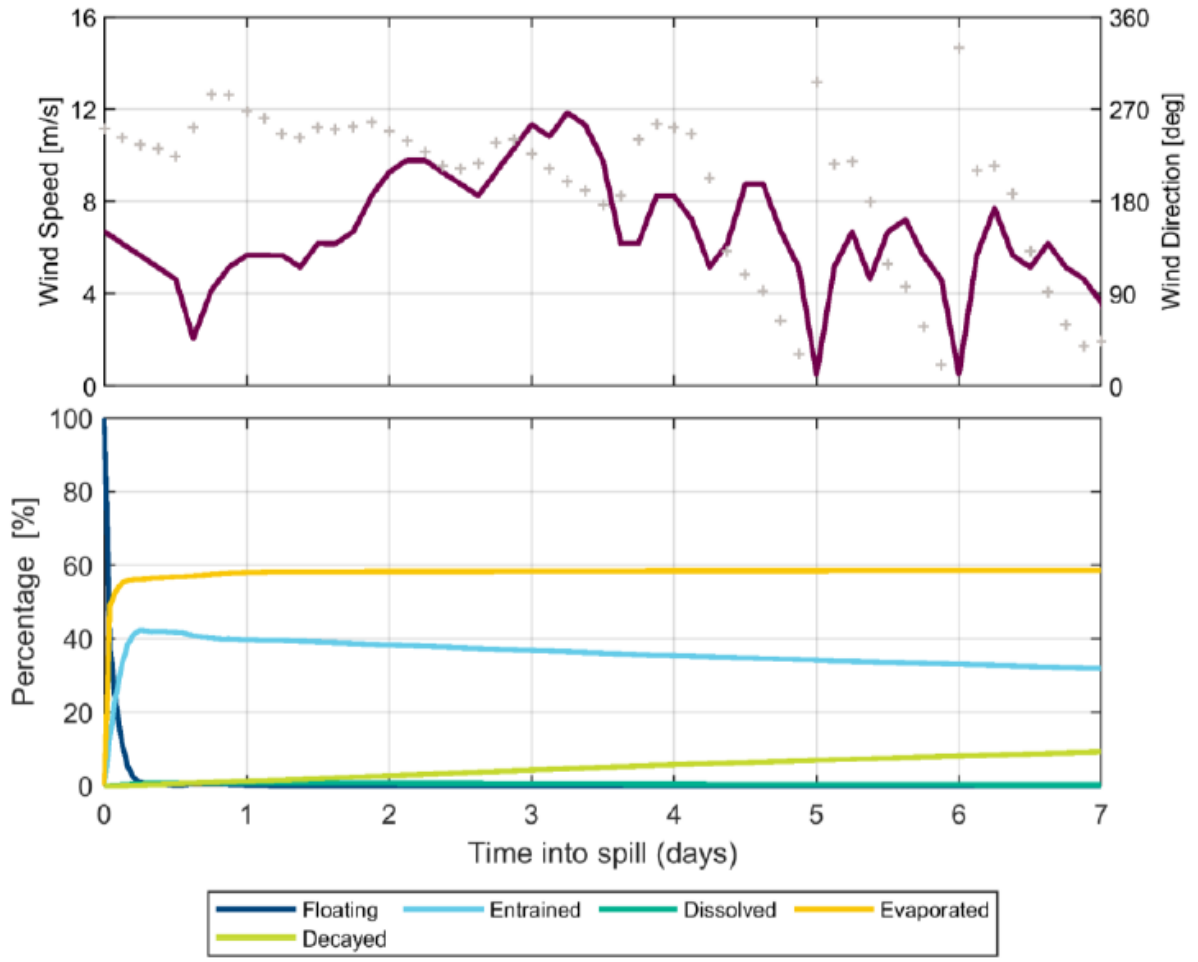

Figure 6-6: Proportional mass balance plot representing the weathering of Julimar Condensate spilled onto the water surface as a one-off instantaneous release (50 m³) and subject to variable wind at 27 °C water temperature and 25 °C air temperature.

Source: (RPS 2025)

Subsea Plume Dynamics

Table 6-17 summarises the results of the OILMAP Deep modelling for Scenario 1 at Julimar East-1. This release scenario involves the long-term discharge of relatively small volumes of oil with minor gas content during well P&A activities. The input parameters for the OILMAP-Deep model and the SINTEF bubble size distribution model, which were used as inputs to the SIMAP model, are presented in Table 6-17 . The OILMAP-Deep model also incorporated temperature and salinity profiles representative of the release location to accurately capture the ambient density profile.

Table 6-14: Near-field subsurface discharge model parameters for loss of well containment at Julimar East-1

Inputs	Release depth (m BMSL)	171
	Oil density (g/cm³) (at 15 °C)	0.798
	Oil viscosity (cP (at 40 °C)	1.39
	Oil temperature (°C)	21.4
	Gas: oil ratio (scf/bbl)	0.22 [8.681]
	Period	***Constant flow***
	Oil flow rate (bbl/hr) [m³/hr]	8 [1]
	Diameter of hole (m) [in]	4,809 [27,002]

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Outputs	Plume diameter (m)	60.8
	Plume height (m ASB)	125.7
	Plume initial rise velocity (m/s)	2.2
	Plume terminal rise velocity (m/s)	0.076
Predicted oil droplet size distribution	20% droplets size (µm)	6,688
	20% droplets size (µm)	9,765
	20% droplets size (µm)	12,693
	20% droplets size (µm)	16,498
	20% droplets size (µm)	24,092

The results of the OILMAP simulation for Julimar condensate from the Julimar East-1 well predict that the discharge will initially generate a cone-shaped plume of rising gas bubbles that entrain oil droplets and seawater, carrying the mixture toward the surface throughout the release period. The mixed plume is predicted to ascend with an initial vertical velocity of about 2.2 m/s, gradually slowing as the plume diameter expands due to entrainment of ambient water. The terminal rise velocity of the water and oil mixture is approximately 0.07 m/s, forming a circular displacement plume with a central diameter around 60.8 m. The plume is expected to rise roughly 126 m from the release depth before losing momentum.

The droplet size distribution of entrained oil within the plume ranges from approximately 6,700 µm to 24,100 µm. The relatively low gas content in the mixture reduces plume energy and pressure, affecting the rise behaviour beyond the energetic mixing zone. Under more energetic sea states, a significant portion of droplets may remain suspended within the wave-mixed zone near the surface. The potential for the plume to breach the water surface may present other hazards, including conditions that may lead to high local concentrations of natural gas and volatile organic compounds evaporating from the liquid phase. These issues are not addressed by this study and are not calculated to happen in this scenario but should be considered when evaluating the practicality of response operations near the surfacing area and slicks that are set up.

Impact assessment

Environmental value(s) potentially impacted

Environment that may be affected (EMBA)

Quantitative hydrocarbon spill modelling results are shown in Table 6-15 and has been used to define the EMBA (Sections 4.1 and 6.9.1.3).

Surface Hydrocarbons

Quantitative hydrocarbon spill modelling results for surface hydrocarbons are shown in Table 6-15. In the event of the loss of containment scenario occurring, floating oil concentrations exceeding the 1 g/m^2 threshold could potentially be found up to 30 km, from the release location. The most likely drift axis would be North-east, following the prevailing ocean currents, but oil could drift inshore under the influence of ocean eddies, wind, and tidal currents to potentially expose to the Montebello Australian Marine Park (AMP) with a probability of 1% (Table 6-15). No sensitive receptors are predicted to be contacted at the surface threshold of 10 g/m^2.

Entrained Hydrocarbons

The stochastic modelling indicated that entrained oil concentrations >10 ppb could potentially travel up to 324 km from the release location. The furthest distance for entrained oil at the 100 ppb threshold is predicted as 7 km (RPS 2025). No sensitive receptors are predicted to be contacted at the entrained threshold of 100 ppb.

Dissolved Hydrocarbons

Dissolved aromatic hydrocarbon concentrations ≥10 ppb were calculated to potentially occur up to 115 km from the release location (RPS 2025). No sensitive receptors are predicted to be contacted at the dissolved threshold of 50 ppb.

Accumulated Hydrocarbons

Quantitative hydrocarbon spill modelling results for maximum local accumulated hydrocarbon concentrations indicated that no shoreline locations have potential to experience shoreline accumulation above the ecological EMBA threshold concentration of 100 g/m^2 or the socio-cultural EMBA threshold of 10 g/m^2.

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Summary of potential impacts to environmental values
Table 6-15 presents the full extent of the EMBA, i.e. the sensitive receptors and their locations that may be exposed to hydrocarbons (surface, accumulated, entrained and dissolved) at or above the set threshold concentrations in the unlikely event of a major hydrocarbon release from a loss of well containment during the Petroleum Activity. Details of these receptors are outlined in Section 4. The potential biological and ecological impacts of an unplanned hydrocarbon release as a result of a loss of well containment during the Petroleum Activity are presented in the following sections.

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Table 6-15: Key receptor locations and sensitivities potentially contacted above impact thresholds by the Julimar East-1 loss of well containment scenario (Scenario 1) with summary hydrocarbon spill contact (table cell values correspond to probability of contact)

		Environmental, Social, Cultural, Heritage and Economic Aspects presented as per the Environmental Risk Definitions in Woodside's Risk Management Procedure																													Probability of hydrocarbon contact (%) Note: the probability is based on stochastic modelling of 100 hypothetical worst-case spills under a variety of weather and metocean conditions					
		Physical		Biological																				Socio-economic and Cultural					Socio- cultural EMBA		Ecological EMBA			
Environmental setting	Location/name	Water Quality	Sediment Quality	Marine Primary Producers			Other Communities/Habitats								Protected Species									Other Species						Surface hydrocarbon (1-10 g/m²)	Accumulated hydrocarbons (10–100 g/m²)	Surface hydrocarbon (≥10 g/m²)	Entrained hydrocarbon (≥100 ppb)	Dissolved aromatic hydrocarbon (≥50 ppb)	Accumulated hydrocarbons (>100 g/m²)
		Open water (pristine)	Marine sediment (pristine)	Coral reef	Seagrass beds/macroalgae	Mangroves	Spawning/nursery areas	Open water – productivity/upwelling	Non-biogenic coral reefs	Offshore filter feeders and/or deepwater benthic communities	Nearshore filter feeders	Sandy shores	Estuaries/tributaries/creeks/lagoons (including mudflats)	Rocky shores	Cetaceans – migratory whales	Cetaceans – dolphins and porpoises	Dugongs	Pinnipeds (sea lions and fur seals)	Marine turtles (including foraging, internesting areas and significant nesting beaches)	Sea snakes	Whale sharks	Sharks and rays	Sea birds and/or migratory shorebirds	Pelagic fish populations	Resident/demersal fish	Fisheries – commercial	Fisheries – traditional	Tourism and recreation	Protected areas/heritage – European and Indigenous/shipwrecks	Offshore oil & gas infrastructure (topside and subsea)						
Australian Marine Parks *	Montebello MP	✓	✓	✓			✓	✓							✓	✓			✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		1	-	-	-	-	-

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Summary of potential impacts to protected species, other habitats and communities, water quality and socio-economic values

As described above, modelling of a 2,679 m³ subsea release of Julimar condensate over 91 days due to a loss of well containment event predicts that no sensitive receptors will be contacted by hydrocarbons above the ecological EMBA thresholds. The Montebello AMP is the only receptor predicted to be contacted by hydrocarbons above the socio-cultural EMBA thresholds, with a 1% probability of being contacted by floating hydrocarbons at or above 1 g/m^2.

The potential impacts of spilled hydrocarbons to species (protected and otherwise), marine primary producers, other habitats and communities, water quality, marine sediment quality, air quality, protected areas and socio-economic values are described in Section 6.9.2. The vessel collision EMBA is larger spatially than the loss of well containment EMBA; therefore, the potential impacts of entrained hydrocarbons provided in Section 6.9.2, and the scale of impact described, provides a conservative assessment for potential impacts of a 2,679 m³ subsea release of Julimar condensate. Impacts specific to a loss of well control spill are summarised below.

Given the localised area of the potential EMBA and the rapid dispersion, dilution and weathering of a condensate spill, it is expected that any potential impacts will be low magnitude and temporary in nature.

Protected species

As identified in Section 4.6, protected species including migrating pygmy blue whales, humpback whales, and southern right whales may be encountered within the Operational Area and therefore could be impacted in close proximity to the spill location. 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 (DHNRDT 2016). Given the absence of critical habitats or aggregation areas, cetaceans in the area are expected to be transient, and impacts are expected to be limited to individuals or small groups of animals. Impact on the overall population viability of cetaceans are not predicted.

The EMBA for this spill scenario overlaps with an internesting BIA and habitat critical to the survival of flatback turtles. However, it is noted that the BIA and habitat critical to the survival of flatback turtles are considered very conservative as they are based on the maximum range of internesting females and many turtles are more likely to remain near their nesting beaches. In the event of a worst-case loss of well control spill, there is a potential that entrained hydrocarbons exceeding impact threshold concentrations (100 ppb) will be present in offshore waters extending up to 7 km from the release 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 BIA. The potential for lethal and sub-lethal impacts to marine turtles is limited to small numbers of transient individuals that may be present in offshore waters near the release location.

Seabirds may also be exposed to hydrocarbons in the upper water column, if resting or foraging in waters near to the spill. Impacts may include mortality due to oiling of feathers or the ingestion of hydrocarbons. However, due to the limited spatial extent of the spill and limited window for exposure, population level impacts are not expected. Other protected species that may occasionally transit through the area and may potentially be exposed to a condensate spill, include shark and ray species such as whale sharks and manta rays. The EMBA for this spill scenario overlaps a whale shark foraging BIA along both the North West Shelf. Should sharks or rays 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. 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 and the limited spatial extent of the spill.

Other communities

Within the EMBA for a loss of well control spill event there is the potential for plankton communities to potentially be impacted where entrained hydrocarbon threshold concentrations are exceeded. A range of lethal and sublethal impacts may occur to plankton exposed to entrained hydrocarbons within the EMBA. Communities are expected to recover quickly (weeks/months) due to high population turnover (ITOPF 2011a). It is therefore considered that any potential impacts would be low magnitude and temporary in nature.

Pelagic fish populations in the open water offshore environment of the EMBA are highly mobile and have the ability to move away from a spill. The spill-affected area would be confined to the surface layer and upper 20 to 30 m of the water column beyond the immediate spill location. It is therefore unlikely that fish populations would be exposed to widespread hydrocarbon contamination. Pelagic fish populations are distributed over a wide geographical area so impacts on populations or species level are considered to be negligible. Combined with these factors and the rapid dispersion of condensate, it is considered that any potential impacts will be minor.

Other communities (e.g. demersal fish, benthic infauna and epifauna) and key sensitivities (e.g. KEFs identified in Section 4.7) occur within the EMBA, however they will not be directly exposed or impacted by a condensate spill beyond the immediate location of the release as hydrocarbons will be confined to the upper layers of the water column.

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Water quality

It is likely that water quality will be reduced at the release location of the spill; however, such impacts to water quality would be temporary and localised in nature due to the rapid dispersion and weathering of hydrocarbons. The potential impact is therefore expected to be low.

Protected areas

No protected areas are predicted to be contacted by hydrocarbons above the ecological EMBA thresholds. Floating hydrocarbons have a very low probability (1%) of reaching the Montebello AMP at or above 1 g/m^2. Potential impacts to water quality and the natural values (e.g. mobile protected species) would be temporary and localised in nature due to the very low concentrations of hydrocarbons.

Cultural values and heritage

Through consultation and review of available literature (Section 4.9.1), Woodside understands that Sea Country, including marine ecosystems and species, archaeological heritage and heritage sites, marine parks, as well as intangible cultural heritage may be impacted in the event of a hydrocarbon release from a loss of well control. Cultural features and heritage values that have the potential to be impacted include:

- Marine ecosystems and species: Marine ecosystems may hold both cultural and environmental value to Traditional Custodians (see Section 4.9.1), with cultural and environmental values intrinsically linked (DCCEEW 2023, MAC 2021 as cited in Woodside 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. The EMBA for this spill scenario is known to include habitat for culturally important species such as whales, whale sharks, turtles, dugongs, plankton, and seagrass (Section 4.9.1). In the event of a worst-case release of condensate individual fauna may be directly impacted or impacted through temporary degradation of their habitats, however, no population level impacts are expected. Impacts are not expected to occur to ecologically significant proportions of the populations of the species, nor result in a decrease of the quality of the habitat such that the extent of these species is likely to decline. As such, cultural values and intangible cultural heritage associated with these are expected to be maintained.
- Benthic habitats: 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 MAC for its aesthetic values.
- The potential impacts from an unplanned loss of well containment may result in a change in habitat may occur due to a change in water or sediment quality. Given hydrocarbon characteristics, rapid weathering, short-term exposure, as well as the response strategies planned to be deployed, an unplanned release is not expected to result in a level of exposure to coral and seagrass that would cause an adverse impact on marine ecosystem functioning or integrity results. As such, cultural values and intangible cultural heritage associated with benthic habitats are expected to be maintained.
- Heritage sites: The EMBA overlaps Historic Underwater Heritage sites (Table 4-22), the Ningaloo Coast World Heritage, the Barrow Island and the Montebello-Barrow Islands Marine Conservation Reserves National Heritage Place, the Ningaloo Coast National Heritage Place, and the Ningaloo Marine Area Commonwealth Heritage Place (Table 4-23). The Department of Planning, Lands and Heritage (DPLH) Heritage Inquiry System was searched for the EMBA, which indicated five registered Indigenous heritage places (Appendix I).
- There are a number of historic shipwrecks identified in the vicinity of the Operational Area (Table 4-22). The closest known wrecks are those of the Curlew, Marietta, Vianen, and Wild Wave which all overlap the Operational Area. However, shipwrecks occurring in the subtidal zone may be exposed to entrained/dissolved hydrocarbons, and marine life that shelter and take refuge in and around these wrecks may be affected by in-water toxicity of dispersed hydrocarbons. The consequences of such hydrocarbon exposure may include large fish species moving away, and/or resident fish species and sessile benthos such as hard corals exhibiting sublethal and lethal impacts (which may range from physiological issues to mortality).
- Marine Parks: The EMBA for this scenario overlaps the Montebello AMP, Gascoyne AMP, and the Ningaloo AMP. The Management Plans for these marine parks recognise cultural values of Indigenous groups (Section 4.9.1). Due to the low maximum concentrations predicted to reach any marine park, it is not anticipated that their values will be compromised. There is a low probability of surface hydrocarbons above the socio-cultural threshold at the Montebello AMP, however, probability of accumulated, entrained, and dissolved hydrocarbons were <0.5% for the loss of well containment scenario.
- Potential impacts to intangible cultural heritage from a hydrocarbon spill are discussed in Section 6.9.2 for a vessel collision scenario which results in a larger spatial EMBA than the loss of well control scenario.

Socio-economic

A condensate spill is considered unlikely to cause significant direct impacts on the target species fished by Commonwealth and State fisheries which overlap with the EMBA (see Section 4.9.2). The fisheries that operate within the EMBA predominantly target demersal fish species (demersal finfish and crustaceans) that inhabit waters in the range of >60 to 200 m depth, or pelagic species which are highly mobile. Therefore, a condensate spill is expected to result in minor impacts, considering that hydrocarbons are confined to the upper layers of the water column beyond the immediate location of the spill. Visible surface hydrocarbons at or exceeding 1 g/m² may occur up to 30 km from

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the release site, which may result in fouling of fishing gear and a perception of impacts to fish stocks by fisheries stakeholders and the public. There is the potential that a fishing exclusion zone would be applied in the area of the spill, which would put a temporary ban on fishing activities and therefore potentially lead to subsequent economic impacts on commercial fishing operators if they were planning to fish within the area of the spill. Such measures would likely be in place for less than a week and would not result in widespread or long-term impacts to fishing activities.
Summary of potential impacts to environmental values
In the 'Highly Unlikely' event of an unplanned hydrocarbon release to the marine environment due to a loss of well control, combined with the adopted controls, it is considered that any potential impact to water quality would be moderate and medium-term in nature in comparison to background levels and/or international standards, with localised and temporary impacts to habitats, populations and shipping/fishing concerns. The highest environmental consequence identified for the assessment of an unplanned hydrocarbon release to the marine environment due a loss of well control, as classified in Table 2-2, is defined as 'Moderate impact on environmental feature/s or area/s, such as impact on feature or area of heightened sensitivity with limited ability to recover'.

Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[68]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
Legislation, codes and standards				
Project-specific Mooring Design Analysis.	F: Yes. CS: Standard practice. Required by Woodside standards.	Ensure adequate MODU station holding capacity to prevent loss of station keeping. This will reduce the likelihood of a blowout resulting in release of hydrocarbons to the marine environment.	Benefits outweigh cost/sacrifice.	Yes **C 4.1**
OPGGS (Resource Management and Administration) Regulations 2011: accepted WOMP which describes the well integrity outcomes, control measures and performance criteria used to demonstrate how the risk of loss of well integrity is managed to ALARP including the well design and barriers to be used to prevent a loss of well integrity, which aligns with industry guidance and good practice.	F: Yes. CS: Minimal cost. Standard practice.	Compliance with an accepted WOMP will ensure a number of barriers are in place and verified, reducing the likelihood of a loss of well integrity event occurring. Although the consequence of a blowout would not be reduced, the reduction in likelihood reduces the overall risk.	Benefits outweigh cost/sacrifice.	Yes **C 13.1**
In the event of a spill, emergency response activities implemented in accordance with the OPEP (per Table 7-8).	F: Yes. CS: Costs associated with implementing response strategies, vary dependant on nature and scale of spill event. Standard practice.	This control would not reduce the likelihood, but response activities may reduce the consequence.	Benefits outweigh cost/sacrifice.	Yes **C 12.1**

[68] *Qualitative measure*

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[68]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
Arrangements supporting the activities in the OPEP (per Table 7-8) will be tested to ensure the OPEP can be implemented as planned.	F: Yes. CS: Moderate costs associated with exercises. Standard practice.	Testing the OPEP activities would not reduce the likelihood, but response activities may reduce the consequence.	Benefits outweigh cost/sacrifice.	Yes **C 12.2**
Good practice				
Subsea BOP installed, and function tested during permanent plugging operations. The BOP shall meet the Woodside Well Control Procedure, Woodside Engineering Standard – Rig Equipment and shall be subject to API Standard 53 BOP Risk Assessment.	F: Yes. CS: Standard practice. Required by Woodside standards.	Testing of the BOP will reduce the likelihood of a blowout resulting in release of hydrocarbons to the marine environment. In the event of a blowout, this control would not reduce the consequence, although the reduction in likelihood reduces the overall risk ranking.	Benefits outweigh cost/sacrifice.	Yes **C 7.4**
Subsea Well Control Package (WCP), if installed, will be function tested during well intervention activities. The WCP shall meet the Woodside Well Control Standard and the Woodside MODU Deployed Subsea Installation and Workover Equipment Standard.	F: Yes. CS: Standard practice. Required by Woodside standards.	Testing of the WCP will reduce the likelihood of a loss of well control resulting in release of hydrocarbons to the marine environment. In the event of a loss of well control, this control would not reduce the consequence, although the reduction in likelihood reduces the overall risk ranking.	Benefits outweigh cost/sacrifice.	Yes **C 13.2**
Mitigation: Oil spill response	Refer to Appendix G Should relevant cultural authorities that may be affected in the unlikely event of a spill be identified, Woodside will engage with those parties as appropriate and in alignment with the Oil Pollution FSP (Appendix H).			
Professional judgement – Eliminate				
Do not plug and abandon the wells.	F: No. CS: Inability to permanently abandon the well.	All risk would be eliminated.	Disproportionate. The wells require intervention to achieve the status of permanently abandoned.	No
Professional judgement – Substitute				
No additional controls identified.				
Professional judgement – Engineered Solution				
No additional controls identified.				
Risk-based analysis				
A quantitative spill risk assessment was performed (refer Section 6.9.1).				

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[68]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
ALARP statement: On the basis of the assessment outcomes, use of the relevant tools appropriate to the decision type (i.e. Decision Type A; Section 2.3.4.2) and Woodside's criteria for demonstrating ALARP (Section 2.4.1), Woodside considers the adopted controls appropriate to manage potential impacts/risks associated with a possible unplanned hydrocarbon release as a result of a loss of well integrity. As no reasonably practicable additional/alternative controls were identified that would further reduce the impacts without disproportionate sacrifice, the impacts/risks are considered ALARP.				
Demonstration of acceptability				
Acceptability statement: The risk assessment has determined that, given the adopted controls, an unlikely accidental hydrocarbon release as a result of a loss of well control represents a Moderate current risk rating and may result in moderate impacts on environmental feature/s or area/s, such as impact on feature or area of heightened sensitivity with limited ability to recover. BIAs within the Operational Area include flatback turtle internesting buffer, whale shark foraging, pygmy blue whale migration and wedge-tailed shearwater breeding. Relevant recovery plans and conservation advice have been considered during the impact assessment, and the Petroleum Activity is not considered to be inconsistent with the overall recovery objectives and actions of these recovery plans and conservation advice. On the basis of the assessment outcomes, use of the relevant tools appropriate to the decision type (i.e. Decision Type A; Section 2.3.4.2) and Woodside's criteria for demonstrating acceptability (Section 2.4.2, Woodside considers the adopted controls appropriate to manage the impacts/risks to be managed to a level that is broadly acceptable, and compliance with those controls demonstrates that the EPOs are met.				

EPOs, EPS and MC			
EPO	***Controls***	***PS***	***MC***
EPO 13 No release of hydrocarbons to the marine environment due to loss of well integrity.	**C 4.1** Refer to Section 6.8.2.	**PS 4.1** Refer to Section 6.8.2.	**MC 4.1.1** Refer to Section 6.8.2.
	C 7.4 Refer to Section 6.8.5.	**PS 7.4** Refer to Section 6.8.5.	**MC 7.4.1** Refer to Section 6.8.5.
	C 12.1 Refer to Section 6.9.2	**PS 12.1** Refer to Section 6.9.2	**MC 12.1.1** Refer to Section 6.9.2
	C 12.2 Refer to Section 6.9.2.	**PS 12.2.1** Refer to Section 6.9.2.	**MC 12.2.1** Refer to Section 6.9.2.
		PS 12.2.2 Refer to Section 6.9.2.	**MC 12.2.2** Refer to Section 6.9.2.

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EPOs, EPS and MC			
EPO	***Controls***	***PS***	***MC***
	C 13.1 OPGGS (Resource Management and Administration) Regulations 2011: accepted WOMP which describes the well integrity outcomes, control measures and performance criteria used to demonstrate how the risk of loss of well integrity is managed to ALARP including the well design and barriers to be used to prevent a loss of well integrity, which aligns with industry guidance and good practice.	**PS 13.1** An accepted WOMP is implemented, and well integrity notification and reporting are undertaken in accordance with the Regulations (as applicable).	**MC 13.1.1** Acceptance letter from NOPSEMA demonstrates acceptance of the WOMP. Records demonstrate applicable NOPSEMA notification and reporting.
	C 13.2 Subsea Well Control Package (WCP), if installed, will be function tested during well intervention activities. The WCP shall meet the Woodside Well Control Standard and the Woodside MODU Deployed Subsea Installation and Workover Equipment Standard.	**PS 13.2** Subsea WCP specification, installation and function testing compliant with internal Woodside Standards and international requirements (NORSOK D-010) as agreed by Woodside and MODU contractor.	**MC 13.2.1** Records demonstrate that WCP specifications and function testing were in accordance with minimum standards for the expected well intervention conditions as agreed by Woodside and MODU contractor.
Detailed oil spill preparedness and response performance outcomes, standards and measurement criteria for the Petroleum Activity are presented in Appendix G.			

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6.9.4 Unplanned hydrocarbon or chemical release: Hydrocarbon release during bunkering/refuelling and chemical transfer, storage and use

Context		
Permanent plugging activities – Section 3.12	Physical environment – Section 4.4 Protected species – Section 4.6	Stakeholder consultation – Section 5

Impact evaluation summary

Source of impact	*Environmental value potentially impacted*						*Evaluation* •						
	Marine Sediment	Water Quality	Air Quality (incl Odour)	Ecosystems/Habitat	Species	Socio-economic	Decision Type	Consequence/Impact	Likelihood	Risk Rating	ALARP Tools	Acceptability	Outcome
Loss of hydrocarbons (diesel/jet fuel) to marine environment from bunkering/refuelling.		X			X		A	E	2	M	LCS GP PJ	Broadly Acceptable	EPO 14

Description of source of impact

Bunkering of marine diesel between the support vessel(s) and the MODU may occur in the Operational Area. Additionally, refuelling of helicopters using aviation jet fuel may occur onboard the MODU. Other fuel transfers that may occur within the Operational Area include refuelling of cranes or other equipment as required. There is no planned bunkering of project vessels.

Three credible scenarios for the loss of containment of marine diesel during bunkering operations were identified:

- Partial or total failure of a bulk transfer hose or fittings during bunkering, due to operational stress or other integrity issues, could spill marine diesel to the deck and/or into the marine environment. This would be in the order of less than 200 L, based on the likely volume of a bulk transfer hose (assuming a failure of the dry break coupling and complete loss of hose volume).
- Partial or total failure of a bulk transfer hose or fittings during bunkering, combined with a failure in procedure to shut off fuel pumps, for a period of up to five minutes, could result in about 24 m³ marine diesel loss to the deck and/or into the marine environment.
- Partial or total failure of a bulk transfer hose or fittings during helicopter refuelling could spill aviation jet fuel to the helicopter deck and/or into the marine environment. All helicopter refuelling activities are closely supervised and leaks on the helideck are considered to be easily detectable. In the event of a leak, transfer would cease immediately. The credible volume of such a release during helicopter refuelling would be in the order of <100 L.

Given the limited volume of the potential release and offshore location no modelling has been undertaken as it is significantly less than 500 m^3 marine diesel scenario presented in Section 6.9.2. Given the physical and chemical similarities, and the relatively small credible spill volumes, marine diesel is considered to be a suitable substitute for aviation jet fuel for the purposes of this environmental risk assessment. Aviation jet fuel would behave similarly to diesel and have similar impacts and, considering small size of spill volumes likely to be contained on the helideck, this has not been modelled.

Loss of hydrocarbons to the marine environment has been considered likelihood of 2 ‘Unlikely’. This corresponds to ‘‘Has occurred many times in the industry but not at Woodside’. A search of the Woodside spill records indicates that, while there have been smaller releases (less than 30 L) associated with bunkering, there have been no recorded partial or total failures of bulk transfer hose or fittings during bunkering, combined with a failure in procedure to shut off fuel pumps for a period of up to five minutes, resulting in the worst-case credible scenario of an 24 m³ loss of diesel.

ITOPF Limited (IOTPF) (2018) data reports that for tanker operations during 1970 to 2017, 7% of small (more than seven tonnes) spills occurred during bunkering and 2% of medium (seven to 700 tonnes) spills. While this data is from the oil tanker industry, it has been used as an indicator of the potential for spills associated with bunkering activities. A

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risk assessment by AMSA of oil spills in Australian ports and waters (Det Norske Veritas 2011) identifies transfer spills as a risk.

Hydrocarbon characteristics

Refer to Section 6.9.1 for a description of the characteristics of marine diesel, including detail on the predicted fate and weathering of a spill to the marine environment.

Impact assessment

Environmental value(s) potentially impacted

A spill at the surface as a result of bunkering activities is likely to be localised with limited potential contact with sensitive receptor locations. Based on the modelling presented in Section 6.9.1 for a larger spill of diesel (500 m^3) any release of diesel during bunkering activities is predicted be restricted to open offshore waters.

Therefore, it is considered that there is no potential for contact with sensitive receptor locations above surface (10 g/m^2), entrained (100 ppb) or dissolved (50 ppb) threshold concentrations from a 24 m^3 spill of marine diesel within the Operational Area.

The potential biological and ecological impacts associated with much larger hydrocarbon spills are presented in Section 6.9.2; further detail on impacts specific to a spill of marine diesel from a bunkering loss are provided below.

The biological consequences of such a small volume spill on identified open water sensitive receptors relate to the potential for slight, short-term impacts to megafauna, plankton and fish populations (surface and water column biota) that are within the spill-affected area. No impacts to commercial fisheries are expected. Refer to Sections 6.9.2 and 6.9.3 for the detailed potential impacts of unplanned hydrocarbon release to the marine environment from a much larger hydrocarbon spill. However, the extent of the EMBA associated with a marine diesel spill from loss during bunkering will be much reduced in terms of spatial and temporal scales; hence, potential impacts from bunkering are considered Moderate.

Demonstration of ALARP

Control considered	*Control feasibility (F) and cost/sacrifice (CS)*[69]	*Benefit in impact/risk reduction*	*Proportionality*	*Control adopted*
Legislation, codes and standards				
Marine Order 91 (Marine pollution prevention – oil) 2014, requires Shipboard Oil Pollution Emergency Plan (SOPEP)/Shipboard Marine Pollution Emergency Plan (SMPEP) (as appropriate to vessel class).	F: Yes. CS: Minimal cost. Standard practice.	By ensuring a SOPEP/SMPEP is in place for the vessel, the likelihood of a spill entering the marine environment is reduced. Although no significant reduction in consequence could result, the overall risk is reduced.	Controls based on legislative requirements – must be adopted.	Yes **C 14.1**
Liquid chemical and fuel storage areas are bunded or secondarily contained when they are not being handled/moved temporarily.	F: Yes. CS: Minimal cost. Standard practice.	Reduces the likelihood of contaminated deck drainage water being discharged to the marine environment.	Controls based on legislative requirements – must be adopted.	Yes **C 14.2**
In the event of a spill, emergency response activities implemented in accordance with the OPEP (per Table 7-8).	F: Yes. CS: Minimal cost. Standard practice.	Reduces the likelihood of a deck spill from entering the marine environment. The consequence is unchanged.	Benefits outweigh cost/sacrifice.	Yes **C 12.1**

[69] *Qualitative measure*

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[69]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
Good practice				
Vessel marine assurance process conducted prior to contracting vessels, to ensure suitability and compliance with Marine Order requirements.	F: Yes CS: Minimal cost. Standard practice.	Ensures safe interaction with other marine users by verifying vessel suitability and regulatory compliance before operations begin.	Benefits outweigh cost/sacrifice.	Yes **C 1.8**
Bunkering equipment controls: • All hoses that have a potential environmental risk following damage or failure shall be linked to the MODU's preventative maintenance system. • All bulk transfer hoses shall be tested for integrity before use (tested in accordance with Original Equipment Manufacturer recommendations) and re-certified as required. • There shall be dry- break couplings and flotation on fuel hoses. • There shall be an adequate number of appropriately stocked, located and maintained spill kits.	F: Yes. CS: Minimal cost. Standard practice.	Reduces the likelihood of a spill occurring. Although no significant reduction in consequence could result, the overall risk is reduced.	Benefits outweigh cost/sacrifice.	Yes **C 14.3**
Spill kits positioned in high-risk locations around the MODU.	F: Yes. CS: Minimal cost. Standard practice.	Reduces the likelihood of a deck spill from entering the marine environment. The consequence is unchanged.	Benefits outweigh cost/sacrifice.	Yes **C 14.4**
Contractor procedures include requirements to be implemented during bunkering/refuelling operations, including: • A completed PTW and/or Job Safety Assessment (JSA) shall be implemented for the hydrocarbon bunkering/refuelling operation. • Visual monitoring of gauges, hoses, fittings and the sea surface during the operation.	F: Yes. CS: Minimal cost. Standard practice.	Reduces the likelihood of a spill occurring. Although no significant reduction in consequence could result, the overall risk is reduced.	Benefits outweigh cost/sacrifice.	Yes **C 14.5**

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[69]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
• Hose checks prior to commencement. • Bunkering/refuelling will commence in daylight hours. If the transfer is to continue into darkness, the JSA risk assessment must consider lighting and the ability to determine if a spill has occurred. • Hydrocarbons shall not be transferred in marginal weather conditions.				
Mitigation: Oil spill response.	Refer to Appendix G.			
Professional judgement – Eliminate				
No refuelling of helicopter on MODU.	F: No. Given the distance of the Operational Area from the airports suitable for helicopter operations, and the endurance of available helicopters, eliminating helicopter refuelling is not feasible. Helicopter flights cannot be eliminated and may be required in emergency situations. CS: Not assessed, control cannot feasibly be implemented.	Not considered – control not feasible.	Not considered – control not feasible.	No
The MODU brought into port to refuel.	F: No. Does not eliminate the fuel transfer risk. It is not operationally practical to transit MODU back to port for refuelling, based on the frequency of the refuelling requirements and distance from the nearest port (Dampier approximately 165 km south-east of Operational Area). CS: Significant due to schedule delay and vessel transit costs and day rates.	Eliminates the risk in the Operational Area. However, moves risk to another location. Therefore, no overall benefit.	Disproportionate. The cost/sacrifice outweighs the benefit.	No
Professional judgement – Substitute				
No additional controls identified.				

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[69]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
Professional judgement – Engineered Solution				
No additional controls identified.				
ALARP statement: On the basis of the assessment outcomes, use of the relevant tools appropriate to the decision type (i.e. Decision Type A; Section 2.3.4.2) and Woodside's criteria for demonstrating ALARP (Section 2.4.1), Woodside considers the adopted controls appropriate to manage potential impacts/risks associated with an unplanned hydrocarbon or chemical release during bunkering/refuelling. As no reasonably practicable additional/alternative controls were identified that would further reduce the impacts without disproportionate sacrifice, the impacts/risks are considered ALARP.				

Demonstration of acceptability
Acceptability statement: The impact/risk assessment has determined that, given the adopted controls, an unplanned hydrocarbon or chemical release during bunkering/refuelling represents a Moderate risk rating which may result in slight, low-level impacts on environmental feature/s or area/s such as impact on feature of low significance with ability to recover. Relevant management plans and species recovery plans and conservation advice have been considered during the impact assessment and given the adopted controls, the Petroleum Activity is not considered to be inconsistent with the overall objectives and actions of these plans. On the basis of the assessment outcomes, use of the relevant tools appropriate to the decision type (i.e. Decision Type A; Section 2.3.4.2) and Woodside's criteria for demonstrating acceptability (Section 2.4.2), Woodside considers the adopted controls appropriate to manage the impacts/risks to be managed to a level that is broadly acceptable, and compliance with those controls demonstrates that the EPOs are met.

EPOs, EPS and MC			
EPO	***Controls***	***PS***	***MC***
EPO 14 No release of hydrocarbons or chemicals to the marine environment from MODU and vessels during bunkering activities.	**C 1.8** Refer to Section 6.8.1.	**PS 1.8** Refer to Section 6.8.1.	**MC 1.8.1** Refer to Section 6.8.1.
	C 12.1 Refer to Section 6.9.2.	**PS 12.1** Refer to Section 6.9.2.	**MC 12.1.1** Refer to Section 6.9.2.
	C 14.1 Marine Order 91 (Marine pollution prevention – oil) 2014, requires Shipboard Oil Pollution Emergency Plan (SOPEP)/Shipboard Marine Pollution Emergency Plan (SMPEP) (as appropriate to vessel class).	**PS 14.1** Appropriate initial responses prearranged and exercised for response to a hydrocarbon spill, as appropriate to vessel class.	**MC 14.1.1** Marine Assurance inspection records demonstrate compliance with Marine Order 91.

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EPOs, EPS and MC			
EPO	***Controls***	***PS***	***MC***
	C 14.2 Liquid chemical and fuel storage areas are bunded or secondarily contained when they are not being handled/moved temporarily.	**PS 14.2** Liquid chemical and fuel storage areas are bunded or secondarily contained when they are not being handled/moved temporarily.	**MC 14.2.1** Environmental inspection records confirm all liquid chemicals and fuel are stored in bunded/secondarily contained areas when not being handled/moved temporarily.
	C 14.3 Bunkering equipment controls: • All hoses that have a potential environmental risk following damage or failure shall be linked to the MODU's preventative maintenance system. • All bulk transfer hoses shall be tested for integrity before use (tested in accordance with Original Equipment Manufacturer recommendations) and re-certified as required. • There shall be dry-break couplings and flotation on fuel hoses. • There shall be an adequate number of appropriately stocked, located and maintained spill kits.	**PS 14.3.1** Equipment identified as having integrity damage is replaced prior to failure.	**MC 14.3.1** Records confirm presence of dry break of couplings and flotation on fuel hoses.
		PS 14.3.2 Bunkering equipment controls employed during bunkering.	**MC 14.3.2** Records confirm presence of dry break of couplings and flotation on fuel hoses.
		PS 14.3.3 Spill kits available in the event of a spill during bunkering.	**MC 14.3.3** Records confirm presence of spill kits.
	C 14.4 Spill kits positioned in high-risk locations around the MODU.	**PS 14.4** Spill kits to be available for use to clean up deck spills.	**MC 14.4** Records confirms spill kits are present, maintained and suitably stocked.

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EPOs, EPS and MC			
EPO	***Controls***	***PS***	***MC***
	C 14.5 Contractor procedures include requirements to be implemented during bunkering/refuelling operations, including: • A completed PTW and/or Job Safety Assessment (JSA) shall be implemented for the hydrocarbon bunkering/refuelling operation. • Visual monitoring of gauges, hoses, fittings and the sea surface during the operation. • Hose checks prior to commencement. • Bunkering/refuelling will commence in daylight hours. If the transfer is to continue into darkness, the JSA risk assessment must consider lighting and the ability to determine if a spill has occurred. • Hydrocarbons shall not be transferred in marginal weather conditions.	**PS 14.5** Comply with Contractor procedures for managing bunkering/helicopter operations.	**MC 14.5.1** Records demonstrate bunkering/refuelling performed in accordance with contractor bunkering procedures.
Detailed oil spill preparedness and response performance outcomes, standards and measurement criteria for the Petroleum Activity are presented in Appendix G.			

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6.9.5 Unplanned discharges: Drilling and well fluids

Context		
Project vessels – Section 3.6 Project fluids – Section 3.16	Physical environment – Section 4.4 Habitats and biological communities – Section 4.5 Protected species – Section 4.6	Stakeholder consultation – Section 5

Impact evaluation summary

Source of impact	***Environmental value potentially impacted***						***Evaluation***						
	Marine Sediment	Water Quality	Air Quality (incl Odour)	Ecosystems/Habitat	Species	Socio-economic	Decision Type	Consequence/Impact	Likelihood	Risk Rating	ALARP Tools	Acceptability	Outcome
Accidental discharge of WBM or NWBM to marine environment due to failure of slip joint packers, bulk transfer hose/fitting, emergency disconnect system or from routine MODU operations.	X	X		X	X		A	D	2	M	LCS GP PJ	Broadly Acceptable	EPO 15

Description of source of impact

Drilling fluids – transfers

A support vessel will bulk transfer WBM and brine to the MODU, if and when required. Failure of a transfer hose or fittings during a transfer or backload, as a result of an integrity or fatigue issue, could result in a spill of mud or base oil to either the bunded deck or into the marine environment.

The most likely spill volume of mud is likely to be less than 0.2 m³, based on the volume of the transfer hose and the immediate shutoff of the pumps by personnel involved in the bulk transfer process. However, the worst-case credible spill from a transfer could result in up to 8 m³ of WBM being discharged. This scenario represents a complete failure of the bulk transfer hose combined with a failure to follow procedures, requiring transfer activities to be monitored, coupled with a failure to immediately shut off pumps (e.g. mud pumped through a failed transfer hose for a period of about five minutes).

Drilling fluids – slip joint packer failure

The slip joint packer enables compensation for the dynamic movement of the MODU (heave) in relation to the static location of the BOP. A partial or total failure of the slip joint packer could result in a loss of mud to the marine environment. The likely causes of this failure include a loss of pressure in the pneumatic (primary) system combined with loss of pressure in the back-up (hydraulic) system.

Catastrophic sequential failure of both slip joint packers (pneumatic and hydraulic) would trigger an alarm and result in a loss of the volume of fluid above the slip joint (conservatively 1.5 m³), plus the volume of fluid lost in the one minute (maximum) taken to shut down the pumps. At a flow rate of 3.8 m³ per minute, this volume would equate to an additional 3.8 m³. In total, it is expected that this catastrophic failure would result in a loss of 5.3 m³.

Failure of either of the slip joint packers at a rate not large enough to trigger the alarms could result in an undetected loss of 20 bbl (3 m³) maximum, assuming a loss rate of 10 bbl/hr and that MODU personnel would likely walk past the moon pool at least every two hours.

Chemical – transfers

Loss of a drilling chemical container or drum during transfer from the supply vessel to the MODU may occur due to crane operator error or machinery failure. The maximum container that could be lost is an Intermediate Bulk Container (IBC) which can hold 1 m³ of chemical. If an IBC or drum is lost to the marine environment and cannot be recovered the contents will discharge, either immediately or over a period depending on the damage to the drum or container.

Drilling fluids – activation of the Emergency Disconnect Sequence (EDS)

The EDS is an emergency system that provides a rapid means of shutting in the well (i.e. BOP closed) and

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disconnecting the MODU from the BOP. The EDS could be manually activated due to an identified threat to the safety of the MODU, including loss of MODU station keeping resulting from loss of multiple moorings, potential collision by a third-party vessel or a loss of well control.

During operations, this could result in a subsurface release of a combination of WBM and/or NWBM and solids at the seabed and a release of base fluid. The volume of material released depends on the water depth and, hence, the length of the riser (i.e. the entire riser volume would be lost). The base oil of the NWBM would remain in an emulsion with the other components of the mud system.

Quantitative hydrocarbon spill modelling

The Balnaves Deep-1 well was drilled using NWBM. As a result, there is NWBM contained in the 9-5/8" casing, annulus. This NWBM will undergo remediation/isolation prior to wellhead removal. This will involve partial or complete removal of the NWBM from the annulus and/or installation of a containment cement plug in the annulus to isolate the NWBM. During NWBM removal, the NWBM is returned to the MODU. In case of a failure of the containment system (e.g. slip joint packer failure) or activation of the EDS during NWBM remediation operations, this could result in release of NWBM from the marine riser to the environment.

The volume that could be released is driven by the location of the release point but would not exceed the total NWBM within the Balnaves Deep-1 annulus, estimated to be about 103 m^3 of Saraline 185V. Based on typical concentrations for residual fluids withing casing annuli of NWBM wells, it is estimated there is a 51% volume base oil fraction in the NWBM composition, meaning up to 67 m^3 of paraffin synthetic base oil that may be released to the environment.

Spill modelling was undertaken by RPS, on behalf of Woodside, to determine the fate of released NWBM contained in annuli caused by remediation system failure scenario, based on the assumptions in Table 6-16. Modelling considered metocean conditions throughout the year; this was done to inform the determination of consequence of a spill during intervention at any time of the year.

Table 6-16: Summary of modelled credible scenario – NWBM release at Balnaves Deep-1

Parameter	***Loss of well containment[70]***
Total discharge	Instantaneous release of 67 m^3.
Water depth	135 m.
Fluid	Saraline 185V NWBM.

Hydrocarbon weathering characteristics

The results for the constant-wind case (Figure 6-7) indicate that a moderate proportion of the synthetic based oil will tend to persist on the sea surface (58.3% after 7 days). Under calm wind conditions, entrainment levels are almost negligible, with < 3% entrained after 7 days, around 30.7% of the spilled volume is expected to evaporate within the first 24 hours under light winds.

Under the variable-wind case (Figure 6-8), entrainment of the oil into the water column is indicated to be greater than the constant wind case. The variable wind case also indicated no oil will remain on the surface after 30 hours, instead a large proportion of the oil mass (80%) entrains shortly after release, with roughly 17% of oil evaporating.

The increased level of entrainment in the variable-wind case will result in a higher percentage of biological and photochemical degradation, where the decay of the floating slicks and oil droplets in the water column occurs at an approximate rate of 2.1% per day with an accumulated total of ~14.9% after 7 days, in comparison to a rate of ~0.3% per day and an accumulated total of ~2.2% after 7 days in the constant-wind case.

Under calm conditions where entrainment is restricted, a proportion of the spilled mass of synthetic oil will be expected to remain floating on the water surface. In these circumstances, some components of the remaining floating oil will evaporate and/or degrade over time scales of several weeks to a few months, with the entrained oil reducing concentration through degradation over similar time scales. This long weathering duration will extend the area of

[70] The discharge volumes in this table are predicted using reservoir modelling software packages that take into account a number of factors (well design, reservoir properties and environmental conditions (e.g. water depth, temperature and pressure) to provide a production profile over the oil spill modelling period.

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potential effect, requiring the break-up and dispersion of the slicks to reduce concentrations below the thresholds considered in this study.

Table 6-17: Characteristics of the Shell Saraline 185V NWBM

NWBM Type	Density (g/m^3)	Viscosity (cP)	Component	Volatile (%)	Semi-volatile (%)	Low volatility (%)	Residual (%)	Aromatics (%)
			Boiling Point (°C)	<180	180–265	265–380	>380	Of whole oil <380
Shell Saraline 185V	0.781 @ 15 °C	3.124 @ 25 °C	% of total	1.8	28.5	61.9	7.8	1.1
			% aromatics	0.4	0.2	0.5	-	-

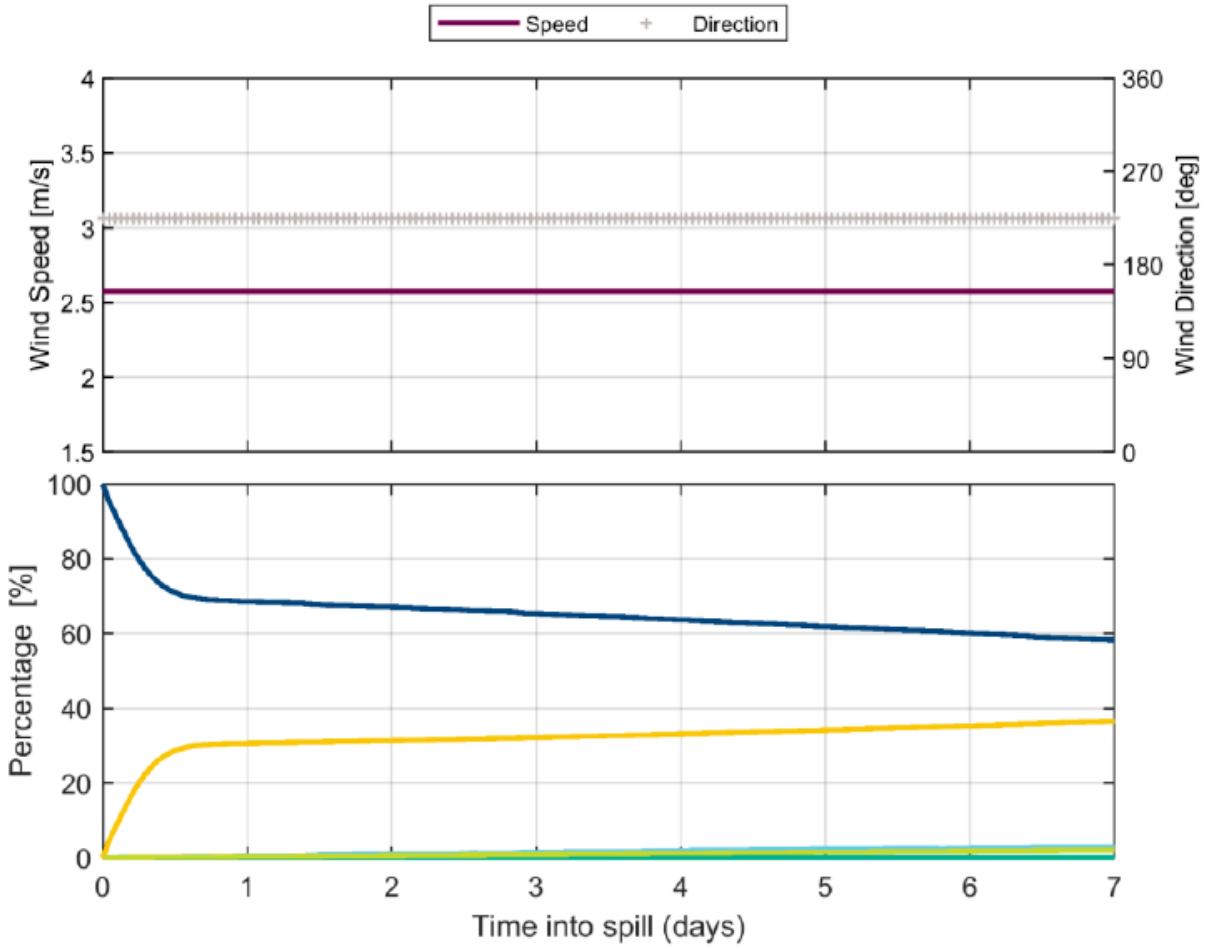

Figure 6-7: Proportional mass balance plot representing the weathering of synthetic based oil spilled onto the water surface as a one-off instantaneous release of 50 m^3 and subject to a constant 5 kn (2.6 m/s) wind at 27 °C water temperature and 25 °C air temperature

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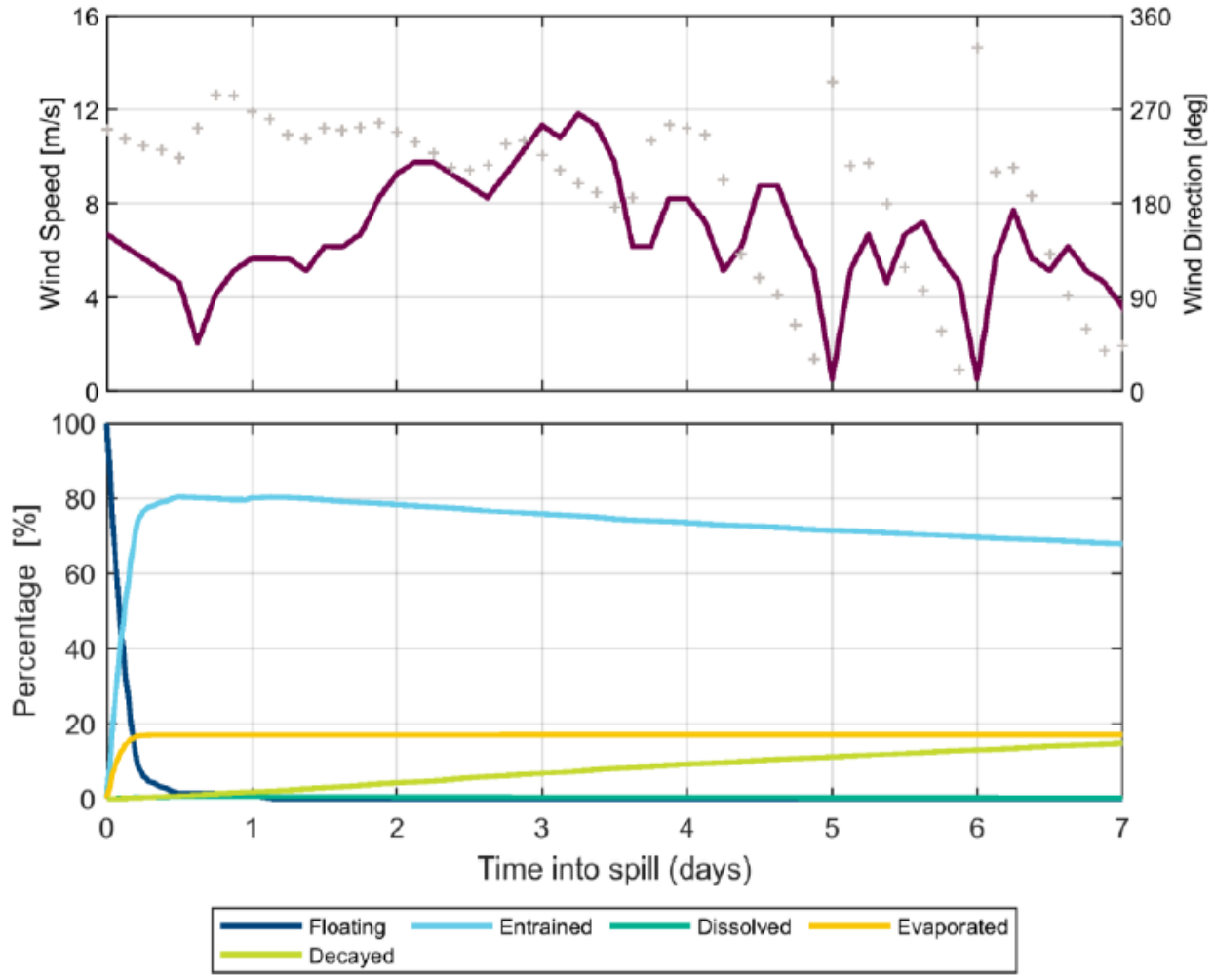

Figure 6-8: Proportional mass balance plot representing the weathering of Synthetic Based Oil spilled onto the water surface as a one-off release of 50 m^3 and subject to variable wind at 27 °C water temperature and 25 °C air temperature

Source: (RPS 2025)

Impact assessment

Environmental value(s) potentially impacted

Environment that may be affected (EMBA)

Surface hydrocarbons

Quantitative hydrocarbon spill modelling results for surface hydrocarbons are shown in Table 6-18. In the event of a release of NWBM contained in annuli caused by remediation system failure scenario occurring, floating oil concentrations exceeding the 1 g/m^2, 10 g/m^2 and 50 g/m^2 threshold could potentially be found up to 54 km, 25 km and 1 km from the release location, respectively. The most likely drift axis would be alongshore, following the prevailing ocean currents, but oil could drift inshore under the influence of ocean eddies, wind, and tidal currents to potentially expose to Montebello Australian Marine Park (AMP) with a probability of 1% above the 10 g/m^2 threshold (Table 6-18).

Entrained hydrocarbons

Quantitative hydrocarbon spill modelling results for entrained hydrocarbons indicated that at the entrained threshold of 100 ppb, Montebello AMP is predicted to be contacted with a probability of 4% (Table 6-18).

Dissolved hydrocarbons

Quantitative hydrocarbon spill modelling results for dissolved hydrocarbons indicated that at the dissolved threshold of 50 ppb, no sensitive receptors are predicted to be contacted.

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Accumulated hydrocarbons

Quantitative hydrocarbon spill modelling results for maximum local accumulated hydrocarbon concentrations indicated that no shoreline locations have potential to experience shoreline accumulation above the socio-cultural and ecological threshold concentration of 10 g/m^2 and 100 g/m^2 respectively.

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Table 6-18: Key receptor locations and sensitivities potentially contacted above impact thresholds by the release of NWBM contained in annuli caused by remediation system failure scenario with summary hydrocarbon spill contact (table cell values correspond to probability of contact [%])

		Environmental, Social, Cultural, Heritage and Economic Aspects presented as per the Environmental Risk Definitions in Woodside's Risk Management Procedure																															Probability of hydrocarbon contact (%) Note: the probability is based on stochastic modelling of 100 hypothetical worst-case spills under a variety of weather and metocean conditions					
		Physical		Biological																				Socio-economic and Cultural												Socio- cultural EMBA		Ecological EMBA			
Environmental setting	Location/name	Water Quality	Sediment Quality	Marine Primary Producers			Other Communities/Habitats								Protected Species									Other Species																		
		Open water (pristine)	Marine sediment (pristine)	Coral reef	Seagrass beds/macroalgae	Mangroves	Spawning/nursery areas	Open water – productivity/upwelling	Non-biogenic coral reefs	Offshore filter feeders and/or deepwater benthic communities	Nearshore filter feeders	Sandy shores	Estuaries/tributaries/creeks/lagoons (including mudflats)	Rocky shores	Cetaceans – migratory whales	Cetaceans – dolphins and porpoises	Dugongs	Pinnipeds (sea lions and fur seals)	Marine turtles (including foraging, internesting areas and significant nesting beaches)	Sea snakes	Whale sharks	Sharks and rays	Sea birds and/or migratory shorebirds	Pelagic fish populations	Resident/demersal fish	Fisheries – commercial	Fisheries – traditional	Tourism and recreation	Protected areas/heritage – European and Indigenous/shipwrecks	Offshore oil & gas infrastructure (topside and subsea)	Surface hydrocarbon (1-10 g/m²)	Accumulated hydrocarbons (10–100 g/m²)	Surface hydrocarbon (≥10 g/m²)	Entrained hydrocarbon (≥100 ppb)	Dissolved aromatic hydrocarbon (≥50 ppb)	Accumulated hydrocarbons (>100 g/m²)
Australian Marine Parks [71]	Montebello MP	✓	✓	✓			✓	✓							✓	✓			✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		4	-	1	4	-	-

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

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Summary of potential impacts to protected species, other habitats and communities, water quality and socio-economic values
Non-water based mud NWBM is made up of a number of components detailed in Section 3.10.2, including base oil, which generally has a high-volatile to semi-volatile fraction. According to Shell's 2024 Technical Datasheet, Saraline 185V readily biodegrades, is non-toxic in the water column and has low sediment toxicity (Shell 2024). Under the Offshore Chemical Notification Scheme (OCNS), Saraline 185V is classified in Group E, the lowest hazard ranking for offshore chemicals in the North Seas and findings from ecotoxicological research confirm very low acute toxicity levels for invertebrates, fish, algae, and sediment organisms (Shell 2024). Saraline 185V is readily biodegradable and unlikely to bioaccumulate in organisms, however, when spilled in water, this fluid can create a film on the surface. Such films may impair oxygen transfer, potentially harming organisms that are dependent on dissolved oxygen in the upper water layer (Shell 2005). The footprint at the seabed associated with releasing NWBM would be small and limited to deeper water seabed surrounding the well site (the release point). The environmental consequence of such a release would include a highly localised area at the discharge location. The biological consequences of a small volume spill of Saraline 185V on identified open water sensitive receptors relate to the potential for minor, short-term impacts to megafauna, plankton and fish populations (surface and water column biota) that are within the spill-affected area. No impacts to commercial fisheries are expected. Refer to 6.9.2 and Section 6.9.3 for the detailed potential impacts of unplanned hydrocarbon release to the marine environment from a much larger hydrocarbon spill. However, the extent of the EMBA associated with a NWBM spill is much reduced in terms of spatial and temporal scales; hence, potential impacts from a spill are considered minor and short-term. ***Water based mud*** WBM is made up of the components detailed in Section 3.10.2, including a variety of chemicals with low toxicity, incorporated into the selected drilling fluid system to meet specific technical requirements. If released to the marine environment at the surface, there would be an extremely small impact footprint area. Any release would be confined to the open waters of the Operational Area that would not reach any sensitive receptors. Components of the WBM would settle in the water column and be subject to dilution. Given the low toxicity of WBM, any impacts on water quality from unplanned discharges would be slight and short-term.
Summary of potential impacts to environmental values
In the unlikely event of an instantaneous subsea release of 67 m^3 of NWBM due to a failure of the containment system, combined with the adopted controls, it is considered that any potential impact to water quality would be minor, localised and temporary in nature in comparison to background levels and/or international standards, with localised and temporary impacts to habitats, populations and shipping/fishing concerns.

Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[72]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
Legislation, codes and standards				
Marine Order 91 – Marine pollution prevention – oil (as relevant to vessel class) requirements, which include mandatory measures for the processing of oily water prior to discharge: • Machinery space bilge/oily water to have International Maritime Organization (IMO) approved oil filtering equipment (oil/water separator) with an online	F: Yes. CS: Minimal cost. Standard practice.	Legislative requirements to be followed reduce the likelihood of an unplanned release. The consequence is unchanged.	Controls based on legislative requirements – must be adopted.	Yes **C 8.3**

[72] *Qualitative measure*

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[72]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
monitoring device to measure oil in water (OIW) content to be less than 15 ppm prior to discharge. • IMO-approved oil filtering equipment to also have an alarm and an automatic stopping device or be capable of recirculating in the event OIW concentration exceeds 15 ppm. • A deck drainage system capable of controlling the content of discharges for areas of high risk of fuel, oil, grease or hazardous chemical contamination. • A waste oil storage tank available, to restrict oil discharges. • In the event that machinery space bilge discharges cannot meet the oil content standard of more than 15 ppm without dilution or be treated by an IMO-approved oil/water separator, to be contained on-board and disposed of onshore. • A valid International Oil Pollution Prevention (IOPP) Certificate, as required by vessel class.				
Where there is potential for loss of primary containment of oil and chemicals on the project vessels, deck drainage must be collected via a deck drainage water management system.	F: Yes. CS: Minimal cost. Standard practice.	Reduces the likelihood of contaminated deck drainage water being discharged to the marine environment. No change in consequence would occur.	Benefits outweigh cost/sacrifice.	Yes **C 8.5**
In the event of a spill, emergency response activities implemented in accordance with the OPEP (per Table 7-8).	F: Yes. CS: Costs associated with implementing response strategies, vary dependant on nature and scale of spill event. Standard practice.	This control would not reduce the likelihood, but response activities may reduce the consequence.	Benefits outweigh cost/sacrifice.	Yes **C 12.1**

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[72]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
Good practice				
Marine riser's telescopic joint to be: • comprised of a minimum of two packers (one hydraulic and one pneumatic), and • pressure tested in accordance with manufacturer's recommendations.	F: Yes. CS: Minimal cost. Standard practice.	Reduces the likelihood of equipment failure leading to an unplanned release of drilling fluids. Although the consequence of an unplanned release would be reduced, the reduction in likelihood reduces the overall risk providing an overall environmental benefit.	Benefits outweigh cost/sacrifice.	Yes **C 15.1**
Contractor procedure for managing drilling fluids transfers onto, around and off the MODU, which requires: • emergency shutdown systems for stopping losses of containment (e.g. burst hoses), • transfer hoses to have flotation devised to allow detection of a leak, • the valve line-up to be checked prior to commencing mud transfers, • constant monitoring of the transfer process, • direct radio communications, • completed PTW and JSA showing contractor procedures are implemented, • recording and verification of volumes moved to identify any losses, and • mud pit dump valves will be locked closed when not in use for mud transfers and operated under a PTW.	F: Yes. CS: Minimal cost. Standard practice for Woodside to review contractor systems prior to performing activity.	Reduces the likelihood of an unplanned release occurring. Although no change in consequence would occur, the reduction in likelihood decreases the overall risk, providing environmental benefit.	Benefits outweigh cost/sacrifice.	Yes **C 15.2**
Check the functionality of: • additional SCE (augers and cuttings dryers), • mud tanks, • mud tank room, and • transfer hoses.	F: Yes. CS: Minimal cost. Standard practice.	Reduces the likelihood of an event occurring and reduces the potential consequences (by limiting volume released).	Benefits outweigh cost/sacrifice.	Yes **C 15.3**
Mitigation: Oil spill response	Refer to Appendix G			

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[72]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
Professional judgement – Eliminate				
No additional controls identified.				
Professional judgement – Substitute				
Only use WBM.	F: Not feasible. Removal of NWBM from the Balnaves Deep-1 well is required to achieve permanent abandonment of the well. CS: Not considered – control not feasible.	Not considered – control not feasible.	Not considered – control not feasible.	No
Professional judgement – Engineered Solution				
Use a MODU that may have a larger tank storage capacity for WBM. As such, there would be fewer bulk transfer movements.	F: Not feasible. The use of a MODU with greater storage capacity cannot be confirmed. CS: Significant cost and schedule delay would occur if the MODU was limited to greater storage capacity.	Not considered – control not feasible.	Not considered – control not feasible.	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 (2.4.1), Woodside considers the adopted controls appropriate to manage potential impacts/risks associated with accidental discharge of drilling fluids. As no reasonably practicable additional/alternative controls were identified that would further reduce the impacts without disproportionate sacrifice, the impacts/risks are considered ALARP.				

Demonstration of acceptability
Acceptability statement: The impact/risk assessment has determined that, given the adopted controls, an unplanned discharge of drilling fluids represents a Moderate current risk rating and may result in minor impact on environmental feature/s or area/s such as impact on feature of low significance with some ability to recover. BIAs within the Operational Area include whale shark foraging, pygmy blue whale migration, flatback turtle internesting buffer, and wedge-tailed shearwater breeding. However, these species are not expected to be impacted. On the basis of the assessment outcomes, use of the relevant tools appropriate to the decision type (i.e. Decision Type A; Section 2.3.4.2) and Woodside's criteria for demonstrating acceptability (Section 2.4.2), Woodside considers the adopted controls appropriate to manage the impacts/risks to be managed to a level that is broadly acceptable, and compliance with those controls demonstrates that the EPOs are met.

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EPOs, EPS and MC			
EPO	***Controls***	***PS***	***MC***
EPO 15 No unplanned release of WBM, NWBM or base oil to the marine environment from the MODU.	**C 8.3** Refer to Section 6.8.6.	**PS 8.3** Refer to Section 6.8.6.	**MC 8.3.1** Refer to Section 6.8.6.
	C 8.5 Refer to Section 6.8.6	**PS 8.5** Refer to Section 6.8.6.	**MC 8.5.1** Refer to Section 6.8.6.
	C 12.1 Refer to Section 6.9.2.	**PS 12.1** Refer to Section 6.9.2.	**MC 12.1.1** Refer to Section 6.9.2.
	C 15.1 Marine riser's telescopic joint to be: • comprised of a minimum of two packers (one hydraulic and one pneumatic), and • pressure tested in accordance with manufacturer's recommendations.	**PS 15.1** MODU's joint packer designed and maintained to reduce hydrocarbons discharged to the environment.	**MC 15.1.1** Records demonstrate that MODU's joint packer is compliant.
	C 15.2 Contractor procedure for managing drilling fluids transfers onto, around and off the MODU, which requires: • emergency shutdown systems for stopping losses of containment (e.g. burst hoses), • transfer hoses to have flotation devised to allow detection of a leak, • the valve line-up to be checked prior to commencing mud transfers, • constant monitoring of the transfer process, • direct radio communications, • completed PTW and JSA showing contractor procedures are implemented, • recording and verification of volumes moved to identify any losses, and • mud pit dump valves will be locked closed when not in use for mud transfers and operated under a PTW.	**PS 15.2** Compliance with contractor procedures to limit accidental loss to the marine environment.	**MC 15.2.1** Records demonstrate drilling fluid transfers are performed in accordance with the applicable contractor procedures.

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EPOs, EPS and MC			
EPO	***Controls***	***PS***	***MC***
	C 15.3 Check the functionality of: • additional SCE (augers and cuttings dryers), • mud tanks, • mud tank room, and • transfer hoses.	**PS 15.3** Functionality checks on mud handling equipment prevents unacceptable use or discharge of WBM.	**MC 15.3.1** Records demonstrate the presence and functionality of the specified equipment.
Detailed oil spill preparedness and response performance outcomes, standards and measurement criteria for the Petroleum Activity are presented in Appendix G.			

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6.9.6 Unplanned discharges: Deck and subsea spills

Context		
Project vessels – Section 3.6 Project fluids – Section 3.16	Physical environment – Section 4.4 Habitats and biological communities – Section 4.5 Protected species – Section 4.6	Stakeholder consultation – Section 5

Impact evaluation summary

Source of impact	***Environmental value potentially impacted***						***Evaluation*** •						
	Marine Sediment	Water Quality	Air Quality (incl Odour)	Ecosystems/Habitat	Species	Socio-economic	Decision Type	Consequence/Impact	Likelihood	Risk Rating	ALARP Tools	Acceptability	Outcome
Accidental discharge of hydrocarbons/chemicals from MODU and project vessel/s deck activities and equipment (e.g. cranes) and from subsea ROV hydraulic leaks within the Operational Area.		X		X	X		A	F	3	M	LCS GP PJ	Broadly Acceptable	EPO 16a, 16b

Description of source of impact

Vessel, MODU and ROV operations

Deck spills can occur from stored hydrocarbons/chemicals or equipment. Project vessels typically store hydrocarbon/chemicals in various volumes (20 L, 205 L; up to approximately 4,000–6,000 L). Storage areas are typically set up with effective primary and secondary bunding to contain any deck spills. Releases from equipment are predominantly from the failure of hydraulic hoses, which can either be located within bunded areas or outside of bunded or deck areas (e.g. over water on cranes). Helicopter refuelling may also take place within the Operational Area, on the helipad of the MODU.

Chemicals that may be accidentally released include:

- non-process chemicals (maintenance and cleaning chemicals), and
- non-process hydrocarbons – i.e. hydraulic fluids used in machinery (including cranes, winches, ROVs), small volumes of fuel.

Non-process chemicals

Non-process chemicals, such as wash chemicals, cleaning chemicals, maintenance chemicals and solvents, are generally held onboard in low quantities (typically <50 L containers) and are located within chemical cabinets or bunded storage areas on the project vessels and MODU. Non-process chemical spills may result from human error or damage to a chemical container during handling. Spills are generally captured by drain systems and routed to a holding tank for treatment or disposal onshore. In the event that a spill is not contained, a release to the marine environment of up to 50 L may occur.

Non-process hydrocarbons

Woodside's operational experience demonstrates that spills are most likely to originate from hydraulic hose failure and generally result in <100 L being released to the marine environment, with an average volume <10 L.

Non-process hydrocarbons (hydraulic fluids) are used in hydraulic-powered machinery, such as winches, cranes and ROVs, and are hydrocarbon-based with added chemical component additives. Unplanned discharges are predominantly due to failure of hydraulic hoses or minor leaks from process components, or spills during periodic refuelling of hydraulic hoses.

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Weeps or leaks from hydraulic hoses are usually very small volumes (~1 L), while spills or burst hose lines can result in higher volumes being released (~10 – 200L), however these are typically contained within a bunded or drained area under the equipment mounted on deck. These on-deck spills are typically unlikely to reach the marine environment, though a credible pathway for such a spill to reach the marine environment is in the event of a burst hydraulic hose on an extended crane. This could potentially result in hydraulic fluid being sprayed in a fine jet out over the water. However, this would only result in a small volume (~25 L) being released, due to the small capacity of hydraulic hoses.

Subsea spills of non-process hydrocarbons can result from a loss of containment of fluids from subsea equipment including the BOP, or ROVs. A review of these spills to the marine environment in the past 12 months indicates subsea spills did not exceed 10 L in Woodside's Drilling function.

The ROV hydraulic fluid is supplied through hoses containing approximately 20 L of fluid. Hydraulic lines to the ROV arms and other tooling may become caught resulting in minor leaks to the marine environment. Small volume hydraulic leaks may occur from equipment operating via hydraulic controls subsea (subsea control fluid). These include the diamond wire cutter, bolt tensioning equipment, ROV tooling etc.

Hydraulic fluids are medium oils of light to moderate viscosity. They have a relatively rapid spreading rate and will dissipate quickly, particularly in high sea states. Lubricating oils may also be held onboard, typically stored with the non process chemicals and held in low quantities. These hydrocarbons are more viscous, so in the event of an unplanned discharge, the spreading rate of a slick of these oils would be slightly slower.

Woodside's operational experience demonstrates that spills are most likely to originate from hydraulic hoses and have been less than 100 L, with an average volume <10 L.

Impact assessment

Environmental value(s) potentially impacted

Water quality

Unplanned discharges of non-process chemicals and hydrocarbons from the MODU and/or project vessels will decrease water quality in the immediate vicinity of the release; however, the impacts are expected to be temporary and localised due to dispersion and dilution in the open ocean environment.

Given the occasional nature of unplanned chemical discharge, the small volumes, and the offshore location of the Operational Area, the change to water quality resulting from unplanned discharge of chemicals will not be substantial. The consequence of a release of hydrocarbons/chemicals on water quality assessed as having no lasting effect on environmental feature/s or area/s.

Marine fauna

As a result of a change in water quality, further impacts to receptors may occur, which include injury or mortality to marine fauna resulting from exposure to toxins in the released chemicals/hydrocarbons. Given that surface discharges are rapidly dispersed, and subsea discharges (from ROVs) would be of very small volumes, potential impacts would be highly localised and temporary.

The potential biological and ecological impacts associated with hydrocarbon spills are presented in Sections 6.9.2 to 6.9.4 and impacts from minor chemical spills are described in Sections 6.9.5 and 6.9.6. Impacts from a minor loss of hydrocarbons from deck and subsea spills will be much reduced in terms of spatial and temporal scales from impacts. Given the small area of the potential spill and the dilution and weathering of any spill, the likelihood of ecological impacts to marine fauna (including protected species), other communities and habitats will be limited to no lasting effect and restricted to individual animals.

Demonstration of ALARP

Control considered	*Control feasibility (F) and cost/sacrifice (CS)*[73]	*Benefit in impact/risk reduction*	*Proportionality*	*Control adopted*
Legislation, codes and standards				
Marine Order 91 (marine pollution prevention – oil) 2014, requires Shipboard Oil Pollution Emergency Plan (SOPEP)/Shipboard Marine Pollution Emergency Plan	F: Yes. CS: Minimal cost. Standard practice.	Legislative requirements to be followed reduce the likelihood of an unplanned release. The	Controls based on legislative requirements – must be adopted.	Yes **C 14.1**

[73] *Qualitative measure*

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[73]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
(SMPEP) (as appropriate to vessel class).		consequence is unchanged.		
Liquid chemical and fuel storage areas are bunded or secondarily contained when they are not being handled/moved temporarily.	F: Yes. CS: Minimal cost. Standard practice.	Reduces the likelihood of contaminated deck drainage water being discharged to the marine environment.	Controls based on legislative requirements – must be adopted.	Yes **C 14.2**
Good practice				
Where there is potential for loss of primary containment of oil and chemicals on the MODU, deck drainage will be collected via a closed drainage system. E.g. drill floor.	F: Yes. CS: Minimal cost. Standard practice.	Reduces the likelihood of contaminated deck drainage water being discharged to the marine environment.	Benefits outweigh cost/sacrifice.	Yes **C 8.3**
Fluids, flocculant and additives intended or likely to be discharged to the marine environment will have an environmental assessment completed before use.	F: Yes. CS: Minimal cost. Standard practice	Environmental assessment of chemicals will reduce the consequence of impacts resulting from discharges to the marine environment by ensuring chemicals have been assessed for environmental acceptability. Planned discharges are required for the safe execution of activities and therefore no reduction in likelihood can occur.	Benefits outweigh cost/sacrifice.	Yes **C 10.1**
Spill kits positioned in high-risk locations around the MODU vessels (near potential spill points such as transfer stations).	F: Yes. CS: Minimal cost. Standard practice.	Reduces the likelihood of a deck spill from entering the marine environment. The consequence is unchanged.	Benefits outweigh cost/sacrifice.	Yes **C 14.4**
MODU and project vessels have self-containing hydraulic oil drip tray management system.	F: Yes. CS: Minimal cost. Standard practice.	Requirements for self-containing hydraulic oil drip tray management system would reduce the likelihood of contaminants being discharged to the marine environment. No change in consequence would occur.	Benefits outweigh cost/sacrifice.	Yes **C 16.1**
Professional judgement – Eliminate				
No additional controls identified.				

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[73]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
Professional judgement – Substitute				
No additional controls identified.				
Professional judgement – Engineered Solution				
Below-deck storage of all hydrocarbons and chemicals.	F: Not feasible. During operations there is a need to keep small volumes near activities and within equipment requiring use of hydrocarbons and chemicals and can result in increased risk of leaks from transfers via hose or smaller containers. CS: Not considered – control not feasible.	Not considered – control not feasible.	Not considered – control not feasible.	No
A reduction in the volumes of chemicals and hydrocarbons stored onboard the vessel.	F: Yes. Increases the risks associated with transportation and lifting operations. CS: Project delays if required chemicals not on board. Increases the risks associated with transportation and lifting operations.	No reduction in likelihood or consequence since chemicals will still be required to enable activities to occur.	Disproportionate. The cost/sacrifice outweighs the benefit gained.	No
ALARP statement: On the basis of the assessment outcomes, use of the relevant tools appropriate to the decision type (i.e. Decision Type A; Section 2.3.4.2) and Woodside's criteria for demonstrating ALARP (Section 2.4.1), Woodside considers the adopted controls appropriate to manage potential impacts/risks associated potential unplanned deck and subsea spills described above. As no reasonably practicable additional/alternative controls were identified that would further reduce the impacts without disproportionate sacrifice, the impacts/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 and chemicals as a result of minor deck and subsea spill represents a Moderate residual risk with no lasting effect on environmental feature/s or area/s. BIAs within the Operational Area includes flatback turtle internesting buffer, whale shark foraging, pygmy blue whale migration and wedge-tailed shearwater breeding. However, these species are not expected to be impacted. On the basis of the assessment outcomes, use of the relevant tools appropriate to the decision type (i.e. Decision Type A; Section 2.3.4.2) and Woodside's criteria for demonstrating acceptability (Section 2.4.2), Woodside considers the adopted controls appropriate to manage the impacts/risks to be managed to a level that is broadly acceptable, and compliance with those controls demonstrates that the EPOs are met.

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EPOs, EPS and MC			
EPO	***Controls***	***PS***	***MC***
EPO 16a Undertake the Petroleum Activity in a manner that does not result in a substantial change in water quality which may adversely impact on biodiversity, ecological integrity, social amenity or human health. **EPO 16b** No unplanned release of hydrocarbons or chemical spills to the marine environment from vessel and subsea activities.	**C 8.3** Refer to Section 6.8.6	**PS 8.3** Refer to Section 6.8.6	**MC 8.3.1** Refer to Section 6.8.6
	C 10.1 Refer to Section 6.8.8	**PS 10.1** Refer to Section 6.8.8	**MC 10.1.1** Refer to Section 6.8.8
	C 14.1 Refer to Section 6.9.4	**PS 14.1** Refer to Section 6.9.4	**MC 14.1.1** Refer to Section 6.9.4
	C 14.2 Refer to Section 6.9.4	**PS 14.2** Refer to Section 6.9.4.	**MC 14.2.1** Refer to Section 6.9.4
	C 14.4 Refer to Section 6.9.4	**PS 14.4** Refer to Section 6.9.4	**MC 14.4.1** Refer to Section 6.9.4
	C 16.1 MODU and project vessels have self-containing hydraulic oil drip tray management system.	**PS 16.1** Contain any on-deck spills of hydraulic oil.	**MC 16.1.1** Records demonstrate project vessels are equipped with a self-containing hydraulic oil drip tray management system.

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6.9.7 Unplanned discharges: Loss of solid hazardous and non-hazardous wastes (including dropped objects)

Context		
Project vessels – Section 3.6 Permanent plugging activities – Section 3.12 Removal and recovery of infrastructure – Section 3.12.2	Physical environment – Section 4.4 Habitats and biological communities – Section 4.5 Protected species – Section 4.6 Socio-economic environment – Section 4.9	Stakeholder consultation – Section 5

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
Accidental loss of hazardous or non- hazardous wastes to the marine environment (excludes sewage, grey water, putrescible waste and bilge water).		X		X	X		A	F	3	M	LC S GP	Broadly Acceptable	EPO 17a, 17b, 17c
Dropped objects resulting in the disturbance of benthic habitat.	X			X		X	A	F	3	M			

Description of source of impact

Solid wastes

The MODU and project vessels will generate a variety of hazardous and non-hazardous solid wastes, including packaging and domestic wastes such as aluminium cans, bottles, paper and cardboard, paint cans and oily rags. Hence, there is the potential for solid wastes to be lost overboard to the marine environment. Equipment that has been recorded as being lost on previous campaigns has primarily been windblown or dropped overboard and has included things such as personal protective equipment and small tools or materials. These events have occurred during backloading activities, periods of adverse weather and incorrect waste storage.

Dropped objects

There is the potential for objects to be dropped overboard from the MODU and project vessels to the marine environment. Objects that have been dropped during previous offshore activities include small numbers of personal protective gear (e.g. glasses, gloves, hard hats), small tools (e.g. spanners) hardware fixtures (e.g. riser hose clamp) and drill equipment (e.g. drill pipe); however, there is also potential for larger equipment to also be dropped during the activity, particularly during recovery of infrastructure from the seabed. The spatial extent in which dropped objects can occur is restricted to the Operational Area.

Impact assessment

Environmental value(s) potentially impacted

Solid wastes

The potential impacts of solid wastes accidentally discharged to the marine environment include direct pollution and contamination of the environment and secondary impacts relating to potential contact of marine fauna with wastes, resulting in entanglement or ingestion and leading to injury and death of individual animals. The temporary or permanent loss of waste materials into the marine environment is not likely to have a significant environmental impact, based on the location of the Operational Area, the types, size and frequency of wastes that could occur, and species present. Given this, impacts on water quality or any species will are considered to have no lasting effect.

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Water quality

Hazardous solid wastes such as paint cans, oily rags, etc., can cause localised contamination of the water through a release of toxins and chemicals. Given the likely small volumes of any unplanned solid waste discharge, and the occasional nature of the event, these would result in temporary and highly localised changes to the water quality.

Injury/mortality to fauna

Seabirds and migratory shorebirds, fish, marine reptiles and marine mammals

The unplanned discharge of solid wastes can result in mortality to fauna, either through contamination or physical injury depending on the nature of the waste. Marine fauna, including fish, seabirds and shorebirds, marine mammals and marine reptiles may be impacted through ingestion or entanglement of waste or through exposure to toxic chemicals. Ingestion or entanglement of marine fauna has the potential for physical harm which may limit feeding/foraging behaviours and thus can result in mortalities. Injury and fatality to vertebrate marine life caused by ingestion of, or entanglement in, harmful marine debris was listed as a key threatening process under the EPBC Act in August 2003 (CoA 2018). The Threat Abatement Plan for the impacts of marine debris on the vertebrate wildlife of Australia's coasts and oceans (CoA 2018) identifies *EPBC Act*-listed species for which there are scientifically documented adverse impacts resulting from marine debris. Marine turtles and seabirds in particular may be at risk from plastics which may cause entanglement or be mistaken for food (CoA 2017) and ingested causing damage to internal tissues and potentially preventing feeding activities. In the worst instance this could have a lethal effect to an individual. Marine debris has been identified as threat in the Recovery Plan for Marine Turtles in Australia (2017–2027).

Impacts to species including fish, birds, marine mammals and marine reptiles from the unplanned discharge of solid waste is unlikely given low occurrence of unplanned discharges and the location of the activities being a significant distance from sensitive habitats. Significant impacts are unlikely to occur at an individual level and will not occur at a population level, nor result in the decrease of the quality of the habitat such that the extent of these species is likely to decline.

While the threat abatement plan for impacts of marine debris on vertebrate marine life does not list explicit management actions for non-related industries (CoA 2018) management controls will reduce the risk of unplanned discharge of solid waste.

The temporary or permanent loss of waste materials into the marine environment will have no lasting effect on any species or water quality, based on the types, size and frequency of wastes that could occur.

Dropped objects

In the unlikely event of loss of an object being dropped into the marine environment, potential environmental effects would be limited to localised physical impacts on benthic communities. In most cases, objects will be able to be recovered and therefore these impacts will also be temporary in nature. However, there may be instances where objects are unable to be recovered due to health and safety, operational constraints or other factors such as the difficulty of recovering dropped objects at depth. When dropped objects are unable to be recovered, the impact will continue to be localised but would also be long-term.

The temporary or permanent loss of dropped objects into the marine environment is likely to result in a localised impact only, as the benthic communities associated with the Operational Area are of low sensitivity and are broadly represented throughout the NWMR. As described in Section 4.7, the Ancient Coastline at 125 m Depth Contour and Continental Slope Demersal Fish Communities KEFs overlap the Operational Area. The habitat types associated with the hard substrate that characterises the Ancient Coastline at 125 m Depth Contour KEF are not considered to be unique by Falkner et al. (2009) in their review of KEFs in the NWMR. Furthermore, benthic habitats in the Operational Area are expected to consist of bare unconsolidated sediments dominated by silt and clay fractions (Section 4.5), and the Operational Area overlaps a relatively minor proportion of both KEFs. Given the nature and scale of risks and consequences from dropped objects, no lasting effect is expected to seabed sensitivities associated with the Operational Area. Further, considering the types, size and frequency of dropped objects that could occur, it is unlikely that a dropped object would have a significant impact on any benthic community.

Submerged Cultural heritage

As described in Section 4.7, the Operational Area overlaps the Ancient Coastline at 125 m depth contour KEF and therefore, any seabed disturbance such as dropped object, may directly disturb a very small, localised area of the KEF where there is the potential that unidentified cultural features may exist. As such, controls have been adopted to assist in the identification and management in cases where potential underwater cultural heritage may be identified.

Four historical shipwrecks have been identified within the Operational Area (Section 4.9.1.8). Additional assessment is scheduled to occur prior to the activity commencing in order to confirm the specific location of these wrecks (C 3.3). Assessments of the Operational Area, detailed in Section 4.9, have not identified any First Nations archaeological sites on the relevant Ancient Landscape area. Additionally, volcanic rock which may contain petroglyphs do not occur within the Operational Area. Review of the seabed survey data will be completed prior to activities which may include seabed contact (See C 3.3). In the case an unplanned seabed disturbance event occurs in an area not previously assessed and identifies Underwater Cultural Heritage the Unexpected Finds Procedure (See Section 7.2.3) is applicable.

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[74]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
Legislation, codes and standards				
Project vessels compliant with Marine Orders for safe vessel operations: • Marine Order 94 (Marine pollution prevention – packaged harmful substances) 2014 • Marine Order 95 (Pollution prevention – Garbage).	F: Yes. CS: Minimal cost. Standard practice.	Legislative requirements to be followed reduce the likelihood of an unplanned release. The consequence is unchanged.	Controls based on legislative requirements – must be adopted.	Yes **C 11.1**
Disposal of any hazardous waste associated with the subsea infrastructure will comply with relevant State and Commonwealth legislation: • Hazardous Waste (Regulation of Exports and Imports) Act 1989 (Cth) • WA Environmental Protection (Controlled Waste) Regulations 2004.	F: Yes. CS: Minimal cost. Standard practice.	Legislative requirements to be followed may slightly reduce the likelihood of air impacts to air quality.	Benefits outweigh cost/sacrifice.	Yes **C 11.3**
Good practice				
Vessel marine assurance process conducted prior to contracting vessels, to ensure suitability and compliance with Marine Order requirements.	F: Yes CS: Minimal cost. Standard practice.	Ensures safe interaction with other marine users by verifying vessel suitability and regulatory compliance before operations begin.	Benefits outweigh cost/sacrifice.	Yes **C 1.8**
Lost waste or dropped objects will be recovered, where safe and practicable. Where safe and practicable for this activity, will consider: • risk to personnel to retrieve object, • whether the location of the object is in recoverable water depths,	F: Yes; however, it may not always be practicable. Assessed on a case-by-case situation. CS: Minimal cost. Standard practice.	No reduction in likelihood, as this is an unplanned event. Since the equipment may be recovered, a reduction in consequence is possible.	Benefits outweigh cost/sacrifice.	Yes **C 17.1**

[74] *Qualitative measure*

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• object's proximity to subsea infrastructure, and • ability to recover the object (as in, nature of object, lifting equipment and suitable weather).				
Global Wells and Seismic waste arrangements, which require: • dedicated space for waste segregation bins and skips to be provided on the MODU • records of all waste to be disposed, treated or recycled • waste streams to be handled and managed according to their hazard and recyclability class • all non-putrescible waste (excludes all food, greywater or sewage waste) to be transported from the MODU and disposed onshore.	F: Yes. CS: Minimal cost. Standard practice.	Controls outlined in the management plan will reduce the likelihood of an unplanned release. The consequence is unchanged.	Benefits outweigh cost/sacrifice.	Yes **C 17.2**
Vessel waste arrangements, which require: • dedicated space for waste segregation bins and/or skips to be provided, • records of all waste to be disposed, treated or recycled, • waste streams to be handled and managed according to their hazard and recyclability class, • all non-putrescible waste (excludes all food, greywater or sewage waste) to be transported from the MODU and disposed onshore.	F: Yes. CS: Minimal cost. Standard practice.	Reduces the likelihood of an unplanned release. The consequence is unchanged.	Benefit outweighs cost sacrifice.	Yes **C 17.3**

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The MODU's' work procedures for lifts, bulk transfers and cargo loading, which require: • The security of loads shall be checked before commencing lifts. • Loads shall be covered if there is a risk of loss of loose materials. • Lifting operations shall be conducted using the PTW and JSA systems to manage the specific risks of that lift, including consideration of weather and sea state.	F: Yes. CS: Minimal cost. Standard practice.	By implementing MODU's work procedures for lifts, bulk transfers and cargo loading, the likelihood of a dropped object event is reduced. Since the object may be recovered, a reduction in consequence is possible.	Benefits outweigh cost/sacrifice.	Yes **C 17.4**
MODU and project vessel inductions include material to raise crew awareness of dropped object prevention.	F: Yes. CS: Minimal cost. Standard practice.	By raising awareness of dropped object prevention, the likelihood of a dropped object event is reduced. Since the object may be recovered, a reduction in consequence is possible.	Benefits outweigh cost/sacrifice.	Yes **17.5**
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/risks associated seabed disturbance from loss of hazardous and non-hazardous solid waste, including dropped objects. As no reasonably practicable additional/alternative controls were identified that would further reduce the impacts without disproportionate sacrifice, the impacts/risks are considered ALARP.				

Demonstration of acceptability
Acceptability statement: The impact/risk assessment has determined that, given the adopted controls, accidental discharge of hazardous and non-hazardous solid waste, including dropped objects represents a Moderate residual risk rating with no lasting effect on environmental feature/s or area/s of low significance. Relevant recovery plans conservation advice and threat abatement plans have been considered during the impact assessment, and the Petroleum Activity is not considered to be inconsistent with the overall recovery objectives and actions of these recovery plans, advice and threat abatement plans (refer to Section 6.10). 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/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 17a Woodside will manage its activities to prevent material loss of solid hazardous and non-hazardous waste from occurring. **EPO 17b** Environmental risk from hazardous and non-hazardous waste management limited to Moderate[75] during the Petroleum Activity. **EPO 17c** No release of solid hazardous or non-hazardous waste[76] to the marine environment.	**C 1.8** Refer to Section 6.8.1	**PS 1.8** Refer to Section 6.8.1	**MC 1.8.1** Refer to Section 6.8.1
	C 11.1 Refer to Section 6.8.9	**PS 11.1** Refer to Section 6.8.9	**MC 11.1.1** Refer to Section 6.8.9
	C 11.3 Refer to Section 6.8.9	**PS 11.3** Refer to Section 6.8.9	**MC 11.3.1** Refer to Section 6.8.9
	C 17.1 Lost waste or dropped objects will be recovered, where safe and practicable. Where safe and practicable for this activity, will consider: • risk to personnel to retrieve object, • whether the location of the object is in recoverable water depths, • object's proximity to subsea infrastructure, and • ability to recover the object (as in, nature of object, lifting equipment and suitable weather).	**PS 17.1** Waste dropped to the marine environment will be recovered where safe and practicable to do so.	**MC 17.1.1** Records detail the recovery attempt consideration and status of any waste lost to the marine environment.
	C 17.2 Global Wells and Seismic waste arrangements, which require: • dedicated space for waste segregation bins and skips to be provided on the MODU, • records of all waste to be disposed, treated or recycled, • waste streams to be handled and managed according to their hazard and recyclability class, and • all non-putrescible waste (excludes all food, greywater or sewage waste) to be transported from the	**PS 17.2** Hazardous and non-hazardous waste will be managed in accordance with the Global Wells and Seismic waste arrangements.	**MC 17.2.1** Records demonstrate compliance against Global Wells and Seismic waste arrangements.

[75] *Defined in Section 2.3.6.*

[76] *Waste as defined in the Woodside Offshore Facilities Waste Management Plan*

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EPOs, EPS and MC			
EPO	***Controls***	***PS***	***MC***
	MODU and disposed onshore.		
	C 17.3 Vessel waste arrangements, which require: • dedicated space for waste segregation bins and/or skips to be provided, • records of all waste to be disposed, treated or recycled, • waste streams to be handled and managed according to their hazard and recyclability class, and • all non-putrescible waste (excludes all food, greywater or sewage waste) to be transported from the MODU and disposed onshore.	**PS 17.3** Hazardous and non-hazardous waste will be managed in accordance with the vessel waste arrangements.	**MC 17.3.1** Hazardous and non-hazardous waste will be managed in accordance with the Vessel waste arrangements.
	C 17.4 The MODU's work procedures for lifts, bulk transfers and cargo loading, which require: • The security of loads shall be checked before commencing lifts. • Loads shall be covered if there is a risk of loss of loose materials. • Lifting operations shall be conducted using the PTW and JSA systems to manage the specific risks of that lift, including consideration of weather and sea state.	**PS 17.4** All lifts conducted in accordance with applicable MODU's work procedures to limit potential for dropped objects.	**MC 17.4.1** Records show lifts conducted in accordance with the applicable MODU's work procedures.
	C 17.5 MODU and project vessel inductions include material to raise crew awareness of dropped object prevention.	**PS 17.5** MODU and vessels crews aware of requirements for dropped object prevention.	**MC 17.5.1** Records show dropped object prevention material is provided to the MODU/vessels' crew during inductions.

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6.9.8 Physical presence: Interaction with marine fauna

Context		
Project vessels – Section 3.6	Protected species – Section 4.6 Socio-economic environment – Section 4.9	Stakeholder consultation – Section 5

Impact evaluation summary

Source of impact	*Environmental value potentially impacted*						*Evaluation*						
	Marine Sediment	Water Quality	Air Quality (incl Odour)	Ecosystems/Habitat	Species	Socio-economic	Decision Type	Consequence/Impact	Likelihood	Risk Rating	ALARP Tools	Acceptability	Outcome
Accidental collision between project vessels/MODU and protected marine fauna within the Operational Area.					X		A	D	2	M	LCS GP PJ	Broadly Acceptable	EPO 18

Description of source of impact

The MODU and project vessels operating in the Operational Area may present a potential hazard to cetaceans (e.g. pygmy blue whales) and other protected marine fauna, such as marine turtles and whale sharks. Vessel movements can result in collisions between the vessel (hull and propellers) and marine fauna, potentially resulting in superficial injury, serious injury that may affect life functions (e.g. movement and reproduction) and mortality.

The factors that contribute to the frequency and severity of impacts due to collisions vary greatly due to vessel type, vessel operation (specific activity, speed), physical environment (e.g. water depth), the type of animal potentially present and their behaviours.

Vessels used during the Petroleum Activity may include project vessels, with multiple vessels likely to be used to support the MODU. Project vessels would typically be stationary or moving at low speeds when supporting the Petroleum Activity. Project vessels typically transit to and from the Operational Area between two and four trips per week (e.g. to port). Project vessels will not anchor within the Operational Area during the activities, therefore, vessels will utilise DP.

Impact assessment

Environmental value(s) potentially impacted

Vessel collisions with marine fauna have potential to occur within the Operational Area. Vessel disturbance is a key threat to a number of migratory and threatened species identified as occurring within the Operational Area. Relevant conservation actions outlined in recovery plans and threat abatement plans are outlined in Appendix C. Relevant BIAs that overlap the Operational Area include:

- whale shark foraging BIA,
- flatback turtle internesting buffer BIA,
- flatback internesting habitat critical to the survival of marine turtle species,
- pygmy blue whale migration BIA, and
- wedge-tailed shearwater breeding BIA.

Refer to Section 4.6 for more information about these species and details of seasonal timings.

The likelihood of vessel/fauna collision being lethal is influenced by vessel speed – the greater the speed at impact, the greater the risk of mortality (Jensen and Silber 2004; Laist et al. 2001). Vanderlaan and Taggart (2007) found that the chance of lethal injury to a large whale as a result of a vessel strike increases from about 20% at 8.6 knots to 80% at 15 knots.

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Project vessels within the Operational Area are likely to be travelling <8 knots (and will often be stationary), therefore, the chance of a vessel collision with protected species resulting in a lethal outcome is considered unlikely, as fauna can move away from project vessels. The risk of marine life getting caught in operating thrusters is unlikely, given the low presence of individuals, combined with the avoidance behaviour commonly displayed during dynamic positioning operations.

Cetaceans

Cetaceans are naturally inquisitive marine mammals. The reaction of cetaceans to the approach of a vessel is quite variable. Some species remain motionless when close to a vessel, while others are known to be curious and often approach ships that have stopped or are slow-moving, although they generally do not approach and sometimes avoid faster-moving ships (Richardson et al. 1995). The Whale and Dolphin Conservation Society (WDCS 2006) indicates some cetacean species, such as humpback whales, can detect and change course to avoid a vessel.

Collisions between vessels and marine mammals occur more frequently in areas where high vessel traffic and important habitat coincide (WDCS 2006). The Operational Area overlaps the pygmy blue whale migration BIA and is ~20 km north from a humpback whale migration BIA. Individuals may transit through the Operational Area, with increased occurrence expected during migration periods, including the northern migration of pygmy blue whales from April to July and the southern migration from October to January. Humpback whales may also be present between May and November. However, large aggregations of either species within the Operational Area are not expected. Given the absence of aggregations, the size of the BIA in total, duration of activities within the Operational Area and the slow speeds at which project vessels operate, collisions with cetaceans are considered unlikely.

Whale sharks

Whale sharks which have been shown to spend approximately 25% of their time less than 2 m from the surface and greater than 40% in the upper 15 m of the water column (Wilson et al. 2006; Gleiss et al. 2013), making them vulnerable to vessel strike. Individuals are at risk from vessel strikes when feeding at the surface or in shallow waters (where there is limited option to dive). However, it is expected that whale shark presence within the Operational Area would not comprise high numbers and their presence would be transitory and of a short duration. Considering the slow speed of vessels during the activity, the risk is considered low.

Marine turtles

Turtles are also at risk from vessel strikes, particularly in shallow coastal foraging habitats and internesting areas where there are high numbers of recreational and commercial vessels (CoA 2017). Considering the distance of the Operational Area from the nearest nesting beaches (Montebello Islands ~41 km) it is expected that the presence of marine turtles would be very unlikely and only comprise individuals transiting the open, offshore waters for short periods of time. Given the slow speeds at which project vessels operate, collisions with transiting marine turtles are considered highly unlikely.

It is unlikely that vessel movement associated with the Petroleum Activity will have a significant impact on marine fauna populations, given the low presence of transiting individuals and the low operating speed of the project vessels (generally less than eight knots or stationery, unless operating in an emergency).

Cultural values and heritage

Through consultation and review of available literature (Section 4.9.1), Woodside understands that marine fauna that may be affected by a collision with a project vessel, such as marine mammals, whale sharks and turtles, are culturally important to Traditional Custodians. Traditional Custodians value these species both tangibly as well intangibly as they can be considered a resource or linked to songlines and dreaming stories. Traditional Custodians also have connection to many marine species through kinship and totemic systems; an individual may have obligation to care for species to which they are kin. Traditional Custodians may also have a cultural obligation to care for the environmental values of Sea Country. Activities that impact turtle populations and their marine environment may have an indirect impact on some Indigenous communities if they deplete hunting areas and threaten local food security (Delisle et al. 2018). Whale species may be subject of First Nations' increase ceremonies/rituals which are performed to enhance or maintain populations. As these Thalu ceremonies are performed to maintain and increase populations of marine species, it is considered that management applies at the species/population level and not to individuals. For example, it is anticipated the Thalu site on Murujuga which "brings in whales to beach" will continue to serve its purpose so long as whales continue to migrate through Mermaid Sound. Related intangible cultural heritage may include the transmission of cultural knowledge about whales and whale behaviour, including birthing areas, whale communication and migratory patterns. Such cultural knowledge may be associated with various cultural functions and activities that support the social and economic life of a community (Fijn 2021). Inter-generational transmission of cultural knowledge (including songlines) relating to marine reptiles may be impacted where changes results in reduced sightings (e.g., through population decline, changes to migration routes or changes to migration seasonality). This transfer of knowledge may be integral to managing a group's intangible cultural heritage (UNESCO 2003). As described in the assessment of impacts to marine fauna (above), potential impacts to marine fauna are predicted to be at an individual level, which are not considered to be ecologically significant at a population level. Impacts are not expected to occur to ecologically significant proportions of the populations of the species, nor result in a decrease of the quality of the habitat such that the extent of these species is likely to decline. As such, cultural values and intangible cultural heritage associated with these species are expected to be maintained. It is not deemed credible, that vessel movement associated with the Petroleum Activity could have a significant impact on marine fauna populations given

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(1) the low presence of transiting individuals, (2) avoidance behaviour commonly displayed by whales, whale sharks and marine turtles and (3) low operating speed of the activity project vessels (generally less than 8 knots or stationary, unless operating in an emergency). Activities are considered unlikely to result in a consequence greater than slight short-term disruption to individuals or a small proportion of the population and no impact on critical habitat or fauna activity.

Cumulative impacts

Cumulative effects from the activity and from other activities conducted in the vicinity are not expected, due to the short-term nature of the operations and the slow speed at which vessels will be operating. Since activities will be conducted sequentially, rather than concurrently, and given the low-level impacts expected, cumulative impacts to receptors are not expected.

Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[77]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
Legislation, codes and standards				
EPBC Regulations 2000 – Part 8 Division 8.1 Interacting with cetaceans, including the following measures[78]: • Project vessels will not travel greater than 6 knots within 300 m of a cetacean. • 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 shows signs of being disturbed, project vessels will immediately withdraw from the caution zone at a constant speed of less than 6 knots.	F: Yes. CS: Minimal cost. Standard practice.	Implementing these controls will reduce the likelihood of a collision occurring between a cetacean, whale shark or turtle. The consequence of a collision is unchanged.	Controls based on legislative requirements – must be adopted.	Yes **C 5.1**
Good practice				
Implement adaptive management procedure prior to: • Resupply vessel (ISV and/or PSV) moving alongside the MODU within	F: Yes. CS: Time/Cost associated with person used for observations. Schedule delays associated with waiting on pygmy blue whale	Implementation of adaptive management where pygmy blue whales (or large unidentified whales) are observed means a new noise source (vessel) is	Benefits outweigh cost/sacrifice.	Yes **C 5.2**

[77] *Qualitative measure*

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

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[77]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
the Operational Area, during daylight hours. • MODU departing well location (excludes kedging).	activity to cease/move on.	not introduced while pygmy blue whales are sighted. Restricting the introduction of new noise sources when pygmy blue whale presence is detected could lower likelihood of disturbance to pygmy blue whales so as to not be inconsistent with the Blue Whale Conservation Management Plan.		
Project vessels will not travel greater than six knots within 250 m of a whale shark and not allow the vessel to approach closer than 30 m of a whale shark.	F: Yes. CS: Minimal cost. Standard practice.	Implementation of controls for reduced vessel speed around whale sharks can potentially reduce the underwater noise footprint of a vessel.	Legislative control for State waters. Benefits outweigh cost/sacrifice. Good Practice.	Yes **C 5.4**
Project vessels will not travel greater than six knots within 300 m of a turtle (caution zone). If the turtle shows signs of being disturbed, vessels will immediately withdraw from the caution zone at a constant speed of less than six knots.	F: Yes CS: Minimal cost. Standard practice.	Implementation of controls for reduced vessel speed around turtles can potentially reduce the underwater noise footprint of a vessel.	Benefits outweigh cost/sacrifice. Good Practice.	Yes **C 5.5**
Stop or deviate from course if pygmy blue whale (or large unidentified whale) observed during entry of a hybrid/DP MODU and project vessels to the Operational Area.	F: Yes CS: Time/Cost associated with vessel moving and delay to activities which cannot be carried out without project vessel present and at required standby distance.	Can reduce cumulative noise and potential reduction in likelihood of impact to pygmy blue whales or other large unidentified whales.	Benefits outweigh cost/sacrifice. Good Practice.	Yes **C 5.6**
Environmental induction of all relevant vessel crew.	F: Yes. CS: Minimal cost. Standard practice.	Providing awareness inductions to personnel assists in understanding obligations.	Benefits outweigh cost/sacrifice.	Yes **C 18.1**
Professional judgement – Eliminate				
No additional controls were identified.				

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[77]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
Professional judgement – Substitute				
Variation of the timing of the Petroleum Activity to avoid migration and foraging periods.	F: Yes. Avoidance of the migration period is technically feasible, although not considered to be reasonably practicable. CS: Significant cost and schedule delays in contracting vessel for a specific timeframe.	Negligible reduction in consequence, given the duration and nature of the activity and receiving environment.	Grossly disproportionate. Implementation of the control requires considerable cost sacrifice for minimal environmental benefit.	No
Professional judgement – Engineered Solution				
The use of dedicated MFOs on support vessels for the duration of each activity to watch for whales and provide direction about and monitor compliance with Part 8 of the EPBC Regulations.	F: Yes. However, vessel crews already maintain a constant watch during operations in compliance with the Woodside Marine – Charterers Instructions on the requirements of vessel and whale interactions, and crew perform specific cetacean observation training. CS: Additional cost of MFOs beyond that required during surveys considered unnecessary.	Given that support vessel bridge crews already maintain a constant watch during operations in compliance with the Woodside Marine – Charterers Instructions, additional MFOs would not significantly further reduce the risk.	Disproportionate. Cost/sacrifice outweighs the benefit.	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/risks associated with potential vessel collision with protected marine fauna.. As no reasonably practicable additional/alternative controls were identified that would further reduce the impacts without disproportionate sacrifice, the impacts/risks are considered ALARP.				

Demonstration of acceptability
Acceptability statement: The impact/risk assessment has determined that, given the adopted controls, vessel collision with marine fauna represents a Moderate residual risk rating that may result in a minor impact on environmental feature/s or area/s of low significance. Relevant BIAs within the Operational Area include flatback turtle internesting, pygmy blue whale migration and whale shark foraging BIAs. Relevant recovery plans and conservation advice have been considered during the impact assessment, and the Petroleum Activity is not considered to be inconsistent with the overall recovery objectives and actions of these recovery plans and conservation advice The adopted controls are considered good oil-field practice/industry best practice and meet the requirements of Part 8 (Division 8.1) of the EPBC Act Regulations 2000. The residual risk of vessel collision with marine fauna is not inconsistent with the relevant objectives and actions of any applicable recovery plans or threat abatement plans (refer to Section 6.10), based on the adopted controls. Regard has been given to relevant conservation advice during the assessment of potential risks. Marine species such as cetaceans, whale sharks and turtles have been identified, during consultation for this EP as well as for other Woodside activities, as a cultural value for Traditional Custodians.

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Demonstration of acceptability
Impacts on a population level are not expected to occur, and cultural values and intangible cultural heritage associated with these species are expected to be maintained. On the basis of the assessment outcomes, use of the relevant tools appropriate to the decision type (i.e. Decision Type A; Section 2.3.4.2) and Woodside's criteria for demonstrating acceptability (Section 2.4.2), Woodside considers the adopted controls appropriate to manage the impacts/risks to be managed to a level that is broadly acceptable, and compliance with those controls demonstrates that the EPOs are met.

EPOs, EPS and MC			
EPO	***Controls***	***PS***	***MC***
EPO 18 No injury or mortality to *EPBC Act 1999* and *WA Biodiversity Conservation Act 2016* listed marine fauna as a result of the Petroleum Activity.	**C 5.1** Refer to Section 6.8.3.	**PS 5.1.1** Refer to Section 6.8.3.	**MC 5.1.1** Refer to Section 6.8.3.
			MC 5.1.2 Refer to Section 6.8.3.
	C 5.2 Refer to Section 6.8.3.	**PS 5.2** Refer to Section 6.8.3.	**MC 5.2.1** Refer to Section 6.8.3.
			MC 5.2.2 Refer to Section 6.8.3.
			MC 5.2.3 Refer to Section 6.8.3.
	C 5.4 Refer to Section 6.8.3.	**PS 5.4** Refer to Section 6.8.3.	**MC 5.4.1** Refer to Section 6.8.3.
	C 5.5 Refer to Section 6.8.3.	**PS 5.5** Refer to Section 6.8.3.	**MC 5.5.1** Refer to Section 6.8.3.
	C 5.6 Refer to Section 6.8.3.	**PS 5.6** Refer to Section 6.8.3	**MC 5.6.1** Refer to Section 6.8.3
	C 18.1 Environmental induction of all relevant vessel crew.	**PS 18.1** MODU and vessel crew shall undertake a project specific induction covering marine fauna requirements for the project.	**MC 18.1.1** Environmental induction attendance records demonstrate MODU and vessel crews are aware of marine fauna requirements.

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6.9.9 Physical presence: Introduction and establishment of invasive marine species

Context		
Project vessels – Section 3.6	Physical environment – Section 4.4 Habitats and biological communities – Section 4.5 Protected species – Section 4.6 Socio-economic environment – Section 4.9	Stakeholder consultation – Section 5

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
Introduction and establishment of Invasive Marine Species (IMS) within the Operational Area.				X	X	X	A	D	1	M	LCS GP PJ	Broadly Acceptable	EPO 19

Description of source of impact

During the Petroleum Activity, vessels will be transiting to and from the Operational Area, potentially including traffic mobilising from beyond Australian waters. These vessels may include the MODU, AHTSV and general support vessels (Section 3.6).

All vessels are subject to some level of marine fouling whereby organisms attach to the vessel hull. This could particularly occur in areas where organisms can find a good attachment surface (e.g. seams, strainers and unpainted surfaces) or where turbulence is lowest (e.g. niches, sea chests), although commercial vessels typically maintain anti-fouling coatings to reduce the build-up of fouling organisms. IMS could be present as biofouling on immersible equipment (survey equipment, ROV etc.) and could be translocated to the Operational Area and transferred directly to the seabed or subsea structures where they could establish. Organisms can also be drawn into ballast tanks during onboarding of ballast water as cargo is loaded or to balance vessels under load.

Project vessels have the potential to introduce IMS to the Operational 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) during times when vessels need to be alongside each other.

Impact assessment

Environmental value(s) potentially impacted

IMS are a subset of non-indigenous marine species (NIMS) that have been introduced into a region beyond their natural biogeographic range resulting in impacts to social/cultural, human health, economic and/or environmental values. NIMS are species that have the ability to survive, reproduce and establish founder populations. However, not all NIMS introduced into an area will thrive or cause demonstrable impacts; the majority of NIMS around the world are relatively benign and few have spread widely beyond sheltered ports and harbours. NIMS are only considered IMS when they result in impacts to environmental values and/or have social/cultural, economic and/or human health impacts.

Once introduced, IMS may prey on local species (which had previously not been subject to this kind of predation and therefore not have evolved protective measures against the attack), they may outcompete indigenous species for

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food, space or light and can also interbreed with local species, creating hybrids such that the endemic species is lost. These changes to the local marine environment result in changes to the natural ecosystem.

IMS have also proven economically damaging to areas where they have been introduced and established. Such impacts include direct damage to assets (fouling of vessel hulls and infrastructure) and depletion of commercially harvested marine life (e.g. shellfish stocks). IMS have proven particularly difficult to eradicate from areas once established. If the introduction is detected early, eradication may be effective but is likely to be expensive, disruptive and, depending on the method of eradication, harmful to other local marine life. Given this, the consequence of the introduction and successful establishment of an IMS has been determined as a consequence level of minor.

Potential IMS have historically been introduced and translocated around Australia by a variety of natural and human means, including marine fouling and ballast water. Potential IMS vary from one region to another depending on various environmental factors such as water temperature, salinity, nutrient levels and habitat type, which dictate their survival and invasive capabilities. IMS typically require hard substrate in the photic zone; therefore, requiring shallow waters to become established. Highly-disturbed, shallow-water environments such as shallow coastal waters, ports and marinas are more susceptible to IMS colonisation, whereas IMS are generally unable to successfully establish in deep-water ecosystems and open-water environments where the rate of dilution and the degree of dispersal are high (Williamson and Fitter 1996; Paulay et al. 2002; Geiling 2014).

Given the wells are located at a depth of approximately 135-170 m (water depth where benthic cover is less than 2%), the likelihood of IMS being introduced and establishing viable populations within this Operational Area or immediate surrounds is considered highly unlikely, given:

- All project vessels used for the Petroleum Activity will be subject to the Woodside IMS risk assessment process. This process aligns with the approach adopted by WA DPIRD (such as vessel check tool) and has been proven effective in minimising the potential for IMS introduction. Woodside has successfully implemented this process for several large construction projects and ongoing operations over the last decade.
- There remains a significant distance (more than 45 km) from the Operational Area to the closest shallow water habitat that may be susceptible to the introduction and subsequent establishment of IMS, further reducing the likelihood of the establishment of IMS.
- The short duration of operations further reduces the risk of IMS introduction and subsequent establishment.

The establishment of IMS has the potential to cause changes to the functions, interests or activities of other users through indirect impact such as changes to fisheries target species resulting in economic and social implications, or due to compromised reputation to the oil and gas industry. IMS have proven particularly difficult to eradicate from areas once established. If the introduction is detected early, eradication may be effective but is likely to be expensive, disruptive and, depending on the method of eradication, harmful to other local marine life. Given the low likelihood of IMS translocation to, and colonisation of environments within the Operational Area, the Petroleum Activity will not result in establishment of IMS, and as such not adversely affect other marine user activities in the region.

In support of Woodside's assessment of the risks and consequences of IMS introduction associated with the Petroleum Activity, Woodside conducted a risk and impact evaluation of the different aspects of a marine pest translocation. The results of this assessment are presented in Table 6-19**.**

As a result of this assessment, Woodside has presented the highest potential consequence as a minor and likelihood as highly unlikely, resulting in an overall moderate risk following the implementation of identified controls.

Table 6-19: Credibility, consequence and likelihood of introducing IMS

IMS Introduction Location	Credibility of Introduction	Consequence of Introduction	Likelihood
Introduced to the Operational Area and established on the seabed.	**Not Credible** The deep offshore open waters of the Operational Area (~135 m – 170 m) away from shorelines and/or critical habitat are not conducive to the settlement and establishment of IMS.		
Introduced to Operational Area and establishment on a project vessel.	**Credible** There is potential for the transfer of marine pests between project vessels/MODU within the Operational Area.	**Environment – Not credible** The translocation of IMS from a colonised project vessel to another vessel and then to the environment is not credible. This is because the Operational Area is in deep open waters away from shorelines. Furthermore, the translocation to shallower environments via natural dispersion from a project vessel is not considered credible, given the distances of the Operational Area from nearshore environments (i.e. greater	**Remote (0)** Interactions between project vessel will be limited during the Petroleum Activity, with minimum 500 m safety exclusion zones being adhered to around the activity, and interactions limited to short periods of time alongside (as in, during backloading, bunkering activities). There

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		than 12 nm/50 m water depth). On this basis there is no credible environmental risk. **Reputation – D** If IMS were to establish on a project vessel from another colonised vessel, this could potentially impact the vessel operationally through the fouling of intakes and potentially cause the infected vessels to be quarantined and requiring costly cleaning. Such introduction would be expected to have minor impact to Woodside's reputation, particularly with Woodside's contractors, and may impact future proposals.	is also no direct contact (in other words, they are not tied up alongside) during these activities. Spread of marine pests via ballast water or spawning in these open ocean environments is also considered remote.
Transfer between project vessels and transfer from project 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 activity. As described above, the transfer of IMS between project vessels was already considered remote, given the offshore open-ocean environment. Project vessels will be located in an offshore, open-ocean, deep environment, where IMS survival is implausible. Furthermore, this marine pest once transferred would need to survive on a new vessel with good vessel hygiene (in other words, has been through Woodside's risk assessment process) and survive the transport back from the Operational Area to shore. In the event it was to survive this trip, it would then need conditions conducive to establishing a viable population in the nearshore waters to which the infected vessel travels.		

Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[79]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
Legislation, codes and standards				
Project vessels will manage their ballast water using one of the approved ballast water management options, as outlined in the Australian Ballast Water Management Requirements.	F: Yes. CS: Minimal cost. Standard practice.	Reduces the likelihood of transferring marine pests between project vessels within the Operational Area. No change in consequence would occur.	Controls based on legislative requirements under the Biosecurity Act 2015 – must be adopted.	Yes **C 19.1**
Internationally sourced Project vessels will manage their biosecurity risk associated with biofouling as specified in the Australian Biofouling Management Requirements.	F: Yes. CS: Standard practice.	Reduces the likelihood of transfer of marine pests between vessels within the Operational Area. No change in consequence would occur.	Controls based on legislative requirements under the Biosecurity Act 2015 – must be adopted.	Yes **C 19.2**
Good practice				
Woodside's IMS risk assessment process[80] will be applied to project vessels	F: Yes. CS: Minimal cost. Good practice implemented	Identifies potential risks and additional controls implemented	Benefits outweigh cost/sacrifice.	Yes **C 19.3**

[79] *Qualitative measure*

[80] *Woodside's IMS risk assessment process was developed with regard to the national biofouling management guidelines for the petroleum production and exploration industry and guidelines for the control and management of a ships' biofouling to minimise the transfer of invasive aquatic species (IMO Guidelines 2011).*

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[79]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
and relevant immersible equipment undertaking the Petroleum Activity. Assessment will consider these risk factors: For vessels/MODU: • vessel/MODU type, • recent IMS inspection and cleaning history, including for internal niches, • out-of-water period before mobilisation, • age and suitability of antifouling coating at mobilisation date, • internal treatment systems and history, • origin and proposed area of operation, • number of stationary/slow speed periods >7 days, • region of stationary or slow periods, and • type of activity – contact with seafloor. For immersible equipment: • region of deployment since last thorough clean, particularly coastal locations, • duration of deployments, • duration of time out of water since last deployment, • transport conditions during mobilisation, and • 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.	across all Woodside Operations.	accordingly. In doing so, the likelihood of transferring marine pests between project vessels within the Operational Area is reduced. No change in consequence would occur.		

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[79]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
Professional judgement – Eliminate				
No discharge of ballast water during the Petroleum Activity.	F: No. Ballast water discharges are critical for maintaining vessel stability. Given the nature of the Petroleum Activity, the use of ballast (including the potential discharge of ballast water) is considered to be a safety critical requirement. CS: Not considered – control not feasible.	Not considered – control not feasible.	Not considered – control not feasible.	No
Eliminate use of vessels.	F: No. Given that vessels must be used to implement project, there is no feasible means to eliminate the source of risk. CS: Loss of the project.	Not considered – control not feasible.	Not considered – control not feasible.	No
Professional judgement – Substitute				
Source project vessels based in Australia only.	F: Potentially. Limiting activities to only use local project vessels could potentially pose a significant risk in terms of time and duration of sourcing a vessel, as well as the ability of the local vessels to perform the required tasks. For example, there are limited installation vessels based in Australian waters. While the project will attempt to source project vessels locally it is not always possible. Availability cannot always be guaranteed when considered competing Oil and Gas activities in the region. In addition, sourcing Australian based vessels only will cause increases in cost due to pressures of vessel availability. CS: Significant cost and schedule impacts	Sourcing vessels from within Australian will reduce the likelihood of IMS from outside Australian waters, however, it does not reduce the likelihood of introduction of species native to Australia but alien to the Operational Area and NWMR, or of IMS that have established elsewhere in Australia. The consequence is unchanged.	Disproportionate. Sourcing vessels from Australian waters may result in a reduction in the likelihood of IMS introduction to the Operational Area; however, the potential cost of implementing this control is grossly disproportionate to the minor environmental gain (or reducing an already remote likelihood of IMS introduction) potentially achieved by using only Australian based vessels, consequently this risk is considered not reasonably practicable.	No

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[79]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
	due to restrictions of vessel hire opportunities.			
IMS inspection of all vessels.	F: Yes. Approach to inspect vessels could be a feasible option. CS: Significant cost and schedule impacts. In addition, Woodside's IMS risk assessment process (C 13.2) is seen to be more cost effective as this control allows Woodside to manage the introduction of marine pests through biofouling, while targeting its efforts to and resources to areas of greatest concern.	Inspection of all vessels for IMS would reduce the likelihood of IMS being introduced to the Operational 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, as other controls to be implement achieve an ALARP position.	No
Professional judgement – Engineered Solution				
No additional controls identified.				
ALARP statement: On the basis of the assessment outcomes, use of the relevant tools appropriate to the decision type (i.e. Decision Type A; Section 2.3.4.2) and Woodside's criteria for demonstrating ALARP (Section 2.4.1), Woodside considers the adopted controls appropriate to manage potential impacts/risks associated with IMS introduction. As no reasonably practicable additional/alternative controls were identified that would further reduce the impacts without disproportionate sacrifice, the impacts/risks are considered ALARP.				

Demonstration of acceptability
Acceptability statement: The impact/risk assessment has determined that, given the adopted controls, the accidental introduction and establishment of IMS through ballast water or biofouling on vessels represents a Moderate residual risk that may result in minor impact on environmental feature/s or area/s such as impact on feature of low significance with some ability to recover. Further opportunities to reduce the impacts and risks have been investigated above. On the basis of the assessment outcomes, use of the relevant tools appropriate to the decision type (i.e. Decision Type A; Section 2.3.4.2) and Woodside's criteria for demonstrating acceptability (Section 2.4.2), Woodside considers the adopted controls appropriate to manage the impacts/risks to be managed to a level that is broadly acceptable, and compliance with those controls demonstrates that the EPOs are met.

EPOs, EPS and MC			
EPO	***Controls***	***PS***	***MC***
EPO 19 No introduction and establishment of invasive marine species into the Operational Area as a	**C 19.1** Project vessels will manage their ballast water using one of the approved ballast water management options, as outlined in the	**PS 19.1** Project vessels manage ballast water in accordance with Australian Ballast Water Management Requirements.	**MC 19.1.1** Ballast Water Records System maintained by vessels which verifies compliance against Australian Ballast Water

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EPOs, EPS and MC			
EPO	***Controls***	***PS***	***MC***
result of the Petroleum Activity.	Australian Ballast Water Management Requirements.		Management Requirements.
	C 19.2 Internationally sourced Project vessels will manage their biosecurity risk associated with biofouling as specified in the Australian Biofouling Management Requirements.	**PS 19.2** Compliance with Australian Biofouling Management Requirements.	**MC 19.2.1** Records of implementation of biofouling management measure and pre-arrival reporting.
	C 19.3 Woodside's IMS risk assessment process[81] will be applied to project vessels and relevant immersible equipment undertaking the Petroleum Activity. Assessment will consider these risk factors: For vessels/MODU: • vessel/MODU type, • recent IMS inspection and cleaning history, including for internal niches, • out-of-water period before mobilisation, • age and suitability of antifouling coating at mobilisation date, • internal treatment systems and history, • origin and proposed area of operation, • number of stationary/slow speed periods >7 days, • region of stationary or slow periods, and • type of activity – contact with seafloor. • For immersible equipment: • region of deployment since last thorough	**PS 19.3.1** Before entering the Operational Area, project vessels, MODU and relevant immersible equipment are determined to be low risk[82] of introducing IMS of concern, and maintain this low-risk status to mobilisation.	**MC 19.3.1** Records of IMS risk assessments maintained for all project vessels and relevant immersible equipment entering the Operational Area or IMS management area to undertake the Petroleum Activity.
		PS 19.3.2 In accordance with Woodside's IMS risk assessment process, the IMS risk assessments will be undertaken by an authorised environment adviser who has completed relevant Woodside IMS training or by qualified and experienced IMS inspector.	**MC 19.3.2** Records confirm that the IMS risk assessments undertaken by an Environment Adviser or IMS inspector (as relevant).

[81] *Woodside's IMS risk assessment process was developed with regard to the national biofouling management guidelines for the petroleum production and exploration industry and guidelines for the control and management of a ships' biofouling to minimise the transfer of invasive aquatic species (IMO Guidelines 2011).*

[82] *Low risk of introducing IMS of concern is defined as either no additional management measures required or, management measures have been applied to reduce the risk.*

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EPOs, EPS and MC			
EPO	***Controls***	***PS***	***MC***
	clean, particularly coastal locations, • duration of deployments, • duration of time out of water since last deployment, • transport conditions during mobilisation, and • 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.		

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6.9.10 Physical presence: Disturbance to the seabed from loss of station keeping

Context		
Project vessels – Section 3.6	Physical environment – Section 4.4 Habitats and biological communities – Section 4.50	Stakeholder consultation – Section 5

Impact evaluation summary

Source of impact	***Environmental value potentially impacted***						***Evaluation***						
	Marine Sediment	Water Quality	Air Quality (incl Odour)	Ecosystems/Habitat	Species	Socio-economic	Decision Type	Consequence/Impact	Likelihood	Risk Rating	ALARP Tools	Acceptability	Outcome
Loss of station keeping of MODU leading to seabed disturbance.		X		X			A	E	2	M	GP	Broadly Acceptable	EPO 20

Description of source of impact

A moored MODU is planned to be used for the Petroleum Activity for permanently plugging the wells, secured on station by an eight to 12 point pre-laid mooring system deployed to the seabed, as dictated by the mooring analysis. High energy weather events such as cyclones, occurring while the MODU is on station, can lead to excessive loads on the mooring lines, resulting in failure (either anchor(s) dragging or mooring lines parting). A failure of mooring integrity may lead to the mooring lines and anchors attached to the MODU being trailed across the seabed. If mooring failure is sufficient, the MODU may move off station, increasing the likelihood of anchor drag across the seabed. A hybrid MODU that uses DP in conjunction with a pre-laid mooring system to hold station, may be used to conduct the drilling. In this scenario, there may be an opportunity to disconnect the rig anchor release (RAR) system (see Section 3.11.5, which would allow the rig to avoid the cyclone and for the anchor drag risk to be reduced.

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

Industry statistics from the North Sea show that a single mooring line failure for MODUs is the most common failure mechanism (33 × 10-4 per line per year), followed by a double mooring line failure (11 × 10-4 per line per year) (Petroleumstilsynet 2014). Note that single and double mooring line failures do not typically result in the loss of station keeping. If partial or complete mooring failures are sufficient to result in a loss of station keeping, industry experience indicates that MODUs may drift considerable distances from their initial position (Offshore: Risk & Technology Consulting Inc. 2002). Partial mooring failures leading to a loss of station keeping resulted in smaller MODU displacements, due to the remaining anchors dragging along the seabed when compared to complete mooring failures; complete mooring failures resulted in a freely drifting MODU (Offshore: Risk & Technology Consulting Inc. 2002).

NOPSEMA has recorded four cases of anchor drag due to loss of MODU holding station during cyclone activity between 2004 and 2015 (NOPSEMA 2015). Seabed disturbance area size from anchor drag is dependent on the extent of the drag.

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Impact assessment
Environmental value(s) potentially impacted
During the event of the MODU breaking its moorings, the anchors could drag along the seabed, however potential environmental effects would be limited to minor physical impacts and/or changes in water quality on benthic communities. ***Epifauna and infauna*** Benthic communities, including epifauna and infauna may be physically impacted by the drag of anchors on the seabed. If anchor drag occurs, habitat impact will span the extent of the drag area, leading to a localised change in communities; however, substantial adverse effect is not anticipated, given the sparse marine life that are well represented elsewhere in the region. Additionally, anchor drag will disturb sediment and result in a temporary, localised reduction in water quality. As a result of a reduction in water quality and injury or mortality to marine fauna resulting from an increase in turbidity may occur. Given a change to water quality is temporary and localised, the only receptors that would potentially be at risk of unplanned seabed disturbance are bottom dwelling species including epifauna and infauna in the immediate area. Given generally sparse benthic communities in the Operational Area, no threatened or migratory benthic species or ecological communities were identified, and those epifauna and infauna communities observed are likely to be well represented elsewhere in the region (refer to Table 4-3), impacts are expected to be restricted to a localised proportion of epifauna and infauna communities. The magnitude of potential impacts to epifauna and infauna from unplanned seabed disturbance during activities associated with the Petroleum Activity is evaluated to be slight. Sensitivity for epifauna and infauna is low, leading to a slight and low-level risk consequence. ***Key ecological features (KEFs)*** As described in Section 4.7, the Ancient Coastline at 125 m depth contour KEF overlaps the Operational Area. As described above, benthic communities in the Operational Area are representative of the deep-water soft sediment habitats reported in the wider region and are likely to consist of soft sediment seabed habitat, characterised by sparse, widely represented epifauna and infauna (Woodside 2004; Brewer et al. 2007). Given the nature and scale of risks and consequences from mooring failure, slight impacts are expected to seabed sensitivities within the Operational Area. Furthermore, the Operational Area overlaps relatively minor proportions of the KEF (Section 4.7). There will be no substantial adverse effect on the KEF, communities or cultural heritage sites within it. On this basis, the magnitude of potential impacts to KEFs from unplanned seabed disturbance during activities is evaluated to be slight. Receptor sensitivity for the KEF is low, leading to a slight, low-level risk consequence. ***Submerged cultural heritage*** As described in Section 4.7, the Operational Area overlaps the Ancient Coastline at 125 m depth contour KEF and therefore, seabed disturbance may directly disturb a very small, localised area of the KEF where there is the potential that unidentified cultural features may exist. As such, controls have been adopted to assist in the identification and management in cases where potential underwater cultural heritage may be identified. Assessments of the Operational Area, detailed in Section 4.9.1, have not identified any First Nations archaeological sites on the relevant Ancient Landscape area. Additionally, volcanic rock which may contain petroglyphs do not occur within the Operational Area. Review of the seabed survey data will be completed prior to activities which may include seabed contact (See C 3.3). Four historical shipwrecks have been identified within the Operational Area (Section 4.9.1.8). Based on EPO 3, appropriate avoidance methods and management controls will been adopted to ensure underwater heritage values associated with these wrecks are protected and not impacted by seabed contact activities under the Petroleum Activity. Additional assessment is scheduled to occur prior to the activity commencing in order to confirm the specific location of these wrecks. In the case an unplanned seabed disturbance event occurs in an area not previously assessed and identifies Underwater Cultural Heritage the Unexpected Finds Procedure (See Section 7.2.3) is applicable. Submerged cultural features or heritage values identified through consultation with Traditional Custodians are not expected to be impacted by unplanned seabed disturbance from loss of station keeping.

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[83]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
Legislation, codes and standards				
No additional controls identified.				
Good practice				
Project-specific Mooring Design Analysis.	F: Yes. CS: Minimal cost. Standard practice.	Reduces the likelihood of mooring failure occurring. Although no reduction in consequence would occur, the overall risk is reduced.	Benefits outweigh cost/sacrifice.	Yes **C 4.1**
Specifications and requirements for station keeping equipment (mooring systems) require that: • systems are tested and inspected in accordance with API RP 2I, and • systems have sufficient capability such that a failure of any single component will not cause progressive failure of the remaining anchoring arrangement.	F: Yes. CS: Minimal cost. Standard practice.	Reduces the likelihood of mooring failure leading to loss of station keeping. Should mooring failure occur, no significant reduction in consequence could occur.	Benefits outweigh cost/sacrifice.	Yes **C 20.1**
Mooring system is tested to recommended tension as per API RP 2SK.	F: Yes. CS: Minimal cost. Standard practice.	Reduces the likelihood of anchor drag leading to seabed disturbance.	Benefits outweigh cost/sacrifice.	Yes **C 20.2**
MODU tracking equipment operational when the MODU is unmanned.	F: Yes. CS: Minimal cost. Standard practice.	Reduces the likelihood of a loss of station keeping occurring. Although no reduction in consequence could occur, the overall risk is reduced.	Benefits outweigh cost/sacrifice.	Yes **C 20.3**
Professional judgement – Eliminate				
No additional controls identified.				
Professional judgement – Substitute				
No additional controls identified.				
Professional judgement – Engineered Solution				
No additional controls identified.				

[83] *Qualitative measure*

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[83]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
ALARP statement: On the basis of the assessment outcomes, use of the relevant tools appropriate to the decision type (i.e. Decision Type A; Section 2.3.4.2) and Woodside's criteria for demonstrating ALARP (Section 2.4.1), Woodside considers the adopted controls appropriate to manage potential impacts/risks associated with seabed disturbance from a loss of station keeping. As no reasonably practicable additional/alternative controls were identified that would further reduce the impacts without disproportionate sacrifice, the impacts/risks are considered ALARP.				

Demonstration of acceptability
Acceptability statement: The impact/risk assessment has determined that, given the adopted controls, disturbance to seabed from a loss of station keeping represents a moderate current risk rating and may result in slight, low-level impact on environmental feature/s or area/s of low significance. 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/risks to be managed to a level that is broadly acceptable, and compliance with those controls demonstrates that the EPOs are met.

EPOs, EPS and MC			
EPO	***Controls***	***PS***	***MC***
EPO 20 No seabed disturbance from loss of station keeping.	**C 4.1** Refer to Section 6.8.2.	**PS 4.1** Refer to Section 6.8.2.	**MC 4.1.1** Refer to Section 6.8.2.
	C 20.1 Specifications and requirements for station keeping equipment (mooring systems) require that: • systems are tested and inspected in accordance with API RP 2I, and • systems have sufficient capability such that a failure of any single component will not cause progressive failure of the remaining anchoring arrangement.	**PS 20.1** MODU mooring system tested and in place to ensure no complete mooring failure.	**MC 20.1.1** Records demonstrate mooring system tests and inspection.
	C 20.2 Mooring system is tested to recommended tension as per API RP 2SK.	**PS 20.2** Monitoring compliant with ISO 19901-7:2013.	**MC 20.2.1** Records confirm mooring system is tested to recommended.
	C 20.3 MODU tracking equipment operational when the MODU is unmanned.	**PS 20.3** Tracking of the MODU is possible when the MODU is unmanned.	**MC 20.3.1** Records show the MODU has functional tracking equipment for instances when MODU is unmanned.

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6.10 Recovery plan and threat abatement assessment

This section describes the assessment that Woodside has undertaken to demonstrate that the Petroleum Activity is not inconsistent with any relevant recovery plans or threat abatement plans. For the purposes of this assessment, the relevant Part 13 statutory instruments (recovery plans and threat abatement plans) are:

- Fish, sharks and rays:
  - Recovery Plan for the Grey Nurse Shark (Carcharias taurus) 2014 (CoA 2014).
  - Recovery Plan for the White Shark (Carcharodon carcharias) 2013 (DSEWPaC 2013).
  - Sawfishes and River Sharks Multispecies Recovery Plan (CoA 2015b).
- Marine reptiles:
  - Recovery Plan for Marine Turtles in Australia 2017–2027 (CoA 2017).
- Marine mammals:
  - Conservation Management Plan for the Blue Whale 2015–2025 (CoA 2015a).
  - National Recovery Plan for the Southern Right Whale Eubalaena australis (DCCEEW 2024d).
- Seabirds and migratory shorebirds:
  - National Recovery Plan for the Australian Fairy Tern Sternula nereis (CoA 2020b).
  - National Recovery Plan for Albatrosses and Petrels (CoA 2022a).
  - National Recovery Plan for the Australian Painted Snipe (Rostratula australis) (CoA 2022b).
  - Threat Abatement Plan for the impacts of marine debris on the vertebrate wildlife of Australia's coasts and oceans 2018 (CoA 2018).

Table 6-20 lists the objectives and (where relevant) the action areas of these plans and also describes whether these objectives/action areas apply to government, the Titleholder, and/or the Petroleum Activity. For those objectives/action areas applicable to the Petroleum Activity, the relevant actions of each plan have been identified, and an evaluation has been conducted as to whether impacts and risks resulting from the activity are clearly inconsistent with that action or not. The results of this assessment against relevant actions are presented below.

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Table 6-20: Identification of applicability of recovery plan and threat abatement plan objectives and action areas

EPBC Act Part 13 statutory instrument	Applicable to:		
	Government	***Titleholder***	***Petroleum Activity***
Marine Turtle Recovery Plan			
Objective: Minimise anthropogenic threats to allow for the conservation status of marine turtles to improve so they can be removed from the EPBC Act threatened species list.	Y	Y	Y
Interim recovery objectives			
Current levels of legal and management protection for marine turtle species are maintained or improved, both domestically and throughout the migratory range of Australia's marine turtles.	Y		
The management of marine turtles is supported.	Y		
Anthropogenic threats are demonstrably minimised.	Y	Y	Y
Trends in nesting numbers at index beaches and population demographics at important foraging grounds are described.	Y	Y	
Action areas			
A. Assessing and addressing threats			
A1. Maintain and improve efficacy of legal and management protection.	Y		
A2. Adaptively manage turtle stocks to reduce risk and build resilience to climate change and variability.	Y		
A3. Reduce the impacts of marine debris.	Y	Y	Y
A4. Minimise chemical and terrestrial discharge.	Y	Y	Y
A5. Address international take within and outside Australia’s jurisdiction.	Y		
A6. Reduce impacts from terrestrial predation.	Y		
A7. Reduce international and domestic fisheries bycatch.	Y		
A8. Minimise light pollution.	Y	Y	Y
A9. Address the impacts of coastal development/infrastructure and dredging and trawling.	Y	Y	
A10. Maintain and improve sustainable Indigenous management of marine turtles.	Y		
B. Enabling and measuring recovery			

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EPBC Act Part 13 statutory instrument	Applicable to:		
	Government	*Titleholder*	*Petroleum Activity*
B1. Determine trends in index beaches.	Y	Y	
B2. Understand population demographics at key foraging grounds.	Y		
B3. Address information gaps to better facilitate the recovery of marine turtle stocks.	Y	Y	Y
Blue Whale Conservation Management Plan			
Objective: Minimise anthropogenic threats to allow for their conservation status to improve so that they can be removed from the EPBC Act threatened species list .	Y	Y	Y
Interim recovery objectives			
The conservation status of blue whale populations is assessed using efficient and robust methodology.	Y		
The spatial and temporal distribution, identification of biologically important areas, and population structure of blue whales in Australian waters is described.	Y	Y	Y
Current levels of legal and management protection for blue whales are maintained or improved and an appropriate adaptive management regime is in place.	Y		
Anthropogenic threats are demonstrably minimised.	Y	Y	Y
Action areas			
A. Assessing and addressing threats			
A.1: Maintain and improve existing legal and management protection.	Y		
A.2: Assessing and addressing anthropogenic noise.	Y	Y	Y
A.3: Understanding impacts of climate variability and change.	Y		
A.4: Minimising vessel collisions.	Y	Y	Y
B. Enabling and Measuring Recovery			
B.1: Measuring and monitoring population recovery.	Y		
B.2: Investigating population structure.	Y		
B.3: Describing spatial and temporal distribution and defining biologically important habitat.	Y	Y	Y

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EPBC Act Part 13 statutory instrument	Applicable to:		
	Government	*Titleholder*	*Petroleum Activity*
Southern Right Whale			
Long-term vision: for the recovery of the Australian southern right whale is that the population has increased in size to a level that the conservation status has improved, and the species no longer qualifies for listing as threatened under any of the EPBC Act listing criteria.	Y	Y	Y
Interim recovery objectives			
Current levels of Commonwealth and State legislative and management protection for southern right whales are implemented, maintained, or improved, so threats continue to be managed and reduced over the life of the plan.	Y		
Anthropogenic threats are managed consistent with ecologically sustainable principles to facilitate recovery of southern right whales.	Y	Y	Y
Population dynamics, including demographics, distribution, residency, and coastal movement across the species range are monitored and quantified using robust, standardised, best-practice methodology to assess population recovery.	Y		
The population structure in Australian waters is clearly characterised to evaluate the degree to which the western and eastern populations are separate populations and inform the degree of connectivity with other southern right whale populations.	Y		
Capability of First Nation Australians, research, citizen science, and general community groups is improved to assist in addressing recovery actions of southern right whales in Australia.	Y		
Action Areas			
A: Assess and address key threats			
A1: Maintain, implement and improve efficacy of current legislative and management protection for southern right whales.	Y		
A2: Address habitat degradation impacts from coastal and offshore marine infrastructure developments within the species' range.	Y	Y	Y
A3: Understand impacts of climate variability and anthropogenic climate change on the species biology and population recovery.	Y		
A4: Manage and mitigate the threat of entanglements from commercial active or discarded fishing gear throughout the species' range in Australian waters.	Y		
A5: Assess, manage, and mitigate impacts from anthropogenic underwater noise.	Y	Y	Y
A6: Manage, minimise and mitigate the threat of vessel strike.	Y	Y	Y
B: Measure recovery			

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EPBC Act Part 13 statutory instrument	Applicable to:		
	Government	*Titleholder*	*Petroleum Activity*
B1: Measure and monitor population demographic and recovery.	Y		
B2: Characterise population structure.	Y		
B3: Determine migratory paths and offshore distribution.	Y		
B4: Improve capability of First Nation Australians, research, citizen science, and general community groups to assist management of southern right whales.	Y		
Grey Nurse Shark Recovery Plan			
Overarching objective			
To assist the recovery of the grey nurse shark in the wild, throughout its range in Australian waters, with a view to: • improving the population status, leading to future removal of the grey nurse shark from the threatened species list of the EPBC Act, and • ensuring that anthropogenic activities do not hinder the recovery of the grey nurse shark in the near future, or impact on the conservation status of the species in the future.	Y	Y	Y
Specific objectives			
Develop and apply quantitative monitoring of the population status (distribution and abundance) and potential recovery of the grey nurse shark in Australian waters.	Y		
Quantify and reduce the impact of commercial fishing on the grey nurse shark through incidental (accidental and/or illegal) take, throughout its range.	Y		
Quantify and reduce the impact of recreational fishing on the grey nurse shark through incidental (accidental and/or illegal) take, throughout its range.	Y		
Where practicable, minimise the impact of shark control activities on the grey nurse shark.	Y		
Investigate and manage the impact of ecotourism on the grey nurse shark.	Y		
Manage the impact of aquarium collection on the grey nurse shark.	Y		
Improve understanding of the threat of pollution and disease to the grey nurse shark.	Y	Y	Y
Continue to identify and protect habitat critical to the survival of the grey nurse shark and reduce the impact of threatening processes within these areas.	Y	Y	

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EPBC Act Part 13 statutory instrument	Applicable to:		
	Government	*Titleholder*	*Petroleum Activity*
Continue to develop and implement research programs to support the conservation of the grey nurse shark.	Y	Y	
Promote community education and awareness in relation to grey nurse shark conservation and management.	Y		
White Shark Recovery Plan			
Primary objective			
The overarching objective of this recovery plan is to assist the recovery of the white shark in the wild throughout its range in Australian waters with a view to: • improving the population status leading to future removal of the white shark from the threatened species list of the EPBC Act, and • 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			
Develop and apply quantitative measures to assess population trends and any recovery of the white shark in Australian waters and monitor population trends.	Y		
Quantify and minimise the impact of commercial fishing, including aquaculture, on the white shark through incidental (illegal and/or accidental) take, throughout its range in Australian waters.	Y		
Quantify and minimise the impact of recreational fishing on the white shark through incidental (illegal and/or accidental) take, throughout its range in Australian waters.	Y		
Where practicable minimise the impact of shark control activities on the white shark.	Y		
Investigate and manage (and where necessary reduce) the impact of tourism on the white shark.	Y		
Quantify and minimise the impact of international trade in white shark products through implementation of CITES provisions.	Y		
Continue to identify and protect habitat critical to the survival of the white shark and minimise the impact of threatening processes within these areas.	Y		
Continue to develop and implement relevant research programs to support the conservation of the white shark.	Y		
Promote community education and awareness in relation to white shark conservation and management.	Y		
Encourage the development of regional partnerships to enhance the conservation and management of the white shark across national and international jurisdictions.	Y		

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EPBC Act Part 13 statutory instrument	Applicable to:		
	Government	*Titleholder*	*Petroleum Activity*
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, and • ensuring that anthropogenic activities do not hinder recovery in the near future, or impact on the conservation status of the species in the future.	Y	Y	Y
Specific objectives			
Reduce and, where possible, eliminate adverse impacts of commercial fishing on sawfish and river shark species.	Y		
Reduce and, where possible, eliminate adverse impacts of recreational fishing on sawfish and river shark species.	Y		
Reduce and, where possible, eliminate adverse impacts of Indigenous fishing on sawfish and river shark species.	Y		
Reduce and, where possible, eliminate the impact of illegal, unregulated and unreported fishing on sawfish and river shark species.	Y		
Reduce and, where possible, eliminate adverse impacts of habitat degradation and modification on sawfish and river shark species.	Y	Y	Y
Reduce and, where possible, eliminate any adverse impacts of marine debris on sawfish and river shark species noting the linkages with the Threat Abatement Plan for the Impact of Marine Debris on Vertebrate Marine Life.	Y	Y	Y
Reduce and, where possible, eliminate any adverse impacts of collection for public aquaria on sawfish and river shark species.	Y		
Improve the information base to allow the development of a quantitative framework to assess the recovery of, and inform management options for, sawfish and river shark species.	Y		
Develop research programs to assist conservation of sawfish and river shark species.	Y	Y	
Improve community understanding and awareness in relation to sawfish and river shark conservation and management.	Y		
Australian Fairy Tern Recovery Plan			
Primary objective			

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EPBC Act Part 13 statutory instrument	Applicable to:		
	Government	*Titleholder*	*Petroleum Activity*
Long-term vision: The Australian Fairy Tern population has increased in size to such an extent that the species no longer qualifies for listing as threatened under any of the EPBC Act listing criteria.	Y	Y	Y
Specific objectives			
Manage and protect known Australian Fairy Tern breeding populations at the landscape scale.	Y		
Develop and apply techniques to measure changes in population trend(s) in order to measure the efficacy of recovery actions.	Y		
Reduce, or eliminate threats at breeding, non-breeding and foraging sites.	Y	Y	
Undertake research and monitoring to improve understanding of breeding, non-breeding and foraging attributes in order to better target management actions and habitat restoration.	Y		
Engage community stakeholders in Australian Fairy Tern conservation.	Y		
Coordinate, review and report on recovery progress.	Y		
Albatrosses and Petrels National Recovery Plan			
Primary objective			
Long-term recovery objective: The populations of albatross and petrel species breeding and/or foraging in Australia's jurisdiction have increased to such a size that each species no longer qualifies for listing as threatened under any of the EPBC Act listing criteria.	Y	Y	Y
Strategies to achieve the objective			
Ensure ongoing protection of albatross and petrel breeding sites and habitats in Australia's jurisdiction.	Y	Y	Y
Improve the understanding of the size, structure and population trends for albatrosses and petrels breeding in Australia's jurisdiction.	Y		
Improve effectiveness of management measures that reduce land-based threats to albatrosses and petrels breeding in Australia's jurisdiction.	Y	Y	
Improve effectiveness of management measures that reduce marine-based threats to albatrosses and petrels foraging in Australia's jurisdiction.	Y	Y	Y
Improve understanding of generalised threats to albatrosses and petrels breeding and foraging within Australia's jurisdiction.	Y	Y	Y
Improve community awareness of the conservation of albatrosses and petrels.	Y		

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EPBC Act Part 13 statutory instrument	Applicable to:		
	Government	*Titleholder*	*Petroleum Activity*
Achieve substantial progress towards global conservation of albatrosses and petrels in international conservation and fishing forums.	Y		
Action Areas			
A. Assessing and addressing threats			
A.1: Ongoing protection of albatross and petrel species breeding sites and habitats in Australia's jurisdiction.	Y		
A.2: Prevent introduction of alien species to breeding islands in Australia's jurisdiction.	Y	Y	
A.3: Identify whether competition with native species is causing population declines.	Y		
A.4: Identify diseases likely to have a population-level effect on breeding populations.	Y		
A 5: Avoid or minimise incidental catch (or bycatch) of seabirds during fishing operations in Australia's jurisdiction.	Y		
A 6: Advocate for effective international measures for conserving albatrosses and petrels.	Y		
A 7: Minimise the effects of marine debris, plastics and pollution.	Y	Y	Y
B. Enabling and Measuring Recovery			
B.1: Monitor population and conservation status of breeding populations in Australia's jurisdiction.	Y		
B.2: Monitor the effects of fishing on albatrosses and petrels in Australia's jurisdiction.	Y		
B.3: Increase community understanding of and involvement in the conservation of albatrosses and petrels.	Y		
B 4: Increase understanding of the effects of climate change on albatrosses and petrels in Australia and identify ways to increase the resilience of the species to these effects.	Y		
B 5: Implement statutory requirements.	Y		
Australian Painted Snipe Recovery Plan			
Primary objective			
Long-term recovery objective: The Australian Painted Snipe population has increased in size to such an extent that the species no longer qualifies for listing as threatened under any of the EPBS Act listing criteria.	Y	Y	Y

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EPBC Act Part 13 statutory instrument	Applicable to:		
	Government	*Titleholder*	*Petroleum Activity*
Specific objectives			
Manage and protect known Australian Painted Snipe habitat at the landscape scale.	Y		
Develop and apply techniques to measure changes in population trajectory in order to measure the success of recovery actions.	Y		
Reduce, or eliminate threats at breeding and non-breeding habitats.	Y	Y	
Undertake research to improve knowledge of the habitat requirements, biology and behaviour of Australian Painted Snipe.	Y		
Engage community stakeholders to improve awareness of the conservation of Australian Painted Snipe.	Y		
Coordinate, review and report on recovery progress.	Y		
Marine Debris Threat Abatement Plan			
Objectives			
Contribute to long-term prevention of the incidence of marine debris.	Y	Y	
Understand the scale of impacts from marine plastic and microplastic on key species, ecological communities and locations.	Y	Y	Y
Remove existing marine debris.	Y		
Monitor the quantities, origins, types and hazardous chemical contaminants of marine debris, and assess the effectiveness of management arrangements for reducing marine debris.	Y		
Increase public understanding of the causes and impacts of harmful marine debris, including microplastic and hazardous chemical contaminants, to bring about behaviour change.	Y		

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Table 6-21: Assessment against relevant actions of the Marine Turtle Recovery Plan

Part 13 statutory instrument	Relevant action areas/objectives	Relevant actions	Evaluation	Relevant EPO and EPS
Marine Turtle Recovery Plan	**Action Area A1:** Maintain and improve efficacy of legal and management protection.	**Action:** Manage anthropogenic activities to ensure marine turtles are not displaced from identified habitat critical to the survival.	Refer Sections 6.8.3, 6.8.4 and 6.9.8. **Not inconsistent assessment:** The assessment of acoustic emissions, light emissions and potential vessel collisions has considered the potential impacts to marine turtles. Management of the Petroleum Activity will ensure that marine turtles are not displaced from identified habitat critical to the survival of marine turtles.	Refer Sections 6.8.3, 6.8.4 and 6.9.8.
	Action Area A3: Reduce the impacts from marine debris.	**Action:** Support the implementation of the Marine Debris Threat Abatement Plan (TAP). Priority actions at stock level: G-NWS – Understand the threat posed to this stock by marine debris. LH-WA – Determine the extent to which marine debris is impacting loggerhead turtles. F-Pil – no relevant actions.	Refer Section 6.9.7. **Not inconsistent assessment:** The assessment of the accidental release of solid hazardous and non-hazardous wastes has considered the potential risks to marine turtles. Controls have been implemented to reduce the likelihood of accidental release of solid wastes for the duration of the Petroleum Activity.	EPO 17a, 17b and 17c C 17.1 to C 17.5 PS 17.1 to PS 17.5
	Action Area A4: Minimise chemical and terrestrial discharge.	**Action:** Ensure spill risk strategies and response programs adequately include management for marine turtles and their habitats, particularly in reference to 'slow to recover habitats', e.g. nesting habitat, seagrass meadows or coral reefs. Priority actions at stock level: G-NWS – Ensure that spill risk strategies and response programs include management for turtles and their habitats. LH-WA & F-Pil – Ensure that spill risk strategies and response programs include management for turtles and their habitats, particularly in reference to slow to recover habitats, e.g. seagrass meadows or corals.	Refer Sections 6.9.2, 6.9.3 and 6.9.4. **Not inconsistent assessment:** The assessment of accidental release of chemicals/hydrocarbons has considered the potential risks to marine turtles. Spill risk strategies and response program include management measures for turtles and their nesting habitats.	Refer Sections 6.9.2, 6.9.3 and 6.9.4. Detailed oil spill preparedness and response performance outcomes, standards and measurement criteria for the Petroleum Activity are presented in Appendix G.

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Part 13 statutory instrument	Relevant action areas/objectives	Relevant actions	Evaluation	Relevant EPO and EPS
	Action Area A8: Minimise light pollution.	**Action:** Artificial light within or adjacent to habitat critical to the survival of marine turtles will be managed such that marine turtles are not displaced from these habitats. Priority actions at stock level: G-NWS – as above. LH-WA – no relevant actions. F-Pil – Manage artificial light from onshore and offshore sources to ensure biologically important behaviours of nesting adults and emerging/dispersing hatchlings can continue.	Refer Section 6.8.4. **Not inconsistent assessment:** The assessment of light emissions has considered the potential impacts to marine turtles. As such, short-term light emissions from the MODU/vessels are unlikely to result in the displacement of internesting, mating, foraging or migrating turtles (refer to Section 6.8.4 for further details). Based on the frequency and nature of the activity, the impacts to adult turtles moving through the Operational Area from vessel lighting are expected to be localised and temporary with no lasting effect.	EPO 6a and 6b C 5.7 and C 6.1 PS 5.7 and PS 6.1
	Action Area B1: Determine trends at index beaches.	**Action:** Maintain or establish long-term monitoring programs at index beaches to collect standardised data critical for determining stock trends, including data on hatchling production. Priority actions at stock level: G-NWS – Continue long-term monitoring of index beaches. LH-WA – Continue long-term monitoring of nesting and foraging populations. F-Pil – no relevant actions.	**Not inconsistent assessment:** Woodside contributes to Action Area B1 via its support of the Ningaloo Turtle Program[84].	N/A

[84] *http://www.ningalooturtles.org.au/media_reports.html*

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Part 13 statutory instrument	Relevant action areas/objectives	Relevant actions	Evaluation	Relevant EPO and EPS
	Action Area B3: Address information gaps to better facilitate the recovery of marine turtle stocks.	**Action:** Understand the impacts of anthropogenic noise on marine turtle behaviour and biology. Priority actions at stock level: G-NWS – Given this is a relatively accessible stock that is likely to be exposed to anthropogenic noise – Investigate the impacts of anthropogenic noise on turtle behaviour and biology and extrapolate findings from the North West Shelf stock to other stocks. LH-WA – no relevant actions. F-Pil – no relevant actions.	Refer Section 6.8.3. **Not inconsistent assessment:** The assessment of acoustic emissions has considered the potential impacts to marine turtles. Noise related to the Petroleum Activity is not expected to result in behavioural response, injury or mortality of individuals, or any other lasting effect.	EPO 5a C 5.5 PS 5.5
Assessment summary The Marine Turtle Recovery Plan has been considered during the assessment of impacts and risks and the Petroleum Activity is not considered to be inconsistent with the relevant actions of this plan.				

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Table 6-22: Assessment against relevant actions of the Blue Whale Conservation Management Plan

Part 13 statutory instrument	Relevant action areas/objectives	Relevant actions	Evaluation	Relevant EPO and EPS
Blue Whale Conservation Management Plan	**Action Area A.2:** Assessing and addressing anthropogenic noise.	**Action 2:** Assessing the effect of anthropogenic noise on blue whale behaviour. **Action 3:** Anthropogenic noise in biologically important areas will be managed such that any blue whale continues to use the area without injury, and is not displaced from a foraging area.	Refer Section 6.8.3. **Not inconsistent assessment:** The assessment of acoustic emissions has considered the potential impacts to pygmy blue whales and accordingly, acoustic emissions from project vessels will not cause permanent injury to any pygmy blue whale. There are no known or possible foraging areas for pygmy blue whales within or adjacent to the Operational Area. If the Petroleum Activity 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.	EPO 5a C 5.1 PS 5.1
	Action Area A.4: Minimising vessel collisions.	**Action 3**: Ensure the risk of vessel strikes on blue whales is considered when assessing actions that increase vessel traffic in areas where blue whales occur and, if required, appropriate mitigation measures are implemented.	Refer Section 6.9.8. **Not inconsistent assessment:** The assessment of vessel collision with marine fauna has considered the potential risks to pygmy blue whales. If the Petroleum Activity within the Operational 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 low operating speed of project vessels and the controls set out in Section 6.9.8.	EPO 18 C 5.1 C 5.2, C 5.4 and C 18.1 PS 5.1, PS 5.2, PS 5.4 and PS 18.1
	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).	N/A
Assessment summary The Blue Whale Conservation Management Plan has been considered during the assessment of impacts and risks and the Petroleum Activity is not considered to be inconsistent with the relevant actions of this plan.				

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Table 6-23: Assessment against relevant actions of the Southern Right Whale Recovery Plan

Part 13 statutory instrument	Relevant action areas/objectives	Relevant actions	Evaluation	Relevant EPO and EPS
National Recovery Plan for the Southern Right Whale	**Action Area A2:** Address habitat degradation impacts from coastal and offshore marine infrastructure developments within the species' range.	**Action 1:** Coastal and offshore development actions are assessed according to principles of ecological sustainable development to ensure the risk of injury, auditory impairment and/or disturbance to southern right whales is maintained. **Action 3**: Current information on species' occurrence, particularly in HCTS, BIAs, and historic high use areas, are used to inform planning, assessment, and decision-making on marine infrastructure development actions.	**Not inconsistent assessment:** This EP assesses that the potential impacts of the petroleum activity do not result in the risk of injury, auditory impairment and/or disturbance to southern right whales, particularly within the HCTS and BIAs that are located over 200 km from the Operational Area.	N/A
	Action Area A5: Assess, manage, and mitigate impacts from anthropogenic underwater noise.	**Action 2:** Actions within and adjacent to southern right whale BIAs and HCTS should demonstrate that it does not prevent any southern right whale from utilising the area or cause auditory impairment. **Action 3:** Actions within and adjacent to southern right whale BIAs and HCTS should demonstrate that the risk of behavioural disturbance is minimised. **Action 4:** Ensure environmental assessments associated with underwater noise generating activities include consideration of national policy (e.g., EPBC Act Policy Statement 2.1) and guidelines related to managing anthropogenic underwater noise and implement appropriate mitigation measures to reduce risks to southern right whales to the lowest possible level. **Action 5:** Quantify risks of anthropogenic underwater noise to southern right whales, including studies aimed to measure physiological effects, behavioural disturbance, and changes to acoustic communication (e.g., masking of vocalisations) to whales.	**Not inconsistent assessment:** The assessment of acoustic emissions has considered the potential impacts to southern right whales. The nearest BIAs and HCTS for the southern right whale being over 200 km from the Operational Area therefore it is not expected that noise from the petroleum activity program will impact the southern right whales.	N/A
	Action Area A6: Manage, minimise and mitigate the	**Action 1:** Assess risk of vessel strike to southern right whales in BIAs.	**Not inconsistent assessment:** The assessment of vessel collision with marine fauna has considered the potential risks to southern right whales. The	N/A

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Part 13 statutory instrument	Relevant action areas/objectives	Relevant actions	Evaluation	Relevant EPO and EPS
	threat of vessel strike.	**Action 3:** Ensure environmental impact assessments and associated plans consider and quantify the risk of vessel strike and associated potential cumulative risks in BIAs and HCTS.	nearest BIAs and HCTS for the southern right whale being approximately 200 km from the Operational Area therefore it is not expected that there is a risk of vessel strike.	
Assessment Summary The National Recovery Plan for the Southern Right Whale has been considered during the assessment of impacts and risks, and the Petroleum Activity is not considered to be inconsistent with the relevant actions of this plan.				

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Table 6-24: Assessment against relevant actions of the Grey Nurse Shark Recovery Plan

Part 13 statutory instrument	Relevant action areas/objectives	Relevant actions	Evaluation	Relevant EPO and EPS
Grey Nurse Shark Recovery Plan	**Objective 7:** Improve understanding of the threat of pollution and disease to the grey nurse shark.	**Action 7.1:** Review and assess the potential threat of introduced species, pathogens and pollutants.	Refer Section 6.9.7. **Not inconsistent assessment:** This EP includes an assessment of the impacts from accidental release of solid wastes as well as planned discharges of drilling waste on marine species.	N/A
			Refer Sections 6.9.2, 6.9.3 and 6.9.4. **Not inconsistent assessment:** The assessment of accidental release of chemicals/hydrocarbons has considered the potential risks to grey nurse sharks. Spill risk strategies and response program include management measures, as identified and required.	Refer Sections 6.9.2, 6.9.3 and 6.9.4. Detailed oil spill preparedness and response performance outcomes, standards and measurement criteria for the Petroleum Activity are presented in Appendix G.
Assessment summary The Grey Nurse Shark Recovery Plan has been considered during the assessment of impacts and risks and the Petroleum Activity is not considered to be inconsistent with the relevant actions of this plan.				

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Table 6-25: Assessment against relevant actions of the Sawfish and River Sharks Recovery Plan

Part 13 statutory instrument	Relevant action areas/objectives	Relevant actions	Evaluation	Relevant EPO and EPS
Sawfish and River Sharks Recovery Plan	**Objective 5:** Reduce and, where possible, eliminate adverse impacts of habitat degradation and modification on sawfish and river shark species.	**Action 5c:** Identify risks to important sawfish and river shark habitat and measures needed to reduce those risks.	Refer Sections 6.9.2, 6.9.3 and 6.9.4. **Not inconsistent assessment:** The assessment of accidental release of chemicals/hydrocarbons has considered the potential risks to sawfish and river shark. Spill risk strategies and response program include management measures, as identified and required.	Refer Sections 6.9.2, 6.9.3 and 6.9.4. Detailed oil spill preparedness and response performance outcomes, standards and measurement criteria for the Petroleum Activity are presented in Appendix G.
	Objective 6: Reduce and, where possible, eliminate any adverse impacts of marine debris on sawfish and river shark species noting the linkages with the Threat Abatement Plan for the Impact of Marine Debris on Vertebrate Marine Life.	**Action 6a:** Assess the impacts of marine debris including ghost nets, fishing gear and plastics on sawfish and river shark species.	Refer Section 6.9.7. **Not inconsistent assessment:** The assessment of the accidental release of solid hazardous and non-hazardous wastes has considered the potential risks to sawfish. Controls have been implemented to reduce the likelihood of accidental release of solid wastes for the duration of the Petroleum Activity.	N/A
Assessment summary The Sawfish and River Sharks Recovery Plan has been considered during the assessment of impacts and risks and the Petroleum Activity is not considered to be inconsistent with the relevant actions of this plan.				

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Table 6-26: Assessment against relevant actions of the Albatrosses and Petrels National Recovery Plan

Part 13 statutory instrument	Relevant action areas/objectives	Relevant actions	Evaluation	Relevant EPO and EPS
Albatrosses and Petrels National Recovery Plan	**Action A7:** Minimise the effects of marine debris, plastics and pollution.	**Action:** Improve understanding of and reduce the effects of marine debris, plastics and pollution on albatrosses and petrels.	Refer to Section 6.9.7. **Not inconsistent assessment:** The assessment of the accidental release of solid hazardous and non-hazardous wastes has considered the potential risks to seabirds and shorebirds. Controls have been implemented to reduce the likelihood of accidental release of solid wastes for the duration of the Petroleum Activity.	EPO 6a and 6c C 6.1 and C 6.2 PS 6.1 and PS 6.2
Assessment summary The Albatrosses and Petrels National Recovery Plan has been considered during the assessment of impacts and risks and the Petroleum Activity is not considered to be inconsistent with the relevant actions of this plan.				

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Table 6-27: 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 6.9.7. **Not inconsistent assessment:** The assessment of the accidental release of solid hazardous and non-hazardous wastes has considered the potential risks to the marine environment. Controls have been implemented to reduce the likelihood of accidental release of solid wastes for the duration of the petroleum activity.	N/A
Assessment summary The Marine Debris Threat Abatement Plan been considered during the assessment of impacts and risks and the Petroleum Activity is not considered to be inconsistent with the relevant actions of this plan.				

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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 Petroleum Activity confirms fit-for-purpose systems, practices and procedures are in place to direct, review and manage the activities so that environmental risks and impacts are continually being reduced to ALARP and are acceptable, and that EPOs and EPS outlined in this EP are achieved.

Woodside, as Operator, is responsible for ensuring that the Petroleum Activity is managed in accordance with this Implementation Strategy and the WMS (Section 1.6).

7.2 Systems, practices, and procedures

All operational activities are planned and performed in accordance with relevant legislation and standards, management measures identified in this EP and internal environment standards and procedures (Section 6). The systems, practices and procedures that will be implemented are listed in the EPS adopted in Section 6. Document names and reference numbers may be subject to change during the statutory duration of this EP and is managed through a Change Register and update process.

7.2.1 Assessment of project fluids

As part of Woodside's chemical approval process, chemicals required by the petroleum activity are selected and approved in accordance with the Woodside Environment Chemical Selection and Assessment Procedure – Australia. This procedure is used to demonstrate that the potential impacts of the chemicals selected are acceptable and ALARP and meet Woodside's corporate requirements. These requirements are outlined in Woodside's Environmental Performance Procedure, and require 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 petroleum activity will be managed in accordance with the requirements set out by the Australian Government under the Industrial Chemicals Environmental Standard (IChEMS). 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. 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.

All approved project fluids are included on the Woodside Drilling and Completions Chemical Assessment Register which is reviewed as per the Chemical Selection and Assessment Procedure – Australia. This excludes legacy chemicals, including residual NWBM currently present in the wellbore, which have been assessed for discharge in Section 6.8.8.

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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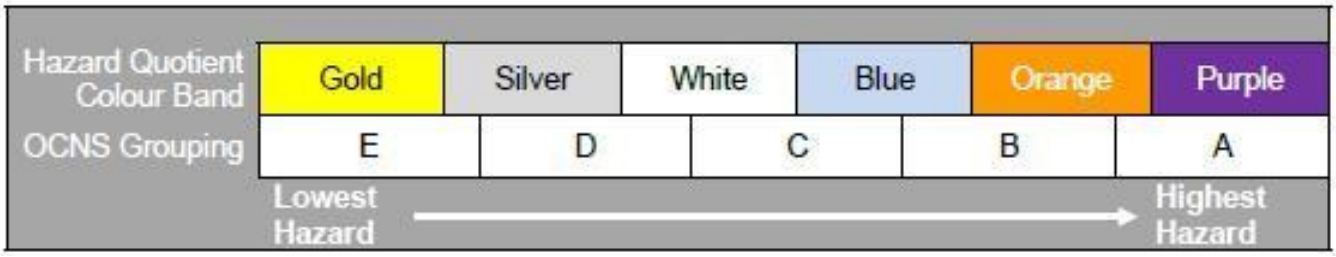

Figure 7-1: OCNS ranking scheme

Chemicals fall into the following assessment types:

- No further assessment: Chemicals with an HQ band of Gold or Silver or an OCNS ranking of E or D with no substitution or product warnings do not require further assessment. Such chemicals do not represent a significant impact on the environment under standard use scenarios and are therefore considered ALARP and acceptable.
- Further assessment/ALARP justification required: The following types of chemicals require further assessment to understand the environmental impacts of discharge into the marine environment:
  - chemicals with no OCNS ranking,
  - chemicals with an HQ band of White, Blue, Orange or Purple or an OCNS ranking of A, B or C, and
  - 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.

7.2.1.1 Ecotoxicity

Chemical ecotoxicity is assessed using the criteria used by CEFAS to group chemicals based on ecotoxicity results (Table 7-1). If a chemical has an aquatic or sediment toxicity within the criteria for the OCNS grouping of D or E, this is considered acceptable in terms of ecotoxicity.

Table 7-1: CEFAS OCNS grouping based on ecotoxicity results

Initial Grouping	A	B	C	D	E
Results of aquatic toxicity data (ppm)	<1	>1–10	>10–100	>100–1,000	>1,000
Results for sediment toxicity data (ppm)	<10	>10–100	>100–1,000	>1,000–10,000	>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.

7.2.1.2 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.

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- Inherently biodegradable: results >20% and <60% to an OSPAR HOCNF accepted ready biodegradation protocol or result of >20% by OSPAR accepted inherent biodegradation study.
- Not biodegradable: results from OSPAR HOCNF accepted biodegradation protocol or inherent biodegradation protocol are <20%, or half-life values derived from aquatic simulation test indicate persistence.

Chemicals with >60% biodegradation in 28 days to an OSPAR HOCNF accepted ready biodegradation protocol are considered acceptable in terms of biodegradation.

7.2.1.3 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.

7.2.1.4 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.

7.2.1.5 Decision

Once the further assessment/ALARP justification has been completed, the relevant environment adviser must concur that the environmental risk as a result of chemical use is ALARP and acceptable.

7.2.2 Woodside invasive marine species risk assessment process

7.2.2.1 Objective and scope

To minimise the risk of introducing invasive marine species (IMS) as a result of the Petroleum Activity, all applicable vessels and immersible equipment will be subject to Woodside's IMS risk assessment process (unless exempt as outlined below) in accordance with Woodside's Invasive Marine Species Management Plan.

The objective of the risk assessment process is to identify the level of threat a contracted vessel, or immersible equipment poses if no additional risk reduction management measures are implemented. This allows Woodside (and its contractors) to apply management options that are commensurate to the identified level of risk.

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The IMS risk assessment process does not apply to:

- vessels or immersible equipment that do not plan to enter the IMS Management Area (IMSMA)85 operational area defined in environmental approvals,
- 'new build' vessels launched <14 days before mobilisation,
- vessels or immersible equipment that have been inspected by a suitably qualified IMS inspector who has classified the vessels or immersible equipment as acceptably low risk no more than 14 days before mobilisation, or
- locally sourced vessels or immersible equipment from within the Western locally sourced zone86. 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).

7.2.2.2 Risk assessment process

Woodside's IMS risk assessment process was developed with regard to the national biofouling management guidelines for the petroleum production and exploration industry and guidelines for the control and management of a ships' biofouling to minimise the transfer of invasive aquatic species (International Maritime Organisation 2023).

To effectively evaluate the potential for vessels and immersible equipment to introduce IMS, a risk assessment process has been developed to score and evaluate the risk posed by each project vessel, or immersible equipment planning to undertake activities within an IMSMA or operational 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.

[85] IMSMA is based on current legal framework and includes all nearshore waters around Australia, extending from the lowest astronomical tide mark to 12 nm from land (including Australian territorial islands). The IMSMA also includes all waters within 12 nm from the 50 m depth contour outside of the 12 nm boundary i.e. submerged reefs and atolls).

[86] 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)

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Table 7-2: Key factors considered as a part of the risk assessment process for vessels

Factors	Details
Vessel type	The risk of IMS infection varies depending on the type of vessel undertaking the activity. A higher risk rating is applied for more complex, slow-moving vessels (e.g. dredges) in comparison to simple vessels (e.g. crew transfer vessel).
Recent IMS inspection and cleaning history, including for internal niches	In the case of biofouling on external hull niches, different risk ratings are applied depending on whether out-of-water or in-water IMS inspections by qualified IMS inspectors and cleaning (if required) have been undertaken prior to contract commencement. If an IMS inspection (and clean if required) has not been undertaken in the past 6 months (from the time of contract commencement), the highest risk factor is applied. The risk factor then lessens for vessels as the time between inspection and mobilisation reduces.
Out-of-water period before mobilisation	A risk reduction factor can be applied for vessels that are hauled out and then mobilised as deck cargo or by road during mobilisation, therefore becoming air dried over an extended period. Risk reduction factor increases with exposure time out of water.
Age and suitability of AFC at mobilisation date	AFC manufacturers provide a range of coatings, each designed to avoid premature coating failure if it is correctly applied and matched to the vessel's normal speeds and activity profile (i.e. proportion of time spent stationary or below 3 knots), and its main operational region (i.e. tropical, subtropical temperate). If the AFC type is deemed to be unknown, unsuited or absent, the highest risk value is applied. If the AFC type is suitable the risk factor applied reduces with age since application.
Internal treatment systems	A risk reduction factor applied if the vessel has an internal biological fouling control system in place at the time of assessment, or evidence of manual dosing.
Vessel origin and proposed area of operation	Differing risk ratings are assigned in relation to the climatic relationship between the vessel's origin and the proposed climatic region of the proposed area of operation. Highest risk rating is applied to similar climatic regions.
Number of stationary/slow speed periods >7 days	A risk factor is calculated based on the number of 7-day periods that the vessel has operated at stationary or at low speed (<3 knots) in port or coastal waters which is any waters <50 m deep outside 12 NM from land or any waters within 12 NM of land. The greater the number of periods, the higher the risk factor applied.
Region of stationary or slow periods	A further multiplier is applied depending on the location of the stationary/slow speed periods. The highest risk rating applied if the stationary or slow speed periods occurred within ports or coastal waters of the same climatic region.
Type of activity – contact with seafloor	The potential for the introduction of IMS varies on the planned vessel activity taking place. Those activities that come in contact with sediments and thus have the potential to accumulate and harbour IMS in areas such as hoppers (dredges) and spud cans (drilling rigs) are considered to have a greater risk of infection.

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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 acceptable levels and achieve a low risk status. These management options have been developed with the intention of reducing IMS risk to levels that are ALARP. It is a flexible approach that allows for a range of management actions to be tailored for a specific vessel movement. These will be assessed on a case-by-case basis and may include:

- Having a suitably qualified and experienced IMS inspector inspect (desktop, in-water or dry dock) to verify risk status; where practicable, the inspection shall occur within seven days (but not more than 14 days) before final departure to the Operational Area.
- Applying in-water or dry dock cleaning of the hull and other niche areas, typically applied where the risk assessment outcome is High risk driven by the age of the AFC on the vessel and its time spent in similar climatic region ports.
- Limiting the duration that the vessel spends within the IMSMA to a maximum of 48 hours (cumulative entries); applicable for Uncertain risk vessels only.
- Rejecting the vessel.

In some circumstances, such as emergency scenarios or in the presence of serious logistic constraints or other factors outside of the control of 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,

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commitments, or other legislative obligations that prescribe management measures for IMS, a risk assessed alternative process is available which must be approved by the relevant Business Vice President (VP), and HSE Vice President.

Before they enter the Operational Area, project vessels and immersible equipment are required to be a low risk of introducing IMS.

7.2.3 Unexpected Finds Procedure

In the event of the discovery of what appears to be Underwater Cultural Heritage (defined as 'any trace of human existence that has a cultural, historical or archaeological character and is located under water'); the following Unexpected Finds Procedure will apply:

- All activities with the potential to impact the suspected Underwater Cultural Heritage must cease immediately. Retain all records of the potential Underwater Cultural Heritage, including any imagery, description and location.
- Person who discovers the heritage object must inform the Activity Supervisor.
- Activity Supervisor must notify Woodside's Principal Heritage Adviser.
- Woodside will specify an appropriate buffer around the potential Underwater Cultural Heritage, taking into consideration the nature and scale of the potential Underwater Cultural Heritage and the activities to be managed.
- No seabed disturbance may occur within the buffer area around the potential Underwater Cultural Heritage until approved by Woodside's Principal Heritage Adviser.
- Woodside's Principal Heritage Adviser must notify a qualified underwater archaeologist and provide all available documentation of the potential Underwater Cultural Heritage.
- If the potential Underwater Cultural Heritage appears to be Aboriginal underwater cultural heritage, Woodside's Principal Heritage Adviser must notify the appropriate Traditional Custodians to determine whether it is a heritage site and if so, how the site should be managed.
- If the potential Underwater Cultural Heritage appears to be a shipwreck or aircraft that has been wrecked for more than 75 years, or is otherwise reportable under Section 40 of the Underwater Cultural Heritage Act 2018 (Cth) (UCH Act), Woodside's Principal Heritage Advisor must notify the Minister responsible for the UCH Act, the Department of Climate Change, Energy, Environment and Water (DCCEEW) underwater archaeology section through the Australasian Underwater Cultural Heritage Database, and the Western Australian Museum.
- If the suspected heritage object includes human remains, Woodside's Principal Heritage Adviser must also notify:
  - the Australian Federal Police (phone: 131 444) of the location of the remains, that the remains are likely to be historic or Aboriginal in origin, and that it may be appropriate that Traditional Custodians and a maritime archaeologist are present during any handling of the remains, and
  - the Office of the Federal Environment Minister in accordance with Section 20 of the Aboriginal and Torres Strait Islander Heritage Protection Act 1984 (Cth).
- Work must not recommence in the vicinity of the potential heritage object until Woodside's Principal Heritage Adviser provides written approval. Woodside's Principal Heritage Adviser must only provide written approval once agreed management measures are implemented consistent with approvals and legislation or where the potential Underwater Cultural Heritage is confirmed to not be Underwater Cultural Heritage.

7.2.4 Offshore Seabird Management Plan

Vessels will implement Woodside's Offshore SBMP, which aligns with recommendations in the National Light Pollution Guidelines for Wildlife (CoA 2023). When implemented, the Offshore SBMP addresses seabird interaction reporting and management for offshore/inshore activities within the North West Marine Region, specifically where the activity is located within a nocturnal seabird species BIA.

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The purpose of the Offshore 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.

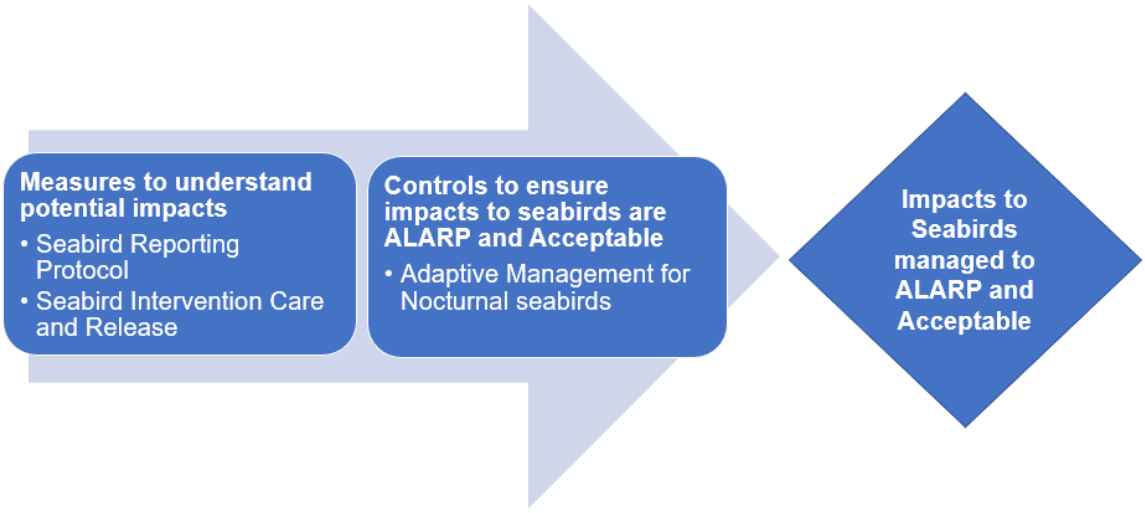

Figure 7-2: Schematic for SBMP to manage seabird impacts to ALARP and acceptable

The Offshore SBMP adaptive management framework has been established to manage the uncertainty of the potential impacts of artificial night at light on nocturnal seabirds and is applied when a Project is within a nocturnal seabird BIA and greater than 20 km from a known rookery. Where interactions with nocturnal seabirds are identified, adaptive management controls under the Offshore 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 of block-out-blinds on portholes and windows not necessary for safety and/or navigation.

The Offshore SBMP will be available on board vessels during the petroleum activity. MODU and vessel crew will be made aware of the Offshore SBMP through the campaign environment induction. This induction will include the requirement to report seabird sightings to the offshore HSE advisors on the MODU and the onshore Woodside Environment Advisor. The Offshore SBMP will be implemented by frontline personnel with support from Woodside activity focused Environmental Advisors, the Science team and a dedicated seabird subject matter expert.

7.2.5 Waste management

The petroleum activity will generate wastes from the operation of vessels (e.g. garbage), the removal of subsea equipment from Petroleum License WA-49-L, and the decontamination of the equipment onshore (if required). The nature and scale or waste generated directly by the petroleum activity is described in Section 6.8.9.

Woodside and its contractors have, or will, develop waste management plans that will be implemented during the Petroleum Activity. These include:

- vessel-specific waste management plans, and
- a recycling and disposal waste management plan for recovered equipment.

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Vessel-specific waste management plans are standard requirements onboard vessels contracted by Woodside. These plans are routinely implemented by vessel contractors to meet relevant requirements, such as Marine Orders giving effect to MARPOL.

The recycling and disposal management plan details how the recovered equipment will be stored and disposed of. The plan details how waste materials will be managed in a safe and environmentally responsible way. The plan will be implemented by Woodside's contractors, which will operate the onshore equipment recovery and decontamination facilities. Woodside will conduct periodic inspections of waste contractor facilities to verify the waste management plan is in place and effective. Woodside will build on learnings from Woodside's current decommissioning projects in the North West Shelf and utilise existing facilities in Karratha, Onslow, and Henderson to process recyclable materials. Materials will be weighed and tracked.

The final waste management strategy for each piece of recovered subsea infrastructure is being developed by Woodside. The waste management hierarchy preferences (Figure 6-2) have been provided to the waste management contractors during the tendering process.

Woodside is targeting a 90% landfill avoidance by weight for the Petroleum Activity.

The contractor evaluation and selection process included:

Issuing the onshore disposal/recycling sub-contract package to a variety of bidders including varying tier of company, geographic location and core business. This was done to establish the industry capabilities in order to develop a functional execution plan.

The evaluation criteria included:

- offshore testing,
- logistic capability,
- provision of local yard & facilities,
- onshore cleaning (hazardous materials),
- hazardous material disposal,
- onshore deconstruction,
- mixed material processing,
- metallic recycling,
- plastic recycling, and
- manpower and equipment.

The following preferences were made during the waste management contractor tender evaluation:

- Selection of preferred onshore discharge points and dismantling and clean-up sites is:
  - primarily driven by the proximity of the onshore discharge points / port facilities to the offshore field,
  - additional evaluation criteria included port facilities and capabilities, port services availability, etc,
  - number of vessel trips between Julimar-Brunello field and port, and
  - port locations considered.
- Selection of dismantling and clean-up sites included in item above with preference for onshore locations that are in proximity to the port to minimise overland transportation and logistics requirements.
- Preference for waste management contractors who can follow the waste management hierarchy philosophy, to reduce waste disposal to landfill.

Woodside will establish a role, the Onshore Processing and Recycling Supervisor, that will conduct onsite surveying/verification of all retrieved infrastructure. The role is responsible for obtaining key chain-of-custody documentation from the contractor regarding the end-state of wastes generated during decommissioning. The Woodside Decommissioning Logistics Lead will conduct waste environmental audits on contractor and subcontractor sites prior to sites receiving retrieved infrastructure and during operations. This audit will be

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undertaken to confirm that the contractor has the facilities and systems to be able to manage wastes in an environmentally responsible manner and in accordance with the waste management plan.

Contaminants such as naturally occurring radioactive material (NORM) and mercury are highly unlikely to be present given the well infrastructure was not used in the production of hydrocarbons. Once onboard the vessel, this equipment will be checked for contaminants and, if present, segregated from other waste. All equipment containing contaminants will be cleaned onshore. Clean recovered well infrastructure will be recycled if it meets clearance criteria. Recovered well infrastructure that doesn't meet clearance criteria and contaminated cleaning wastes will be disposed of at an approved facility in accordance with legislative requirements.

Woodside is committed to clear stewardship and assurance measures to verify implementation of the waste management plan under the agreement with the contractor. Woodside will maintain a register of final disposal details to maintain stewardship especially regarding hazardous wastes. Material will be tracked as they move from offshore recovery through the onshore receival assessment, cleaning, decontamination, de-energising, and disposal stages. The waste management plan requires a tracking and reporting system be implemented to record details of all recovered equipment being recycled or disposed of.

Woodside is committed to re-using, repurposing and/or recycling as much of the decommissioned infrastructure as practicable. Wastes generated during the petroleum activity, including recovery of well infrastructure, will be disposed in accordance with the recycling and disposal management plan.

Non-hazardous waste materials will be stored onboard the project vessels in suitable containers (segregated from hazardous materials) for transport to shore for disposal/recycling in accordance with local regulations.

Hazardous waste generated will be document and tracked, segregated from other waste streams, and stored in suitable containers. Recyclable hazardous wastes, such as oils and batteries, will be stored separately from non-recyclable materials. Waste will be disposed of onshore at a licenced facility.

Decontamination of potentially hazardous material will consist of:

- testing to quantify hazardous material and confirm the removal of hazards after decontamination,
- internal flushing of structures and flexibles as required for processing and disposal,
- collection of the wastewater and extraction of contaminated material,
- disposal of contaminated waste through authorised facilities, and
- relocation of cleaned equipment from hazardous to non-hazardous storage locations for handover to the disposal pathway.

Metallic material, which comprises most of the equipment to be recovered, will be processed following decontamination (if required) by breaking it down for recycling. Tooling will be developed to process mixed material to separate metallic equipment from other materials (e.g., separating plastic coatings from chemical line steel carcasses). Metallic material, including metal recovered from mixed materials, is expected to be recycled. The complexity of recovering and recycling plastics is variable depending on the nature of the plastics; some plastic material may not feasibly be recycled. Material that cannot practicably be recycled will be disposed of in accordance with its waste classification. Non-hazardous waste, such as marine growth, general wastes, and plastics not suitable for recycling will be sent to landfill. Hazardous waste will be packaged, stored, transported, and disposed of in accordance with the *WA Environmental Protection (Controlled Waste) Regulations 2004.* Hazardous wastes are expected to be entombed with a dedicated long-term hazardous waste disposal facility.

The waste management plan will meet and/or maintain consistency (Minamata Convention) with relevant requirements such as:

- classification and management of wastes in accordance with WA Environmental Protection (Controlled Waste) Regulations 2004,
- the Minamata Convention, and
- the Basel Convention.

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7.3 Roles and responsibilities

Key roles and responsibilities for Woodside and contractor personnel relating to implementing, managing and reviewing this EP are described in Table 7-4. Roles and responsibilities for oil spill preparation and response are outlined in Appendix H (Oil Pollution First Strike Plan) and the Woodside Incident Management Handbook. It is the responsibility of Woodside and contractors to implement the Woodside Corporate Health, Safety and Environment Policy (Appendix A) in their areas of responsibility and to ensure that the personnel are suitably trained and competent in their respective roles.

Table 7-4: Roles and responsibilities

Title (role)	Environmental responsibilities
All personnel	
All offshore-based personnel and onshore support personnel	• Understand the Woodside standards and procedures that apply to their area of work. • Understand the environmental risks and control measures that apply to their area of work. • Carry out assigned activities in accordance with approved procedures and the EP. • Follow instructions from relevant supervisor with respect to environmental protection. • Cease operations which are deemed to present an unacceptable risk to the environment. • Participate in environmental assurance activities and inspections as required. • Prompt reporting of environmental hazards/incidents to their supervisor and assist in event investigation. • Attend HSE meetings, training and drills when required.
Office-based personnel	
Woodside Project Manager	• Monitor and manage the activity so it is performed as per the relevant standards and commitments in this EP and approval conditions. • Notify the Woodside Environment Adviser in a timely manner of any scope changes. • Liaise with regulatory authorities as required. • Review this EP as necessary and manage change requests. • Provide sufficient resources to implement the permanent plugging-related management measures (i.e. controls, EPOs, PSs and MC) in this EP. • Ensure MODU and support vessel personnel are given an HSE Induction, as per Section 7.4.2 of this EP, at the start of the permanent plugging programs. • Verify that contractors meet environmental related contractual obligations. • Confirm controls and performance standards in this EP are actioned, as required, before permanent plugging commences. • Ensure the MODU start-up meets the requirements of the Drilling and Managing Rig Operations Process. • Confirm environmental incident reporting meets regulatory requirements (as outlined in this EP) and Woodside's HSE Reporting and Investigation Procedure. • Monitor and close out corrective actions identified during environmental monitoring or audits.
Woodside Head of Projects/Region (Global Wells and Seismic)	• Ensure drilling operations are undertaken as per this EP and approval conditions. • Provide sufficient resources to implement the drilling-related management measures (i.e. controls, EPOs, PSs and MC) in this EP. • Ensure MODU and project vessel personnel are given an Environmental Induction, as per Section 7.4.2 of this EP, at the start of the drilling programs. • Confirm controls and performance standards in this EP are actioned, as required, before drilling commences. • Ensure the MODU start-up meets the requirements of the Drilling and Managing Rig Operations Process.

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Title (role)	Environmental responsibilities
Subsea Delivery Lead	• Monitor and manage the activity so it is performed as per the relevant standards and commitments in this EP and approval conditions. • Notify the Woodside Environment Adviser in a timely manner of any scope changes. • Liaise with regulatory authorities as required. • Provide sufficient resources to implement the subsea related management measures (i.e. controls, EPOs, PSs and MC) in this EP. • Ensure vessel personnel are given an HSE Induction, as per Section 7.4.2 of this EP, at the start of the activities. • Verify that contractors meet environmental related contractual obligations. • Confirm controls and performance standards in this EP are actioned, as required, before activities commence. • Ensure relevant vessels meet the requirements of Woodside's Marine Operations Operating Standard. • Review this EP and manage change requests for the activity. • Confirm that site-based personnel are given an HSE Induction, as per Section 7.4.2 of this EP, at the start of the activity. • Ensure all chemicals and drill fluids proposed to be discharged are assessed and approved as per the requirements of the EP. • Confirm environmental incident reporting meets regulatory requirements (as outlined in this EP) and Woodside's HSE Reporting and Investigation Procedure. • Monitor and close out corrective actions identified during environmental monitoring or audits.
Woodside Drilling Superintendent	• Ensure the permanent plugging program meets the requirements detailed in this EP. • Ensure changes to the permanent plugging program are communicated to the Woodside Environmental Adviser. • Ensure Woodside's Well Site Leader is provided with the resources required to ensure the management measures (i.e. controls, EPOs, EPs and MC) in this EP are implemented. • Confirm environmental incident reporting meets regulatory requirements (as outlined in this EP) and Woodside's HSE Reporting and Investigation Procedure. • Monitor and close out corrective actions identified during environmental monitoring or audits.
Woodside Drilling, Completion and Subsea Engineers	• Ensure changes to the permanent plugging program are communicated to the Woodside Environmental Adviser. • Ensure all drilling and completions fluid chemical components and other fluids that may be used downhole have been reviewed by the Drilling and Completions Environmental Adviser.

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Title (role)	Environmental responsibilities
Woodside Environmental Adviser	• Verify relevant Environmental Approvals for the activities exist before commencing activity. • Track compliance with performance outcomes and performance standards as per the requirements of this EP. • Prepare environmental component of relevant Induction Package. • Assist with the review, investigation and reporting of environmental incidents. • Ensure environmental monitoring and inspections/audits are performed as per the requirements of this EP. • Liaise with relevant regulatory authorities as required. • Assist in preparing required external regulatory reports, in line with environmental approval requirements and Woodside incident reporting procedures. • Monitor and close out corrective actions (Campaign Action Register) identified during environmental monitoring or audits. • Provide advice to relevant Woodside personnel and contractors to help them understand their environment responsibilities. • Liaise with contractors to ensure communication and understanding of environment requirements as outlined in this EP and in line with Woodside's Compass values and management systems.
Woodside Corporate Affairs Adviser/First Nations Adviser	• Prepare and implement the Stakeholder Consultation Plan for the Petroleum Activity. • Report on stakeholder consultation. • Continuously liaise and provide notification as required as outlined in the EP.
Woodside Marine Assurance Superintendent	• Conduct relevant audit and inspection to confirm vessels comply with relevant Marine Orders and Woodside Marine Charters Instructions requirements to meet safety, navigation and emergency response requirements.
Corporate Incident Management Team (CIMT) Incident Commander (IC)	On receiving notification of an incident, the Woodside CIMT incident commander (IC) shall: • establish and take control of the Incident Management Team and establish an appropriate command structure for the incident • assess the situation, identify risks and actions to minimise the risk • communicate impact, risk and progress to the Crisis Management Team and stakeholders • develop the Incident Action Plan (IAP), including objectives for action • approve, implement and manage the IAP • communicate within and beyond the incident management structure • manage and review safety of responders • address the broader public safety considerations • conclude and review activities.
Mobile Offshore Drilling Unit (MODU)-based personnel	
MODU Offshore Installation Manager (OIM)	• Ensure the MODU's management system and procedures are implemented. • Ensure personnel starting work on the MODU receive an environmental induction that meets the requirements specified in this EP. • Ensure personnel are competent to perform the work they have been assigned. • Verify that emergency drills are conducted as per the MODU's schedule. • Ensure the MODU's Emergency Response Team has been given sufficient training to implement the MODU's SOPEP. • Ensure any environmental incidents or breaches of outcomes or standards are reported immediately to the Well Site Leader. • Ensure corrective actions for incidents or breaches are developed, communicated to the Well Site Leader, and tracked to close-out in a timely manner.

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Title (role)	Environmental responsibilities
Woodside Well Site Leader	• Ensure the permanent plugging program is performed as detailed in this EP. • Ensure the management measures (i.e. controls, EPOs, PSs and MC) detailed in this EP (relevant to offshore activities) are implemented on the MODU (other controls will be implemented onshore). • Ensure environmental incidents or breaches of outcomes or standards are reported as per the Woodside Corporate Event Notification Matrix. Ensure corrective actions for incidents and breaches are developed, tracked and closed out in a timely manner. • Ensure periodic environmental inspections/reviews are completed. Ensure corrective actions from inspections are developed, tracked and closed out in a timely manner.
Woodside Offshore HSE Adviser	• Support the Well Site Leader to ensure the controls detailed in this EP relevant to offshore activities are implemented on the MODU and help collect and record evidence of implementation (other controls are implemented and evidence collected onshore). • Support the Well Site Leader to ensure the EPOs are met and the PSs detailed in this EP are implemented on the MODU. • Support the Well Site Leader to ensure environmental incidents or breaches of outcomes or standards outlined in this EP, are reported, and corrective actions for incidents and breaches are developed, tracked and closed out in a timely manner. • Ensure periodic environmental inspections/reviews are completed and corrective actions from inspections are developed, tracked and closed out in a timely manner. • Review contractors' procedures, input into Toolbox talks and JSAs. • Provide day-to-day environmental support for activities in consultation with the Woodside Environment Adviser.
Drilling Logistics Coordinator	• Ensure waste is managed on the MODU and sent to shore as per the Drilling and Completions Waste Management Plan (WMP).
Vessel-based personnel	
Vessels Master	• Ensure personnel commencing work on the vessel receive an environmental induction that meets the relevant requirements specified in this EP. • Ensure personnel are competent to perform the work they have been assigned. • Verify SOPEP drills are conducted as per the vessel's schedule. • Ensure the vessel Emergency Response Team has been given sufficient training to implement the SOPEP. • Ensure any environmental incidents or breaches of relevant EPOs or PSs detailed in this EP are reported immediately to the Woodside Well Site Leader. • Ensure corrective actions for incidents or breaches are developed, communicated to the Well Site Leader, and tracked to close-out in a timely manner. Ensure close-out of actions is communicated to the Well Site Leader.
Vessel Logistics Coordinators	• Ensure waste is managed on the relevant support vessels and sent to shore as per the relevant WMP.
Vessel HSE Advisers	• Refer to Woodside HSE Offshore Adviser responsibilities detailed above under MODU-based personnel.

7.4 Training and competency

7.4.1 Overview

Woodside as part of its contracting process assesses a proposed contractor’s environmental management systems to determine the level of compliance with the standard AS/NZ ISO 14001. This assessment is performed for the Petroleum Activity as part of the pre-mobilisation process. The assessment determines whether there is a clearly defined organisational structure that sets out the roles and responsibilities for key positions. The assessment also assesses whether there is an up-to-date training matrix that defines any corporate and site/activity-specific environmental training and competency requirements.

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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 (including underwater cultural heritage),
- regulations relevant to the activity,
- Woodside's Environmental Management System – Health Safety and Environment Policy,
- EP importance/structure/implementation/roles and responsibilities,
- main environmental aspects/hazards and potential environmental impacts and related EPOs,
- oil spill preparedness and response,
- monitoring and reporting on EPOs and standards using measurement criteria,
- incident reporting, and
- Unexpected Finds Procedure and reporting requirements (Section 7.2.3).

7.4.3 Petroleum activity-specific environmental awareness

Before commencing the plug and abandonment campaign associated with the Petroleum Activity, 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 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.

7.4.4 Management of training requirements

All personnel on the MODU and project vessels are required to be competent to perform their assigned positions. This may be in the form of external or 'on the job' training. The vessel Safety Training Coordinator (or equivalent) is responsible for identifying training needs, keeping records of training performed and identifying minimum training requirements.

7.5 Monitoring, auditing, and managing non-conformance and review

7.5.1 Monitoring

Regulation 22(5) states that the implementation strategy is to provide for the monitoring, audit, management of non-conformance and review of operator's environmental performance and the implementation strategy itself.

This section of the EP outlines the measures undertaken by Woodside to regularly monitor the management of environmental risks and impacts of the Petroleum Activity against the EPOs, EPSs and MCs, with a view to continuous improvement of environmental performance. The effectiveness of the implementation strategy is also reviewed periodically as part of the monitoring and assurance process.

A key tool that is used throughout the implementation of the EP is Woodside's environmental compliance and action register (ECAR). This is an internal tool that is developed at EP acceptance and is maintained until the EP is closed. The ECAR contains all the commitments, controls, performance standards and measurement criteria from the EP and tracks compliance against each of these items. Before a project

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vessel is mobilised, Woodside confirms the compliance systems in place on the vessel and identifies, and records in the ECAR, the specific records that will be provided by the vessel contractor during the offshore campaign. This provides Woodside with the opportunity to confirm the records provided during the activity are sufficient for demonstrating compliance against the EP. It also serves as a central depository for compliance information relevant to each Petroleum Activity.

7.5.2 Auditing

Environmental performance auditing will be performed to:

- identify potential new, or changes to existing environmental impacts and risk, and methods for reducing those to ALARP,
- confirm that mitigation measures detailed in this EP are effectively reducing environmental impacts and risk, that mitigation measures proposed are practicable and provide appropriate information to verify compliance,
- confirm compliance with the Performance Outcomes, Controls and Standards detailed in this EP, and
- internal auditing will be performed to cover each key Petroleum Activity as summarised below.

7.5.2.1 Mobile offshore drilling unit activities

Internal auditing is performed on a MODU-specific schedule, rather than a schedule to align with the Petroleum Activity. This enables continuous review and improvement of environmental performance over the term of the MODU contract. The following internal audits, inspections and reviews will be performed to review the environmental performance of the activities:

Survey environment rig equipment for a newly contracted MODU (if not previously contracted to Woodside within the last 2 years) against Woodside's Manage Campaign Operations Standard. This standard covers functional and technical requirements for Woodside contracted rigs and their associated equipment. An environment rig equipment survey scope typically includes mud and solids control systems, environmental discharge control (including drainage management), and loss of containment management.

Complete a minimum of monthly environmental inspection (conducted by offshore Woodside personnel or a delegate) which may include verifying:

- bunkering/transfers between support vessels and MODU/project vessels,
- environment containment including chemical storage, spill response equipment and housekeeping, and
- general MODU environment risks including waste management, drilling fluids oil/water separation, and inspection of subsea and moonpool areas.

Perform environment audits quarterly during the Petroleum Activity, while the MODU is on location (by a Woodside Environment Adviser or delegate), which may include, but is not limited to:

- operational compliance audits relevant to environmental risk of activities which may include compliance with training commitments, discharge requirements, bunkering activities, verification of use of approved chemicals, and satisfactory close out of items from previous audits, and/or
- inspection of selected risk areas/activities (which may include shaker house, drill floor and mud management while commencing riser drilling or reservoir interception) during routine MODU visits throughout the MODU campaign, determined by risk, previous incidents or operation specification requirements.

7.5.2.2 Marine assurance

Woodside's marine assurance is managed by the Marine Assurance Team of the Logistics Function in accordance with Woodside's Marine Offshore Vessel Assurance Procedure. The Woodside process is based on industry standards and consideration of guidelines and recommendations from recognised industry organisations such as Oil Companies International Marine Forum and International Maritime Contractors Association.

The process is mandatory for all vessels (other than tankers and floating production storage and offloading vessels) hired for Woodside operations, including for short-term hires (i.e. <3 months in duration). It defines

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applicable marine offshore assurance activities, ensuring all vessel operators operate seaworthy vessels that meet the requirements for a defined scope of work and are managed with a robust safety management system.

The process is multi-faceted and encompasses the following marine assurance activities:

- offshore vessel management system assessment (OVMSA),
- dynamic positioning (DP) system verification,
- vessel inspections,
- offshore vessel inspection database (OVID) or condition and suitability assessment, and
- 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, and/or
- Marine Warranty Survey.

Upon completion of the marine assurance process, to confirm that identified concerns are addressed appropriately and conditions imposed are managed, the Woodside Marine Assurance Team will issue the vessel a statement of approval. Should a vessel not meet the requirements of the Woodside Marine Offshore Vessel Assurance Process and be rejected, there does exist an opportunity to further scrutinise the proposed vessel.

If a vessel inspection and/or OVMSA verification review is not available and all reasonable efforts based on time and resource availability have been made to complete this (e.g. short-term vessel hire), the Marine Assurance Specialist Offshore may approve the use of an alternative means of inspection, known as a risk assessment.

7.5.2.3 Risk assessment

Woodside conducts a Marine Vessel 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 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, and

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  - contractors' prior experience operating for Woodside.
- Activity risk factors:
  - people health and safety risks (a function of the nature of the work and the area of operation),
  - environmental risks (a function of environmental sensitivity, activity type and magnitude of potential environment damage (e.g. largest credible oil spill scenario)),
  - value risk (likely time and cost consequence to Woodside if the vessel becomes unusable),
  - reputation risk,
  - exposure (i.e. exposure to risk based on duration of project), and
  - industrial relations risk.

The acceptability of the vessel or requirement for further vessel inspections or audits is based on the ratio of vessel score to activity risk. If the vessel management control is not deemed to appropriately manage activity risk, a satisfactory company audit and/or vessel inspection may be required before awarding work.

The risk assessment is valid for the period a vessel is on hire and for the defined scope of work.

7.5.3 Management of non-conformance

Woodside classifies non-conformances with EPOs and standards in this EP as environmental incidents. Woodside employees and contractors are required to report all environmental incidents, and these are managed as per Woodside's HSE Event Reporting and Investigation Procedure which includes learning requirements.

An internal computerised database called First Priority is used to record and report these incidents. Details of the event, immediate action taken to control the situation, investigation outcomes and corrective actions to prevent recurrence are all recorded. Corrective actions are monitored using First Priority and closed out in a timely manner.

Woodside uses a consequence matrix for classification of environmental incidents, with the significant categories being A, B and C. Detailed investigations are completed for all categories A, B, C and high potential environmental incidents.

7.5.4 Review

7.5.4.1 Management review

Within the relevant Environment teams, regular reviews of the effectiveness of the EP Implementation Strategy are undertaken at a frequency commensurate with activity duration and risk. This review may consider:

- P&A key performance indicators (KPIs),
- Effectiveness of tools and systems to monitor environmental performance,
- Lessons learned from implementation during previous campaigns or activities, and/or
- Reviews of oil spill arrangements and testing performed in accordance with this EP.

Within each Asset, Project team or Business Unit, managers review environmental performance regularly, usually though incident and event reporting and monthly HSE reports. The outcome of such reviews will inform whether further action is required to address key or recurring environmental performance matters.

7.5.4.2 Learning and knowledge sharing

Learning and knowledge sharing occurs via several different methods including:

- event investigations,
- event bulletins,

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- after action review conducted at the end of each well, including review of environmental incidents as relevant,
- ongoing communication with MODU operators,
- formal and informal industry benchmarking,
- cross-asset learnings, and
- engineering and technical authorities discipline communications and sharing.

7.5.4.3 Review of impacts, risks and controls across the life of the EP

In the unlikely case that activities described in this EP do not occur continuously or sequentially, before recommencing activities after a cessation period greater than 12 months, impacts, risks and controls will be reviewed.

The process will identify or review impacts and risks associated with the newly-commencing activity, and will identify or review controls to ensure impacts and risks remain/are reduced to ALARP and acceptable levels. Information learned from previous activities conducted under this EP will be considered. Controls which have previously been excluded on the basis of proportionality will be reconsidered. Any required changes will be managed by the Management of Change (MOC) process outlined in Section 7.8.

7.6 Management of knowledge

Review of knowledge relevant to the existing environment is undertaken to identify changes relating to the understanding of the environment or legislation that supports the risk and impact assessments for EPs (in-force and in-preparation). New knowledge checks take place both routinely primarily via quarterly and annual knowledge reviews and ad hoc (as information is obtained), and encompasses the following topics:

- Environmental science – update checks conducted via desktop reviews: scientific literature, government publications and Woodside supported publications and studies relating to existing environment topics (including but not limited to species and habitats) as well as EPBC Act Matters of National Environmental Significance (Part 3) and Part 13 statutory instruments.
- Socio-economic environment and stakeholder information – update checks conducted via desktop reviews: scientific literature, government publications and Woodside consultation; and,
- Environmental legislation – monitoring of emerging regulatory changes and the subsequent management of regulatory change (as outlined in the WMS Regulatory Compliance Management Procedure).

A management of knowledge tracker is maintained to record reviews and updates. Communication of relevant new knowledge is addressed at the EP Consolidation meetings where changes in knowledge prompt a consideration of MOC, this is actioned and documented appropriately.

The frequency and documentation of reviews, communication of relevant new knowledge and consideration of MOC are documented in the WMS EP Guideline.

Any relevant new information on cultural values and heritage will be assessed using the EP Management of Change Process.

Under the oil spill Operational and 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.

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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 description described in this EP including: review of advances in technology at stages where new equipment may be selected such as vessel contracting; changes in understanding of the environment, *EPBC Act* listed threatened and migratory species status, Part 13 statutory instruments (recovery plans, threat abatement plans, conservation advice, wildlife conservation plans) and current requirements for AMPs; and potential new advice from external stakeholders, will be managed in accordance with Regulation 39 of the Environment Regulations.

Risk will be assessed in accordance with the environmental risk management methodology detailed in this EP to determine the significance of any potential new environmental impacts or risks not provided for in this EP. Risk assessment outcomes are reviewed in compliance with Regulation 39 of the Environment Regulations.

Minor changes where a review of the activity and the environmental risks and impacts of the activity do not trigger a requirement for a formal revision under Regulation 39 of the Environment Regulations, will be considered a 'minor revision'. Minor administrative changes to this EP, where an assessment of the environmental risks and impacts is not required (e.g. document references, phone numbers, etc.), will also be considered a 'minor revision'. Minor revisions as defined above will be made to this EP using Woodside's document control process. Minor revisions will be tracked in an MOC Register to ensure visibility of cumulative risk changes, as well as enable internal EP updates/reissuing as required. This document will be made available to NOPSEMA during regulator environment inspections.

7.8.2 Oil Pollution Emergency Plan management of change

Relevant documents from the OPEP will be reviewed in the following circumstances:

- implementation of improved preparedness measures,
- a change in the availability of equipment stockpiles,
- a change in the availability of personnel that reduces or improves preparedness and the capacity to respond,
- the introduction of a new or improved technology that may be considered in a response for this activity,
- to incorporate, where relevant, lessons learned from exercises or events, and/or
- 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 38 and 39 of the Environment Regulations to determine if EP, including OPEP, resubmission is required. Changes with potential to influence minor or technical changes to the OPEP are tracked in MOC records and 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 refers to 'records', in this context Woodside considers 'records' to mean any hard or soft copy of information such as data, observations, certifications or photographs that can show a point in time and can be duplicated such that they can be stored in compliance systems and/or provided to internal and external auditors (i.e. NOPSEMA) on request.

Record keeping will be in accordance with Regulation 22(6) that addresses maintaining records of emissions and discharges.

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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 system and Management of Change Process.

Woodside hosts community forums at which members are provided updates on Woodside activities on a regular basis (for example community reference group meetings). Representatives who are present at those meetings are from community and industry and include Woodside, State Government (for instance relevant Regional Development Commissions), Local Government, Indigenous Groups, Industry representative bodies, Community and industry organisations.

Relevant persons and those who are simply interested in the activities, can otherwise remain up-to-date on this activity through subscribing to the Woodside website, or by reading the publicly available version of the EP on NOPSEMA's website, where available.

Should consultation feedback be received following EP acceptance that identifies relevant new information or a measure or control that requires implementation or update to meet the intended outcome of consultation, Woodside will apply its EP Management of Knowledge process and Management of Change Process as appropriate.

Woodside has developed a Program of Ongoing Engagement with Traditional Custodians, which complies with Corporate Woodside Policies Strategies and procedures and is directly informed by feedback from Traditional Custodians.

It provides a mechanism for ongoing dialogue so that Traditional Custodians can, on an ongoing basis, provide Woodside with feedback relating to the activity and in relation to caring for and managing country, including Sea Country. The Program will be tailored to each Traditional Custodian group and may include, as agreed with relevant Traditional Custodians:

- social investment to support Indigenous ranger programs,
- support for Indigenous oil spill response capabilities,
- support for recording Sea Country values,
- support to Traditional Custodian groups to build capabilities and capacity with respect to ability to engage with Woodside and the broader oil and gas industry on activities,
- development of ongoing relationships with Traditional Custodian groups, and/or
- any other initiatives proposed for protecting Country, including cultural values.

At the time of EP submission, a number of specific activities as part of ongoing consultation regarding the activity are planned with Traditional Custodians. Where Traditional Custodian relevant persons have requested information or further engagement considered as ongoing consultation, but have not requested a framework agreement, these requests have been captured in Table 7-5. However, a framework agreement may still be initiated by these groups at any time.

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Table 7-5: Ongoing consultation engagements

Report/information	Recipient	Purpose	Frequency	Content
Program of Ongoing Engagement with Traditional Custodians	Relevant cultural authorities.	Ongoing engagement.	Ongoing. Progress on the Program will be reported in line with annual sustainability reporting via the Woodside website.	Assessment of cultural values. Any relevant new information on cultural values will be assessed using the EP Management of Knowledge (refer to Section 7.6) and Management of Change Process (refer to Section 7.8).
Notification (email)	AHO	As requested by AMSA and AHO during consultation.	No less than 4 weeks prior to commencement and after wellhead removal.	PS 1.2 and PS 1.3 (Section 6.8.1). Date of activity start and end.
Updates (email)			As required.	Changes to planned activities.
Notification (email)	AMSA	As requested by AMSA during consultation.	At least 24-48 hours before operations commence.	PS 1.4 (Section 6.8.1). Date of activity start.
Updates (email)			Provide updates to the AHO and ARC should there be changes to the activity.	Changes to planned activities.
Notification (email)	DoD	Standard practice (overlap with Defence Area).	Prior to commencement and upon completion of activities.	PS 1.2 (Section 6.8.1). Date of activity start.
Notification (email)	DMPE	Good practice.	At least 10 days prior to commencement.	Activity start date.
Notification (email)	AFMA DAFF – Fisheries DPIRD WAFIC CFA DCCEEW Recfishwest Relevant Commonwealth fishery licence holders (North West Slope and Western Deepwater Trawl Fishery) Chevron (adjacent titleholder).	As requested during consultation and/or organisation.	At least 10 days prior to commencement and following completion of activities.	PS 1.2 (Section 6.8.1) Date of activity start and end.

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Report/information	Recipient	Purpose	Frequency	Content
Notification (email)	Australasian Underwater Cultural Heritage Database Any other stakeholders as required in the Unexpected Finds Procedure (Section 7.2.3)	Report any unexpected finds of potential Underwater Cultural Heritage	If triggered by unexpected Finds Procedure	Details of the potential Underwater Cultural Heritage shipwreck or aircraft that has been wrecked for more than 75 years, or is otherwise reportable under Section 40 of the *Underwater Cultural Heritage Act 2018* (Cth) (UCH Act),
Notification (email)	All relevant persons for the proposed activity.	Notification of significant change.	As appropriate.	Notification of significant change. Any relevant new information will be assessed using the EP Knowledge Management System (refer to Section 7.6) and Management of Change Process (refer to Section 7.8).
Emails/meetings	Persons or organisations who provide feedback to Woodside post EP submission.	Identification, assessment and consideration of feedback, claims and/or objections.	As appropriate.	Assessment of claims and/or objections. Relevant new information will be assessed be assessed using the EP Management of Knowledge (refer to Section 7.6) and Management of Change Process (refer to Section 7.8).

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.

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.

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7.11.1.2 Regular health, safety and environment meetings

Project vessel operators will hold regular HSE meetings which cover all crews. During these meetings, environmental incidents will be reviewed, and awareness material presented. All personnel are required to attend the HSE meetings and attendances sheets are retained by the project vessel contractor. Daily meetings held onboard the project vessels will also serve to reinforce environmental awareness during the Petroleum Activity.

Dedicated HSE meetings will also be held with the offshore and Perth-based management to address targeted HSE incidents and initiatives.

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, and
- technical high and low lights.

7.11.2 Routine reporting (external)

7.11.2.1 Start and end notifications of the Petroleum Activity

In accordance with Regulation 54, Woodside will notify NOPSEMA of the start of the Petroleum Activity at least 10 days before the activity commences and will notify NOPSEMA within 10 days of completing the activity.

7.11.2.2 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.	NOPSEMA	Monthly, by the 15th of each month.	Details of recordable incidents that have occurred during the Petroleum Activity for previous month (if applicable).
Environmental Performance Report.	NOPSEMA	Annually, with the first report submitted within 12 months of the commencement of the Petroleum Activity covered by this EP (as per the requirements of Regulation 22(7)).	• Compliance with EPOs, controls and EPSs outlined in this EP, in accordance with the Environment Regulations. • Decommissioning progress update.

7.11.2.3 End of the Environmental Plan

The EP will end when Woodside notifies NOPSEMA that the Petroleum Activity has ended and all of the obligations identified in this EP have been completed, and NOPSEMA has accepted the notification, in accordance with Regulation 46 of the Environment Regulations.

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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 Work Instruction and this Section 7.11 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 Petroleum Activity is:
  - an incident that has caused environmental damage with a Consequence Level of Moderate (C) or above (as defined under Woodside's Risk Table), or
  - an incident that has the potential to cause environmental damage with a Consequence Level of Moderate (C) or above (as defined under Woodside's Risk Table).

The environmental risk assessment for the Petroleum Activity identifies those risks with a potential consequence level of C+ for environment. The incidents that have the potential to cause this level of impact include hydrocarbon loss to the marine environment resulting from a loss of well containment or a vessel fuel tank rupture.

Any such incidents represent potential events which would be reportable incidents. Incident reporting is performed with consideration of NOPSEMA (2025) guidance, stating 'if in doubt, notify NOPSEMA', and assessed on a case-by-case basis to determine if they trigger a reportable incident as defined in this EP and by the Environment Regulations.

Notification

NOPSEMA will be notified of all reportable incidents, according to the requirements of Regulations 47, 48 and 49 of the Environment Regulations. Woodside will:

- report all reportable incidents to the regulator (orally) as soon as practicable, but within 2 hours of the incident or of its detection by Woodside,
- provide a written record of the reported incident to NOPSEMA, the National Offshore Petroleum Titles Administrator and the department of the responsible State Minister (DMPE) As soon as practicable after orally reporting the incident,
- complete a written report for all reportable incidents using a format consistent with the NOPSEMA Form FM0831 – Reportable Environmental Incident which must be submitted to NOPSEMA as soon as possible (ASAP), but within 3 days of the incident or of its detection by Woodside, and
- provide a copy of the written report to the National Offshore Petroleum Titles Administrator and DMPE, within 7 days of the written report being provided to NOPSEMA.

Australian Maritime Safety Authority (AMSA) will be notified of oil spill incidents ASAP after their occurrence, and DCCEEW notified if MNES are to be affected by the oil spill incident.

7.11.4.2 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'.

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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, 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, and
- 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), and
- any loss of hazardous materials.

For oil spill incidents, other agencies and organisations will be notified as appropriate to the nature and scale of the incident as per procedures and contact lists in the Oil Pollution Emergency Arrangements (Australia) and the First Strike Plan (Appendix H).

External incident reporting requirements under the OPGGS (Safety) Regulations, including under Sub Regulation 2.42, notices and reports of dangerous occurrences will be reported to NOPSEMA under the approved activity safety cases.

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Table 7-7: External incident reporting requirements

Event	Responsibility	Notifiable party	Notification requirements	Contact	Contact detail
Any marine incidents during Petroleum Activity.	Vessel Master	AMSA	Incident Alert Form 18 as soon as reasonably practicable. Within 72 hours after becoming aware of the incident, submit Incident Report Form 19.	AMSA	reports@amsa.gov.au
Oil pollution incidents in Commonwealth waters.	Vessel Master	AMSA Rescue Coordination Centre (RCC)	As per Article 8 and Protocol I of MARPOL within 2 hours via the national emergency 24-hour notification contacts and a written report within 24 hours of the request by AMSA.	AMSA RCC Australia	If the ship is at sea, reports are to be made to: Free call: 1800 641 792 Phone: 08 9430 2100 (Fremantle)
Oil pollution incidents in Commonwealth waters.	Vessel Master	AMSA	Without delay as per the *Protection of the Sea (Prevention of Pollution from Ships) Act 1983*, 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
Any oil pollution incident which has the potential to enter a National Park or requires oil spill response activities to be conducted within a National Park.	Vessel Master	DCCEEW	Reported verbally, ASAP.	DNP	Phone: +61 419 293 465
Activity that causes unintentional death of or injury to fauna species listed as Threatened or Migratory under the EPBC Act.	Vessel Master	DCCEEW	Within 7 days of becoming aware.	Secretary of the DCCEEW	Phone: 1800 803 772 Email: protected.species@environment.gov.au

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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 Unit (MEER) Duty Officer that a spill has occurred and, if required, request use of equipment stored in Karratha. Follow up with a written pollution reports as soon as practicable following verbal notification. Additionally, 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 Duty Officer	Phone: 08 9480 9924
Within 24 hours of Woodside reporting an oil spill or discharge of any pollutant that impacts state waters to the appropriate authority (eg. DTMI).	CIMT IC or Delegate	DPIRD	Notification to DPIRD via email within 24 hours of Woodside reporting the incident to the appropriate authority.	DPIRD	environment@dpird.wa.gov.au

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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.	Regulation 21(5), 21(6), 22(2)	Oil Spill Preparedness and Response Mitigation Assessment (Appendix G).
Describes the oil pollution emergency plan.	Regulation 22(8)	Woodside's oil pollution emergency plan has the following components: • Hydrocarbon Spill Australia Regulatory Framework (Appendix J). • Oil Pollution First Strike Plan (Appendix H). • Oil Spill Preparedness and Response Mitigation Assessment (Appendix G).
Details the arrangements for responding to and monitoring oil pollution (to inform response activities), including control measures.	Regulation 22(9)	Oil Spill Preparedness and Response Mitigation Assessment (Appendix G). Oil Pollution First Strike Plan (Appendix H).
Details the arrangements for updating and testing the oil pollution response arrangements.	Regulation 22(8), 22(12), 22(13), 22(14)	EP: Section 7.12.6. 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 response arrangements in the oil pollution emergency plan are consistent with the national system for oil pollution preparedness and response.	Regulation 22(11)	Hydrocarbon Spill Australia Regulatory Framework (Appendix J).

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. Following the mapping of training to Woodside identified competencies, training was then mapped to positions based on their required competencies (Table 7-9).

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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 Course (internal course) or equivalent. • ICS 100/200. • IMO3 or equivalent spill response specialist level with an oil spill response organisation (OSRO). • Participation in L2 activation, exercise or skills maintenance.
Operations, Planning, Logistics and Finance Sections, and other rostered members of the CIMT	• IMT Fundamentals Course or equivalent. • ICS 100/200. • Oil spill theory. • Participation in L2 activation, exercise or skills maintenance.
Environment Unit Leader	• IMT Fundamentals Course. • ICS 100/200. • IMO2 or equivalent spill response specialist level with an OSRO. • Participation in L2 activation, exercise or skills maintenance.
Note on competency/equivalency	
In 2023 Woodside undertook a review of incident and crisis systems, processes and tools to assess whether these were fit-for purpose and has rolled out a change to the Crisis and Emergency Management training and the oil spill response training requirements for IMT roles. The revised IMT Fundamentals training Program aligns with the performance requirements of the PMAOMIR320 – Manage Incident Response Information and PMAOM0R418 – Coordinate Incident Response. In 2023, Woodside took the decision to align its global incident command arrangements to the Incident Command System (ICS). As such all rostered members of the Incident Management Team are trained up to ICS 200. In addition to baseline incident management training, all rostered members of the CIMT undertake a level of hydrocarbon spill response training. Depending upon the role, this may take the form of IMO training or completion of Woodside's internal oil spill training course (OSREC) which involves the completion of two online AMSA Modules (Introduction to National Plan and Incident Management; and Introduction to Oil Spills) and face-to-face training. Woodside Learning Services is responsible for collating and maintaining personnel training records. The HSP Dashboard reflects the competencies required for each oil spill role (IMT/operational).	

7.12.3 Emergency response preparation

The Emergency Operations Centre (EOC), based in Woodside's head office, is the onshore coordination point for an offshore emergency, and the location for the Corporate Incident Management Team (CIMT) during an incident. The CIMT is staffed by an appropriately skilled team available on call 24 hours a day. This team coordinates rescues, minimises damage to the environment and facilities, and liaises with external agencies. Woodside's Incident Command Structure is included in the Oil Pollution First Strike Plan (Appendix H) and response arrangements are further detailed in the Hydrocarbon Spill Australia Regulatory Framework (Appendix J). Roles and responsibilities for facility emergency response are detailed in the Woodside Incident Management Handbook.

Woodside will have an Emergency Response Plan (ERP) in place relevant to the Petroleum Activity. The ERP provides procedural guidance specific to the asset and location of operations to control, coordinate and respond to an emergency or incident. The ERP will contain instructions for vessel emergency, medical emergency, search and rescue, reportable incidents, incident notification, contact information and activation of the contractor's emergency centre and Woodside Communication Centre.

In a vessel-based emergency, the Vessel Master will assume overall onsite command and act as the Incident Controller (IC). All persons aboard the vessel will be required to act under the IC's directions. The vessel will maintain communications with the onshore Project Manager and other emergency services. Emergency response support can be provided by the contractor's emergency centre or Woodside Communication Centre if requested by the IC.

The project vessels will have onboard equipment for responding to emergencies, including medical, firefighting and hydrocarbon spill response equipment.

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7.12.4 Oil and other hazardous materials spill

A significant hydrocarbon spill during the Petroleum Activity is unlikely, but should such an event occur, it has the potential to cause serious environmental and reputational damage if not managed properly. The Hydrocarbon Spill Australia Regulatory Framework document (Appendix J), supported by the Petroleum Activity's Oil Pollution First Strike Plan which provides tactical response guidance to the activity/area (Appendix H), cover spill response for this Petroleum Activity.

The Crisis and Emergency Management (CEM) Business Function manages Woodside's hydrocarbon spill response equipment stockpile. Woodside also maintains a suite of contracts for access to additional specialist response equipment and trained personnel, as required via Australian and international spill response organisations and labour supply companies. In the event of a major spill, Woodside will enact first strike response actions, in liaison with the relevant control agency, as detailed in the Nearshore Pipelines Oil Pollution First Strike Plan. The Nearshore Pipelines Oil Pollution First Strike Plan provides immediate actions required to begin a response. Vessels will have shipboard oil pollution emergency plans (SOPEPs) in accordance with the requirements of MARPOL 73/78 Annex I. These plans outline responsibilities, specify procedures and identify resources available in the event of a hydrocarbon or chemical spill from vessel activities. The Petroleum Activity's Oil Pollution First Strike Plan is intended to work in conjunction with the SOPEPs, if hydrocarbons are released to the marine environment from a vessel.

Woodside has established EPOs, EPSs and MCs to be used for hydrocarbon spill response during the Petroleum Activity, as detailed in Appendix G.

7.12.5 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 (CMT) 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 (see Level 2 above) 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 Teams (ERT) and Incident Management Teams (IMT) 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.

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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 MODU- and vessel-specific	One 'First Strike' drill must be conducted within 2 weeks of commencing an activity. For campaigns with an operational duration of greater than one month, this will occur within the first 2 weeks of commencing the activity and then at least every 6-month hire period thereafter.	Comprehensive exercises test elements of the Oil Pollution First Strike Plan (Appendix H). • Emergency drills are scheduled to test other aspects of the ERP.
Level 2 Response	Exercises are MODU-specific	At least one Emergency Management exercise per MODU per campaign must be conducted within the first month of commencing the hire period and then at every 6-month hire period thereafter.	Test both the facility IMT response and that of the CIMT following handover of incident control. Exercises may include testing of Source Control Response Strategies.
Level 3 Response	Exercises are relevant to all Woodside assets	The number of Crisis Management Team exercises conducted each year is determined by the Chief Executive Officer, in consultation with the Vice President of Security and Emergency Management.	Test Woodside's ability to respond to and manage a crisis-level incident.

7.12.7 Testing of hydrocarbon spill response arrangements

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, and
- 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 Ipieca Good Practice Guide and the Australian Institute for Disaster Resilience Australian Emergency Management Arrangements Handbook. If a spill occurs, enacting these arrangements will underpin Woodside's ability to implement a response across its petroleum activities.

The hydrocarbon spill arrangements shown in the rows of the schedule are tested against Woodside's regulatory commitments. Each arrangement has a support agency/company and an area to be tested (e.g. capability, equipment and personnel). For example, an arrangement could be to test Woodside's personnel capability for conducting operational monitoring, or the ability of the Australian Marine Oil Spill Centre to provide response personnel and equipment.

The vertical columns relate to how hydrocarbon spill arrangements will be tested over the 3-year rolling schedule. The subheading for the column describes the standard method of testing likely to be undertaken

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(e.g. discussion exercise, desktop exercise), and the green cells indicate the arrangements that could be tested for each method.

Some arrangements may be tested across multiple exercises (e.g. critical arrangements) or via other 'additional assurance' methods outside the formal Testing of Arrangements Schedule that also constitute sufficient evidence of testing of arrangements (e.g. audits, no-notice drills, internal exercises, assurance drills).

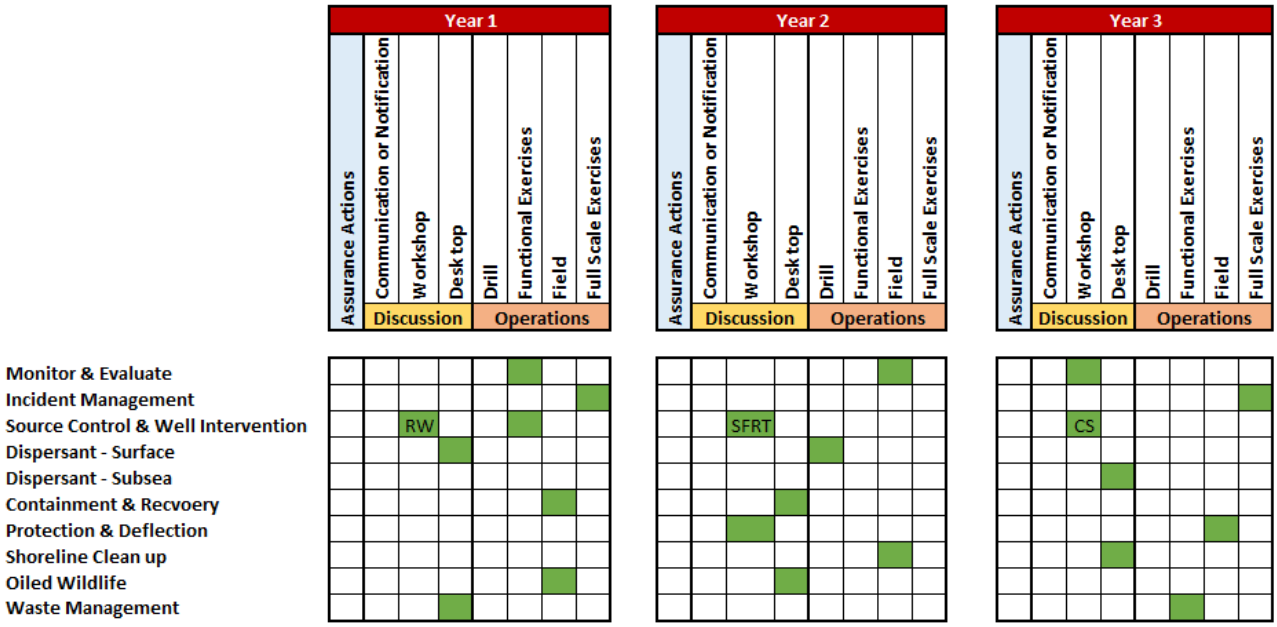

Figure 7-3: Indicative three-yearly testing of arrangements schedule

Note: Schedule is subject to change, additional detail is included in live document

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.

Facilities and relevant support vessels on hire to Woodside receive regular forecasts from Woodside Meteorologists, who liaise closely with the Bureau of Meteorology (BOM). If a cyclone (or severe weather event) is forecast, the path and its development is plotted and monitored using the BOM data. If there is the potential for the cyclone (severe weather event) to affect the Petroleum Activity the asset Cyclone Contingency Plan and the vessel's Cyclone Contingency Plan will be actioned. If required, vessels can transit from the proposed track of the cyclone (severe weather event).

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9. LIST OF TERMS AND ACRONYMS

Table 9-1: List of terms and definitions

Term	Definition
3D	Three dimensional
ABARES	Australian Bureau of Agricultural and Resource Economics and Sciences
ACN	Australian Company Number
AEL	Apache Energy Ltd
AFC	Antifouling Coating
AHO	Australian Hydrographic Office
AHTSV	Anchor handling tug supply vessel
AHV	Anchor handling vessel
AIMS	Australian Institute of Marine Science
AINJ	Auditory Injury
AIS	Automatic Identification System
ALARP	As Low as Reasonably Practicable
AMP	Australian Marine Park
AMSA	Australian Maritime Safety Authority
API	American Petroleum Institute
AS	Australian Standard
ASAP	As soon as possible
ATSB	Australian Transport Safety Bureau
ATSIHP Act	Aboriginal and Torres Strait Islander Heritage Protection Act
AusSAR	Australian Search and Rescue
AWJ	Abrasive water jet
BC Act	Biodiversity Conservation Act
BCF	Bioconcentration Factor
BIA	Biologically important area
BOM	Bureau of Meteorology
BOP	Blow out preventer
BRUVS	Baited remote underwater video systems
BWCMP	Conservation Management Plan for the Blue Whale
CoA	Commonwealth of Australia
CAES	Catch and Effort System
CEFAS	Centre for Environment, Fisheries and Aquaculture Science
CEM	Crisis and Emergency Management (Business Function)
CHP	Commonwealth Heritage Places
CIMT	Corporate Incident Management Team (Level 2/3 incident response)
CMMS	Computerised Maintenance Management System
CMT	Crisis Management Team (Level 3 incident response)
CS	Cost/sacrifice

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Term	Definition
CV	Company Values
DAA	Department of Aboriginal Affairs
DAWE	Department of Agriculture, Water and the Environment
dB	Decibels
DCCEEW	Commonwealth Department of Climate Change, Energy, Environment and Water
DEMIRS	Western Australian Department of Energy, Mining, Industry Regulation and Safety
DHNRDT	Deepwater Horizon Natural Resource Damage Assessment Trustees
DMPE	Department of Mines, Petroleum and Exploration (Formerly DEMIRS)
DNP	Director of National Parks
DoT	Western Australian Department of Transport
DP	Dynamic Positioning
DPIRD	Department of Primary Industries and Regional Development
DPLH	Department of Planning, Lands and Heritage
DoD	Department of Defence
DSEWPaC	Department of Sustainability, Environment, Water, Population and Communities
DTM	Disconnectable turret mooring
DTMI	Department of Transport and Major Infrastructure (Formerly DoT)
ECAR	Environmental Compliance Action Register
EDP	Emergency disconnect package
EDS	Emergency disconnect sequence
EGPMF	Exmouth Gulf Prawn Managed Fishery
EMBA	Environment that May be Affected
EMS	Environmental Management System
ENVID	Environment Identification
EOC	Emergency Operations Centre
EP	Environment Plan
EPBC Act	Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*
EPO	Environmental Performance Outcome
EPS	Environmental Performance Standards
ERP	Emergency Response Plan
ERT	Emergency Response Team
ESD	Ecologically Sustainable Development
ETA	Exploration Temporary Abandonment
F	Feasibility
g	Grams
GHG	Greenhouse Gas
GP	Good Industry Practice
HCTS	Habitat critical to survival
HF	High frequency

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Term	Definition
HOCNF	Harmonised Offshore Chemical Notification Format
HQ	Hazard Quotient
HSE	Health, Safety and Environment
Hz	Hurtz
IAP	Incident Action Plan
IAPP	International Air Pollution Prevention
IBC	Intermediate Bulk Container
IC	Incident Commander
ICLDP	Incident and Crisis Leadership Development Program
ICS	Incident Command System
ID	Identity/identification
ILUA	Indigenous Land Use Agreement
IMCRA	Integrated Marine and Coastal Regionalisation of Australia
IMMR	Inspection, Maintenance, Monitoring and Repair
IMS	Invasive Marine Species
IMSMA	IMS Management Area
IMT	Incident Management Team (onsite)
IOGP	International Association of Oil and Gas Producers
IOPP	International Oil Pollution Prevention
IPA	Indigenous Protected Area
IPIECA	International Petroleum Industry Environmental Conservation Association
IRS	Intervention River System
ISO	International Organization for Standardization
ISV	Infield support vessel
ITOPF	International Tanker Owners Pollution Federation
IUCN	International Union for Conservation of Nature
JSA	Job Safety Assessment
KEF	Key ecological feature
kg	Kilograms
km	Kilometres
km^2	Kilometres squared
KPI	Key Performance Indicator
L	Litres
LAT	Lowest Astronomical Tide
LBL	Long base line
LCS	Legislation, Codes and Standards
LCV	Light construction vessel
LF	Low frequency
LMRP	Lower marine riser package

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Term	Definition
LNG	Liquefied natural gas
m	Metres
m^2	Metres squared
MAE	Major Accident Events
MAFMF	Marine Aquarium Fish Managed Fishery
MARPOL	The International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978 (also known as MARPOL 73/78)
MC	Measurement Criteria
MEE	Major Environmental Events
MEER	Maritime Environmental Emergency Response Unit
MFO	Marine Fauna Observers
MMA	Marine Management Area
MMF	Mackerel Managed Fishery
MMscf	Million standard cubic feet
MNES	Matters of National Environmental Significance
MOC	Management of Change
MODU	Mobile Offshore Drilling Unit
MOPO	Manual of Permitted Operations
MoU	Memorandum of Understanding
MPSV	Multi-purpose support vessel
MSPS	Management System Performance Standard
N/A	Not Applicable
NBPMF	Nikol Bay Prawn Managed Fishery
NERA	National Energy Resources Australia
NHP	National Heritage Places
NIMS	Non-indigenous marine species
NLPG	National Light Pollution Guidelines
nm	Nautical mile
NOAA	National Oceanic and Atmospheric Administration
NOPSEMA	National Offshore Petroleum Safety and Environmental Management Authority
NORM	Naturally occurring radioactive material
NRC	National Resource Council
NW	North West
NWBM	Non-water based mud
NWMR	North-west Marine Region
NWS	Northwest Shelf
NWSTF	North West Slope Trawl Fishery
NZ	New Zealand
OCNS	Offshore Chemical Notification Scheme

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Term	Definition
OGUK	Oil and Gas UK
OPEP	Oil Pollution Emergency Plan
OPGGS Act	Commonwealth *Offshore Petroleum and Greenhouse Gas Storage Act 2006*
OPMF	Onslow Prawn Managed Fishery
OSPAR	Oslo and Paris Commission for the Convention for the Protection of the Marine Environment of the North-East Atlantic
OSPRMA	Oil Spill Preparedness and Response Mitigation Assessment
OSREC	Oil Spill Response Skills Enhancement Course
OSRO	Oil Spill Response Organisation
OVID	Offshore Vessel Inspection Database
OVMSA	Offshore Vessel Management System Assessment
P&A	Plug and abandon
PAA	Petroleum Activities Area
PAD	Pump and dump
PAH	Polycyclic aromatic hydrocarbon
PCE	Pressure control equipment
PCMF	Pilbara Crab Managed Fishery
PDSF	Pilbara Demersal Scalefish Fisheries
PFTMF	Pilbara Fish Trawl Managed Fishery
PGB	Permanent guide base
PJ	Professional Judgement
PK	Peak
PLF	Pilbara Line Fishery
PLONOR	Pose little or no risk
POMF	Pearl Oyster Managed Fishery
PMST	Protected Matters Search Tool
PPB	Parts per billion
PPM	Parts pe million
PS	Performance Standard
PSM	Process Safety Management
PSRA	Process Safety Risk Assessment
PSV	Platform supply vessel
PTFMF	Pilbara Fish Trawl Managed Fishery
PTF	Pilbara Trap Managed Fishery
PTS	Permanent threshold shift
PTW	Permit to work
QA/QC	Quality Assurance, Quality Control
RAR	Rig anchor release
RBA	Risk-based Analysis

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Term	Definition
RCC	Regional Coordination Centre
RMS	Root mean squared
ROV	Remote operated vehicle
SAP-PM	Woodside's CMMS
NWBM	Synthetic based mud
SBMP	Seabird Management Plan
SBTF	Southern Bluefin Tuna Fishery
SCE	Safety and Environment Critical Element
SCQ	Safety and Environment Critical Equipment
SEL	Sound exposure level
SIMAP	Spill Impact Mapping and Analysis Program
SIMOPS	Simultaneous operations
SMPEP	Shipboard Marine Pollution Emergency Plan
SOPEP	Shipboard Oil Pollution Emergency Plan
SPL	Sound pressure levels
SSMF	Specimen Shell Managed Fishery
SV	Societal Value
SWCSMF	South West Coast Salmon Managed Fishery
The Regulations	Commonwealth Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023
VP	Vice president
VHF	Very high frequency
UCH Act	Commonwealth *Underwater Cultural Heritage Act 2018*
UK	United Kingdom
WA	Western Australia
WASCF	Western Australian Sea Cucumber Fishery
WBM	Water based mud
WCBD	Well Control Bridging Document
WCDSCMF	West Coast Deep Sea Crustacean Managed Fishery
WCRLMF	West Coast Rock Lobster Managed Fishery
WDCS	Whale and Dolphin Conservation Society
WDTF	Western Deepwater Trawl Fishery
WHP	World Heritage Place/Property
WLS	Woodside Learning System
WMP	Waste management plan
WMS	Woodside Management System
WOMP	Well Operations Management Plan
WTBF	Western Tuna Billfish Fishery

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APPENDIX A WOODSIDE ENVIRONMENT AND BIODIVERSITY, CLIMATE AND RISK MANAGEMENT POLICIES

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Environment and Biodiversity Policy

OBJECTIVE

Woodside recognises the intrinsic value of nature and the importance of conserving biodiversity and ecosystem services to support the sustainable development of our society. We are committed to doing our part. We understand and embrace our responsibility to undertake activities in an environmentally sustainable way.

PRINCIPLES

Woodside commits to:

- Implementing a systematic approach to the management of the impacts and risks of our operating activities on an ongoing basis, including emissions and air quality, discharge and waste management, water management, biodiversity and protected areas.
- Applying the mitigation hierarchy principle (avoid, minimise, restore) and a continuous improvement approach to ensure we maintain compliance, improve resource use efficiency and reduce our environmental impacts.
- Embedding environmental and biodiversity management, and opportunities, in our business planning and decision-making processes.
- Complying with relevant laws and regulations and applying responsible standards where laws do not exist.
- Not undertaking new activities[1] within the boundaries of natural sites on the UNESCO World Heritage List.[2]
- Not undertaking new activities within IUCN Protected Areas[3] unless compatible with management plans in place for the area.
- Achieving net zero deforestation[4] for new activities.
- Developing Biodiversity Management Plans for all new major projects (CAPEX >US$2 billion).
- Supporting positive biodiversity outcomes in regions and areas in which we undertake activities.
- Setting targets and publicly reporting on our environmental and biodiversity performance.

APPLICABILITY

Responsibility for the application of this Policy rests with all Woodside employees, contractors and joint venturers engaged in activities under Woodside operational control. Woodside managers are also responsible for promotion of this Policy in non-operated joint ventures.

This Policy will be reviewed regularly and updated as required.

Revised by the Woodside Energy Group Ltd Board in December 2024.

[1] Does not include non-industrial and existing activities that are compatible with maintenance of the listed outstanding universal values.
[2] New UNESCO World Heritage Listings that overlap existing activities will be assessed at the time of listing.
[3] New IUCN Protected Areas that overlap existing activities will be assessed at the time of listing.
[4] Definition of Forest: 'native trees higher than 5 metres and a canopy cover of more than 10 percent on the land to be cleared'.

Climate Policy

BACKGROUND

The Intergovernmental Panel on Climate Change has stated that "it is unequivocal that human influence has warmed the atmosphere, ocean and land". An objective of the Paris Agreement is to hold "the increase in the global average temperature to well below 2ºC above pre-industrial levels" and to pursue "efforts to limit the temperature increase to 1.5ºC". Many countries have set targets to reduce greenhouse gas emissions, including by changing the way they produce and consume energy.

OBJECTIVE

Woodside's objective is to thrive in this energy transition as a low cost, lower carbon energy provider.

PRINCIPLES

Woodside aims to achieve the objective by:

- Setting science-based[1] near, mid, and long-term net emissions reduction targets that are consistent with Paris-aligned[2] scenarios, covering equity scope 1 and 2 emissions, both operated and non-operated.[3]
- Developing and operating oil and gas projects in a manner that is consistent with these targets. This includes the deployment of lower-emission technologies (Design Out), supporting efficient operations (Operate Out) and use of robust offsets (Offset) as methods to reduce and offset greenhouse gas emissions.
- Investing in new energy products and lower carbon services to reduce customers' emissions (part of Woodside's Scope 3 emissions), including but not limited to hydrogen, ammonia and carbon capture, utilisation and storage.
- Publishing transparent climate-related disclosures aligned to the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD) or other recognised global reporting standards.
- Aligning our advocacy to the principles of this Climate Policy.

[1] Woodside is using the draft Prototype IFRS Sustainability Disclosure Standard definition of "science-based" (published 2021) which states "targets are considered 'science-based' if they are in line with what the most recent climate science sets out is necessary to meet the goals of the Paris Agreement—limiting global warming to below 2 degrees Celsius above pre-industrial levels and pursuing efforts to limit warming to 1.5 degrees Celsius.". See https://www.ifrs.org/content/dam/ifrs/groups/trwg/trwg-climate-related-disclosures- prototype.pdf (Appendix A).

[2] Woodside is using the draft Prototype IFRS Sustainability Disclosure Standard definition of "Paris-aligned scenarios" (published 2021) which states "scenarios consistent with limiting global warming to below 2 degrees Celsius above pre-industrial levels and pursuing efforts to limit warming to 1.5 degrees Celsius." See https://www.ifrs.org/content/dam/ifrs/groups/trwg/trwg-climate-related-disclosures- prototype.pdf (Appendix A).

[3] Equity emissions means the share of the total emissions arising from an activity that are attributable to Woodside in proportion to Woodside's ownership interest in the activity, irrespective of whether Woodside operates the activity. Operated emissions are the total emissions arising from an activity that Woodside operates, irrespective of Woodside's ownership interest.

APPLICABILITY

Responsibility for the application of this Policy rests with all Woodside employees, contractors and joint venture participants engaged in activities under Woodside operational control. Woodside managers are also responsible for promotion of this Policy in non-operated joint ventures.

This Policy will be reviewed regularly and updated as required.

Reviewed by the Woodside Energy Group Ltd Board in December 2024.

Risk Management Policy

OBJECTIVES

Woodside recognises that risk is inherent in our business and the effective management of risk is vital to deliver our strategic objectives, continued growth and success. We are committed to managing risks in a proactive and effective manner as a source of competitive advantage.

Our approach protects us against potential negative impacts, enables us to take risk for reward and improves our resilience against emerging risks. The objective of our risk management framework is to provide a single consolidated view of risks across the company to understand our full risk exposure and prioritise risk management and governance.

The success of our approach lies in the responsibility placed on everyone at all levels to proactively identify, assess and treat risks relating to the objectives they are accountable for delivering.

PRINCIPLES

Woodside achieves these objectives by:

- Applying a structured and comprehensive framework for the identification, assessment and treatment of current risks and response to emerging risks;
- Ensuring line of sight of financial and non-financial risks at appropriate levels of the organisation;
- Demonstrating leadership and commitment to integrating risk management into our business activities and governance practices;
- Recognising the value of stakeholder engagement, best available information and proactive identification of potential changes in external and internal context;
- Embedding risk management into our critical business processes and control framework;
- Understanding our exposure to risk and tolerance for uncertainty to inform our decision making and assure that Woodside is operating with due regard to the risk appetite endorsed by the Board; and
- Evaluating and improving the effectiveness and efficiency our approach.

APPLICABILITY

The Managing Director of Woodside is accountable to the Board of Directors for ensuring this Policy is effectively implemented.

Responsibility for the application of this Policy rests with all Woodside employees, contractors and joint venturers engaged in activities under Woodside operational control. Woodside managers are also responsible for promotion of this Policy in non-operated joint ventures.

This Policy will be reviewed regularly and updated as required.

Reviewed by the Woodside Energy Group Ltd Board in December 2024.

APPENDIX B RELEVANT REQUIREMENTS

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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, eimponsure 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 the voyage history of the ship in the past 12 months through a pre-arrival report.

Commonwealth legislation	Summary
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.
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.

Commonwealth legislation	Summary
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 ozone-depleting 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* *MARPOL Convention*	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. 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.

Commonwealth legislation	Summary
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*.

APPENDIX C WOODSIDE MASTER EXISTING ENVIRONMENT

Only include this if the master existing environment is being appended to this EP instead of being referred to in another EP under Regulation 56.

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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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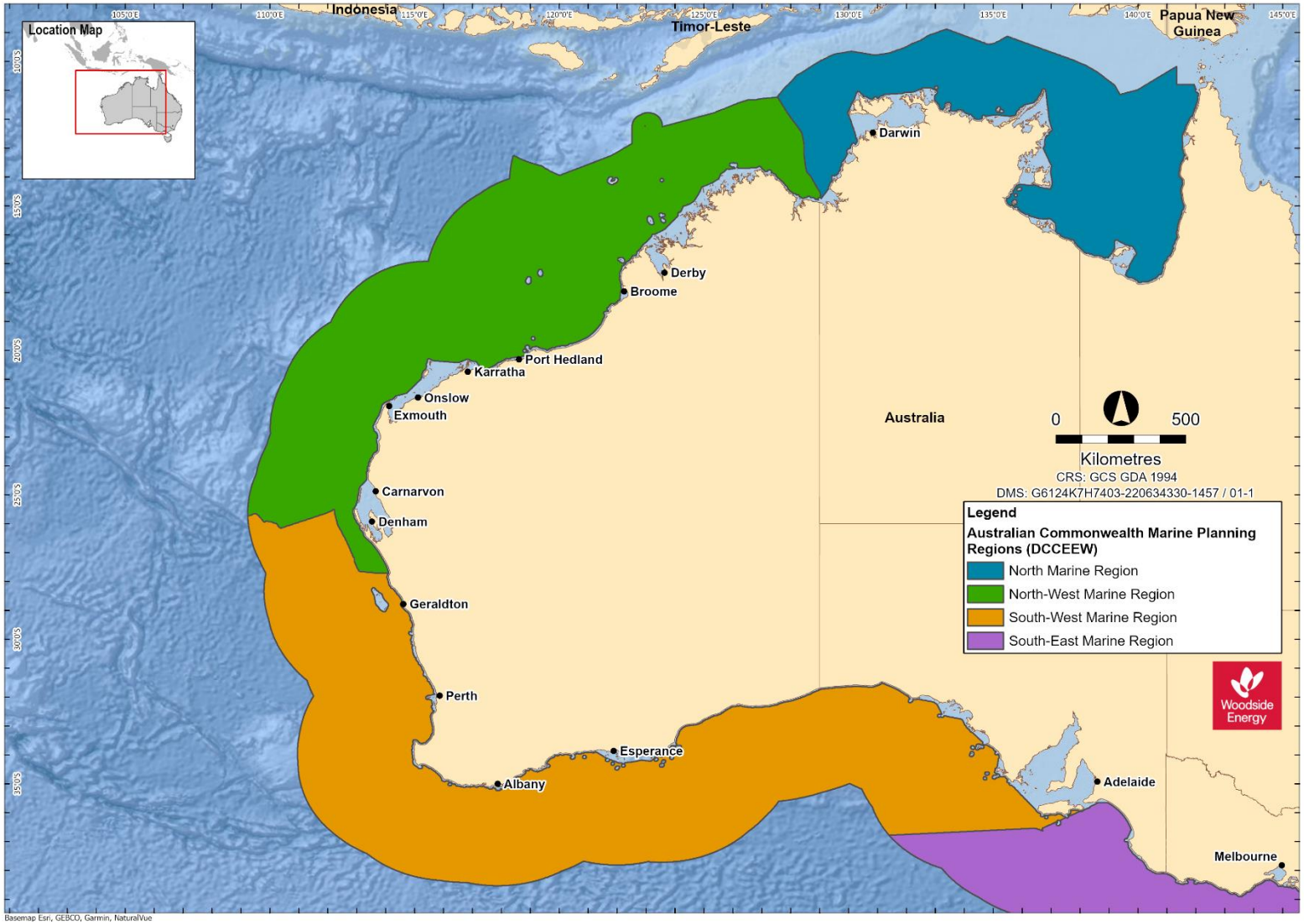

Figure 1-1: Marine bioregions: NWMR, SWMR, NMR and South-East (as defined under the EPBC Act, refer to (DCCEEW, 2021b)

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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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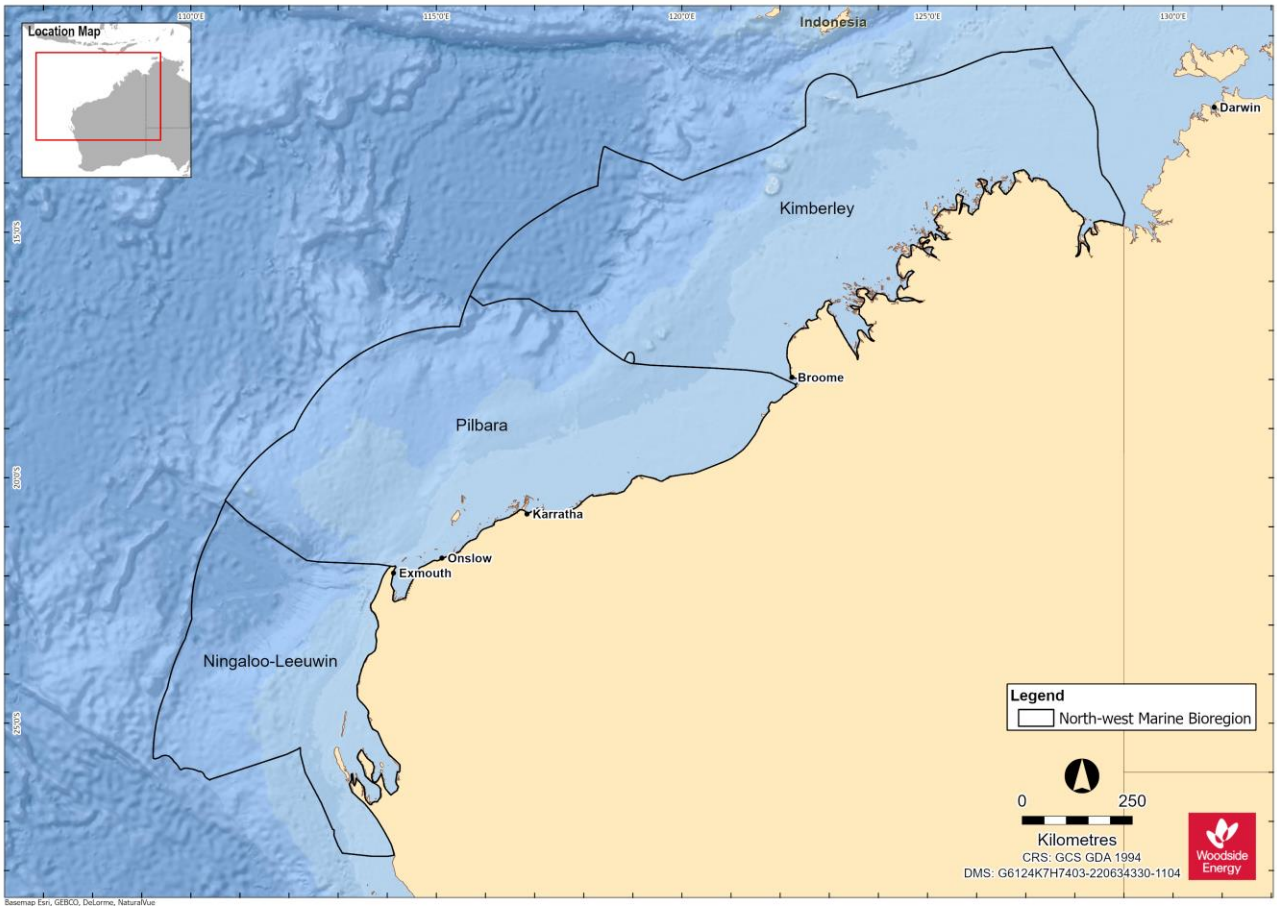

Note: Woodside areas align with the marine systems as described in DEWHA (2007a)

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).

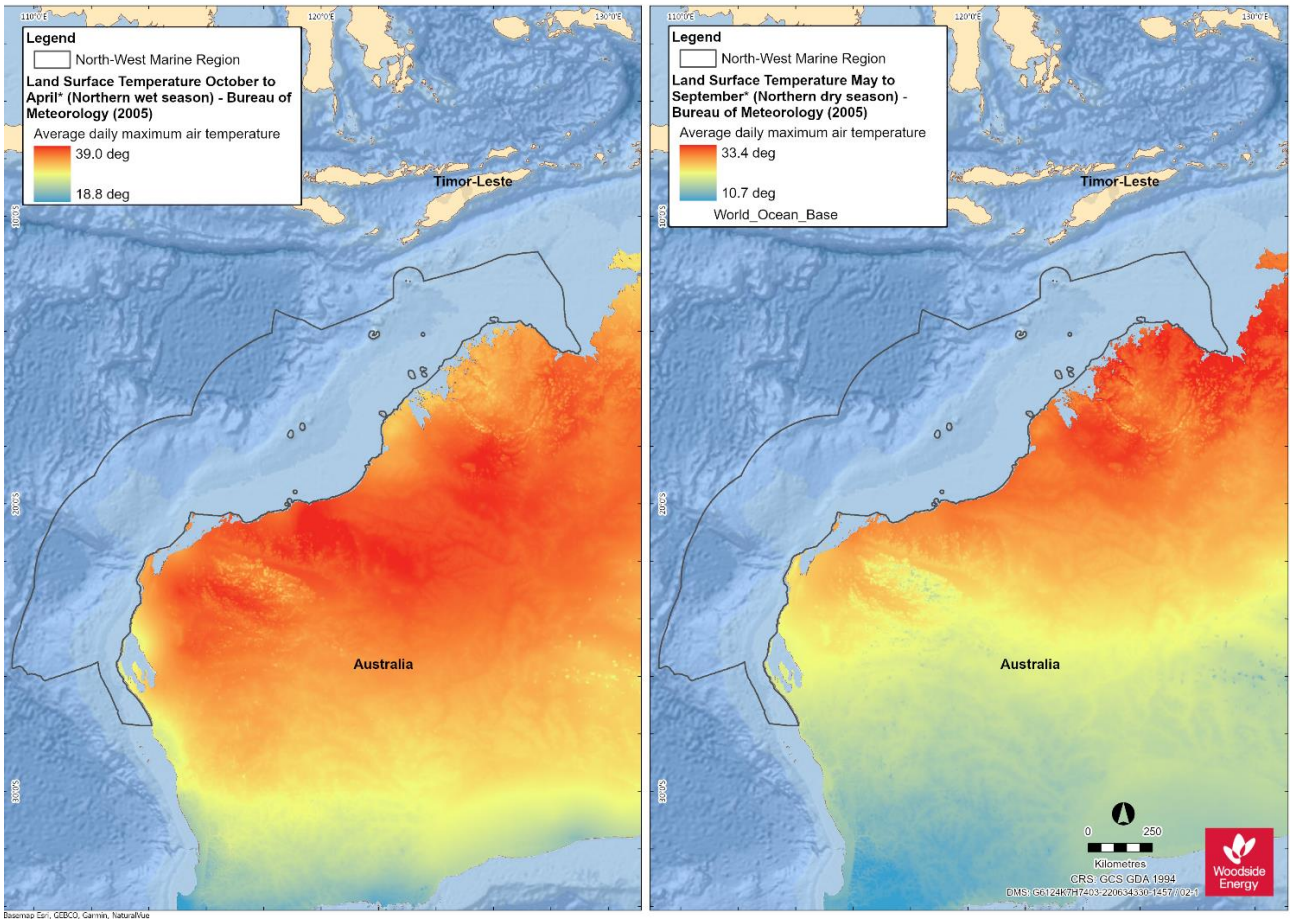

Figure 2-2: Average daily maximum air temperature for land surface adjacent to NWMR: (a) summer (northern wet season) and (b) winter (northern dry season)

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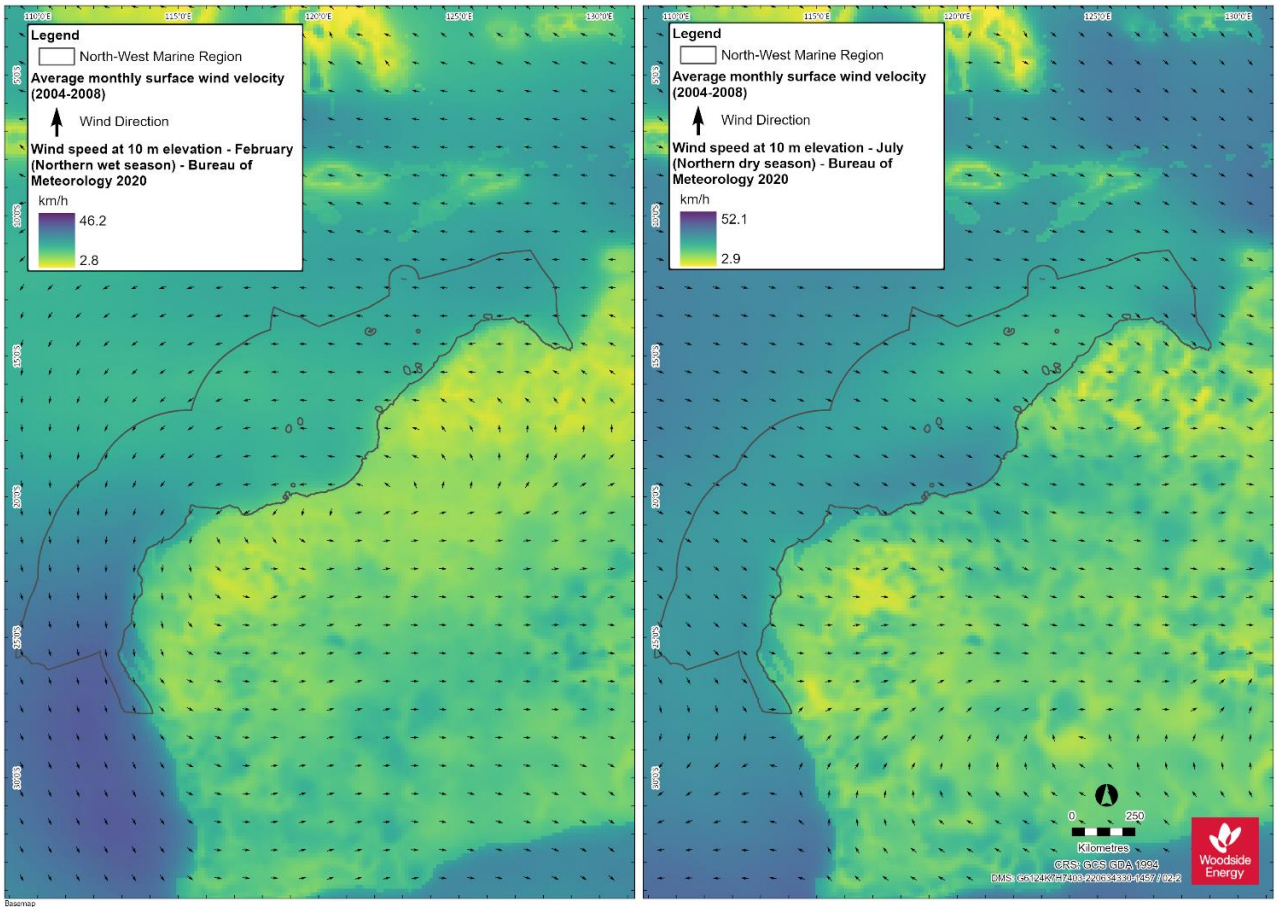

Figure 2-3: Average monthly surface wind direction and velocity for NWMR: (a) summer (February, northern wet season) and (b) winter (July, northern dry season)

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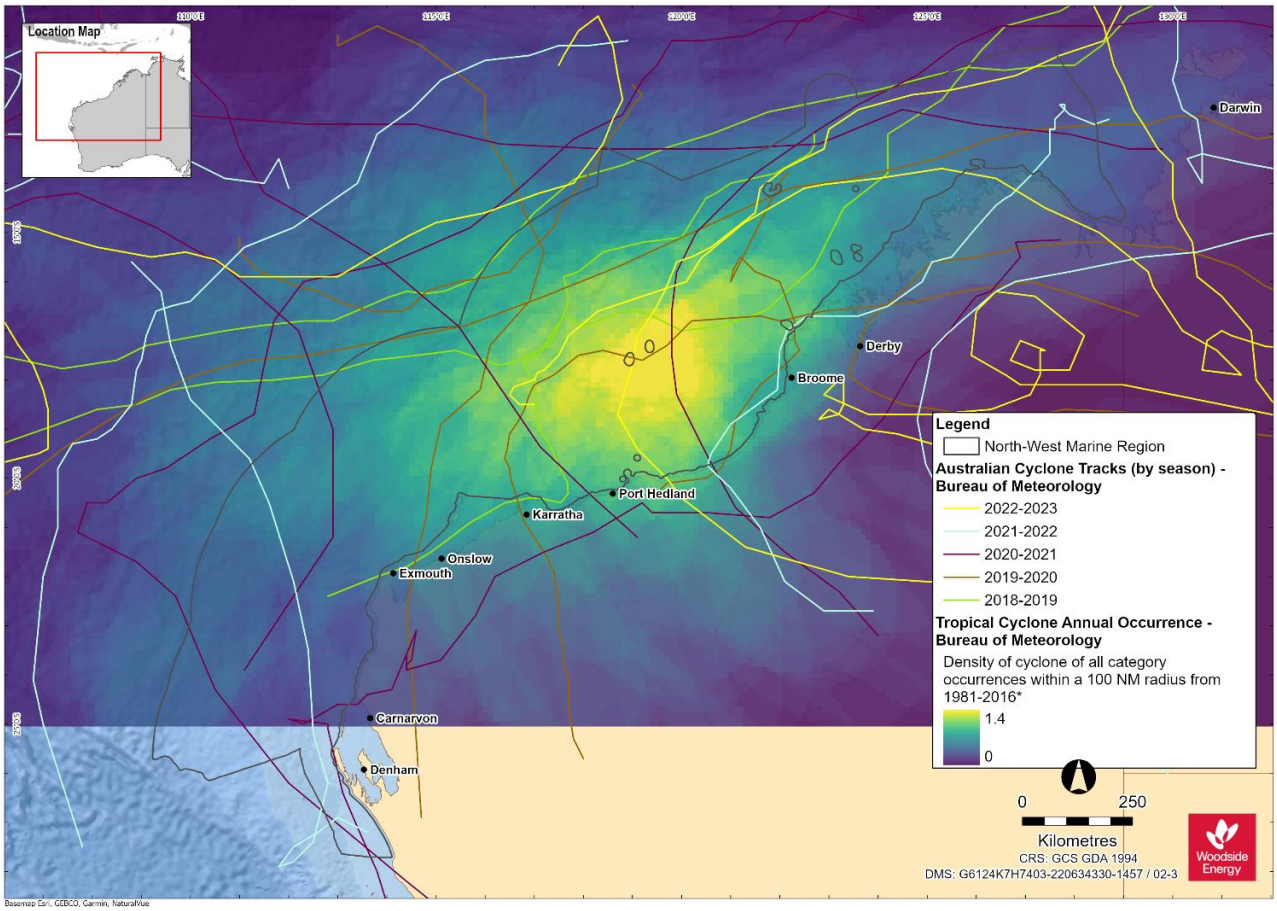

Figure 2-4: Tropical cyclone annual occurrence and cyclone tracks for NWMR

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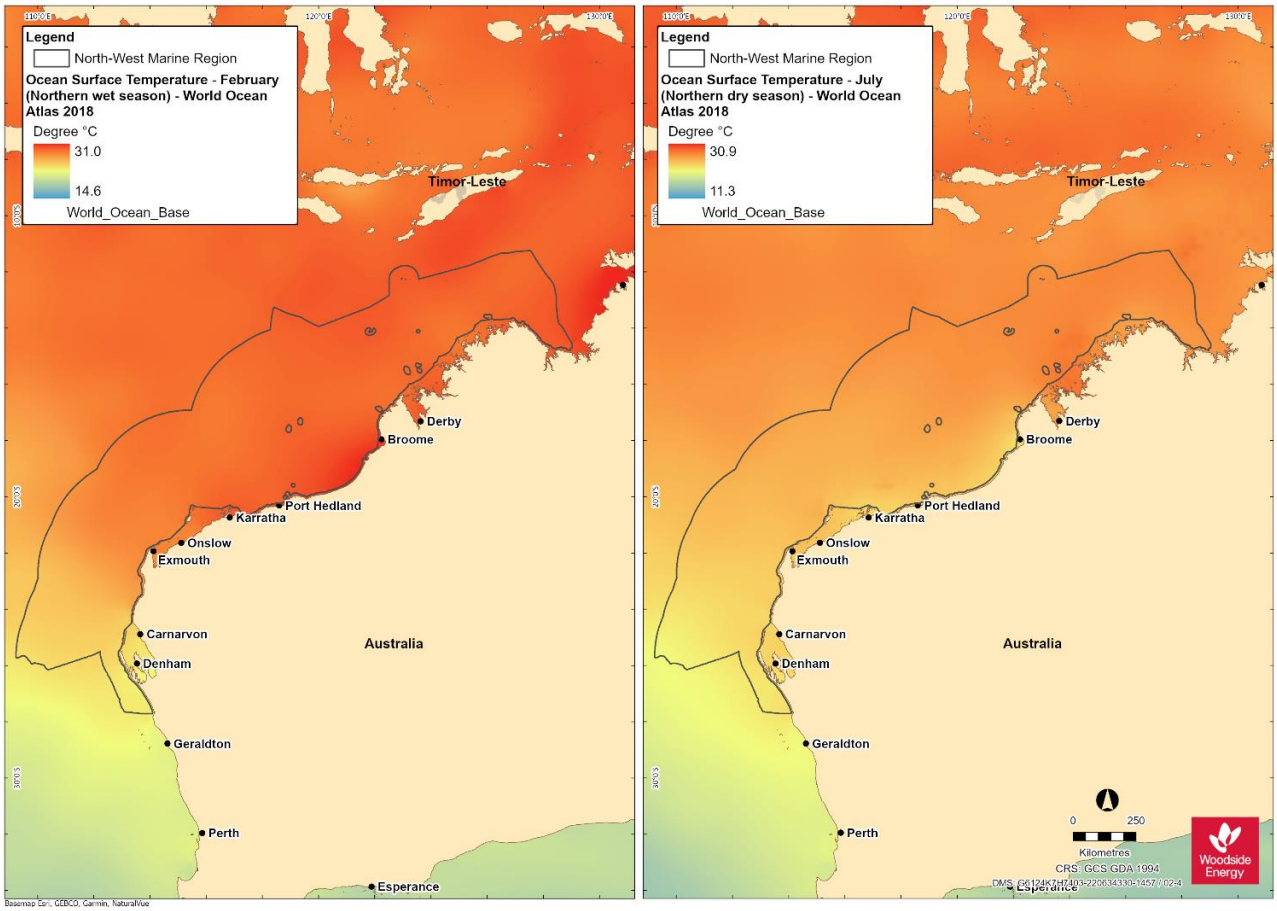

Figure 2-5: Ocean surface temperature for NWMR: (a) summer (February, northern wet season) and (b) winter (July, northern dry season) (data source: Locarnini et al., 2018 in World Ocean Atlas, 2018)

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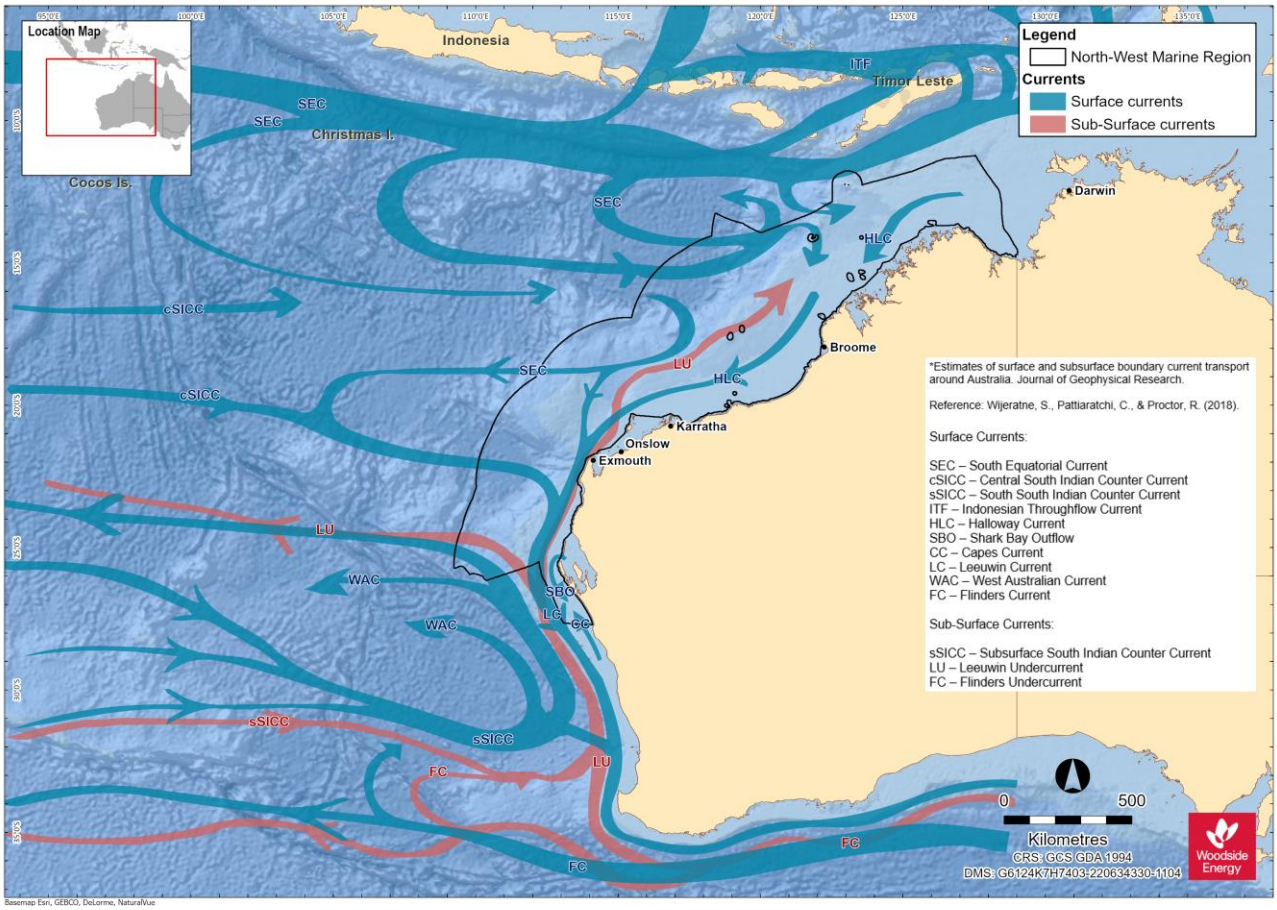

Figure 2-6: Ocean surface and sub-surface currents of the NWMR and wider region (data source: adopted from Wijeratne et al., 2018)

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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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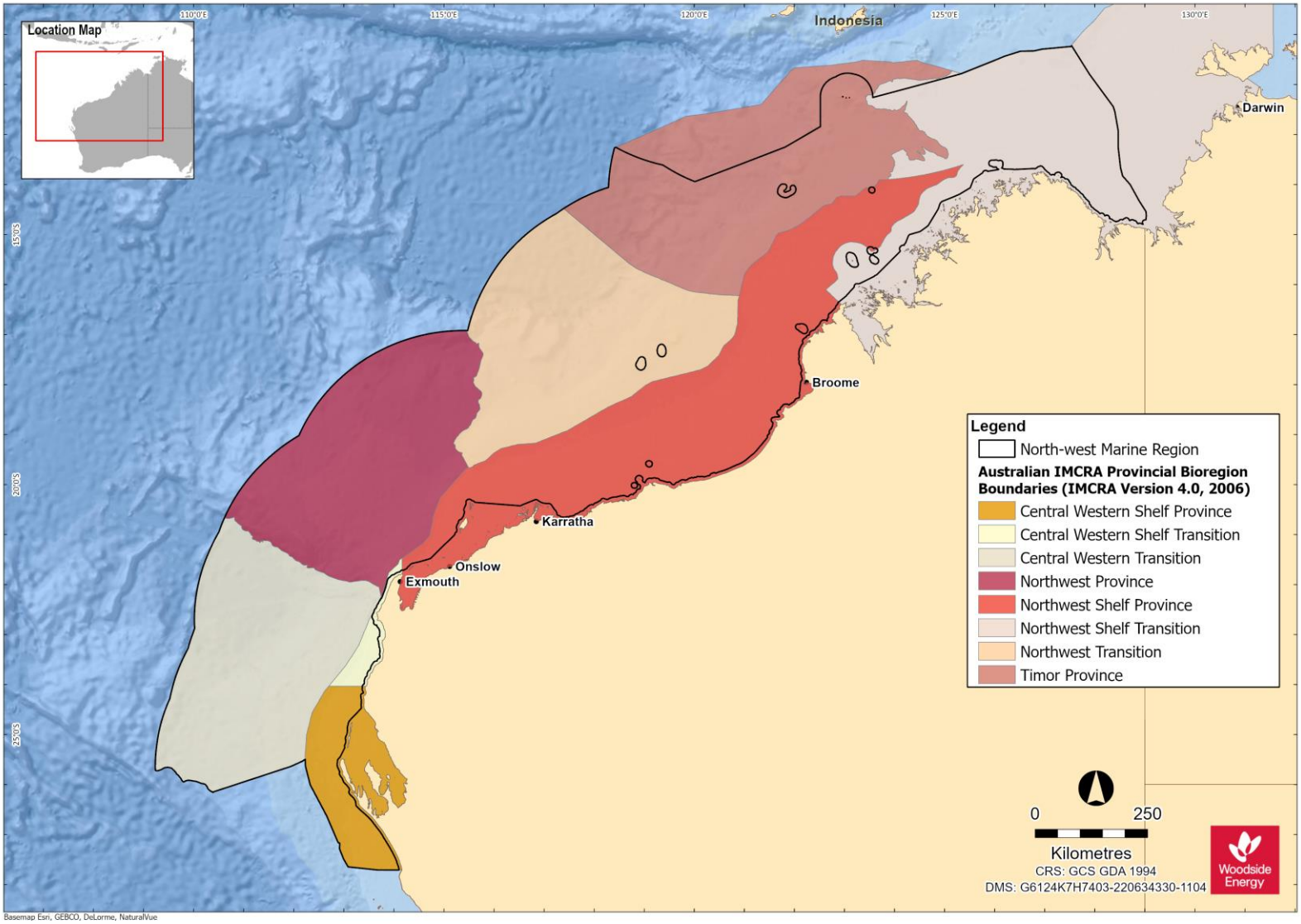

Figure 2-7: The eight Integrated Marine and Coastal Regionalisation of Australia (IMCRA) v4.0 provincial bioregions of the NWMR (GA, 2024)

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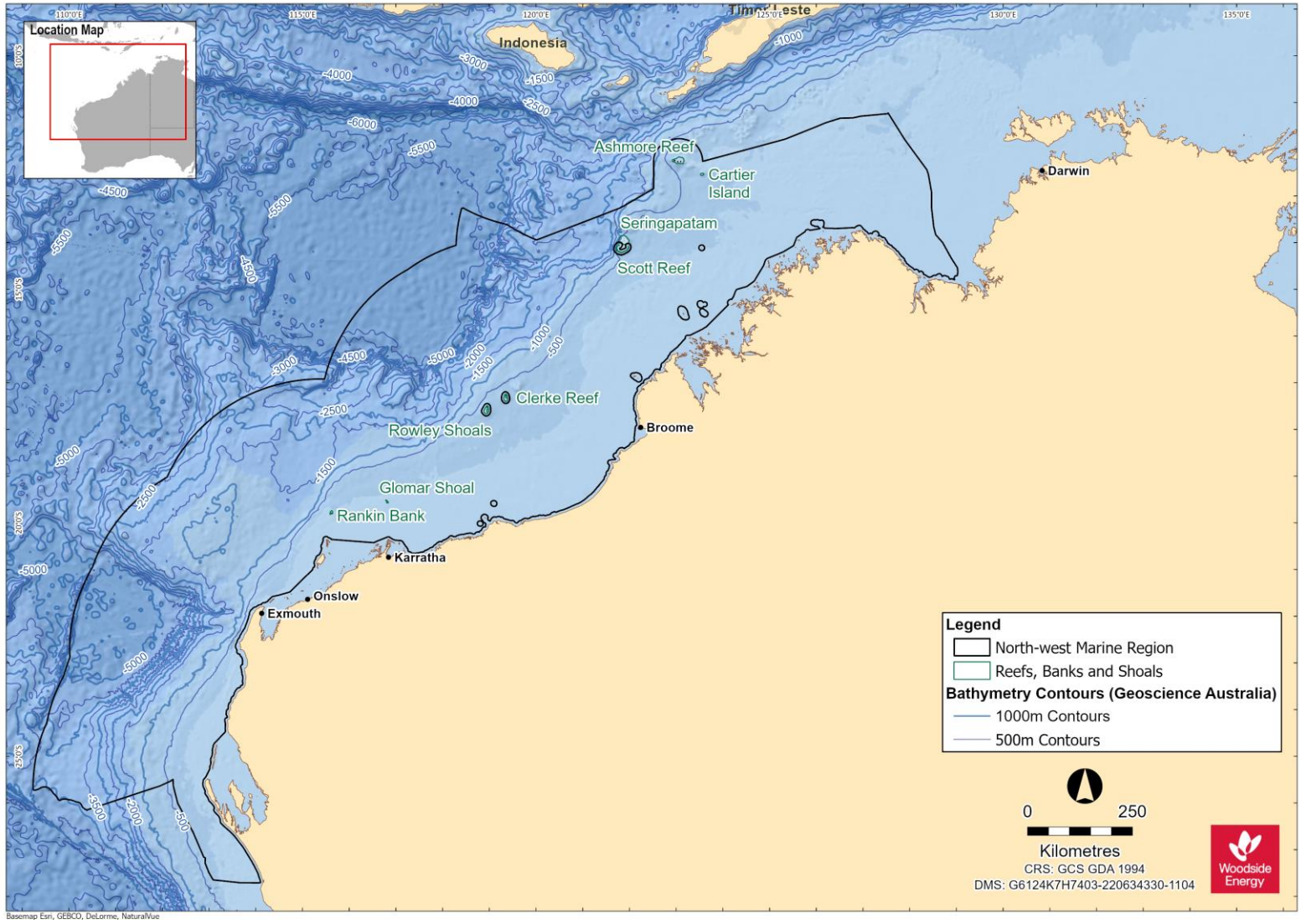

Figure 2-8: Bathymetry of the NWMR (data source: Geoscience Australia)

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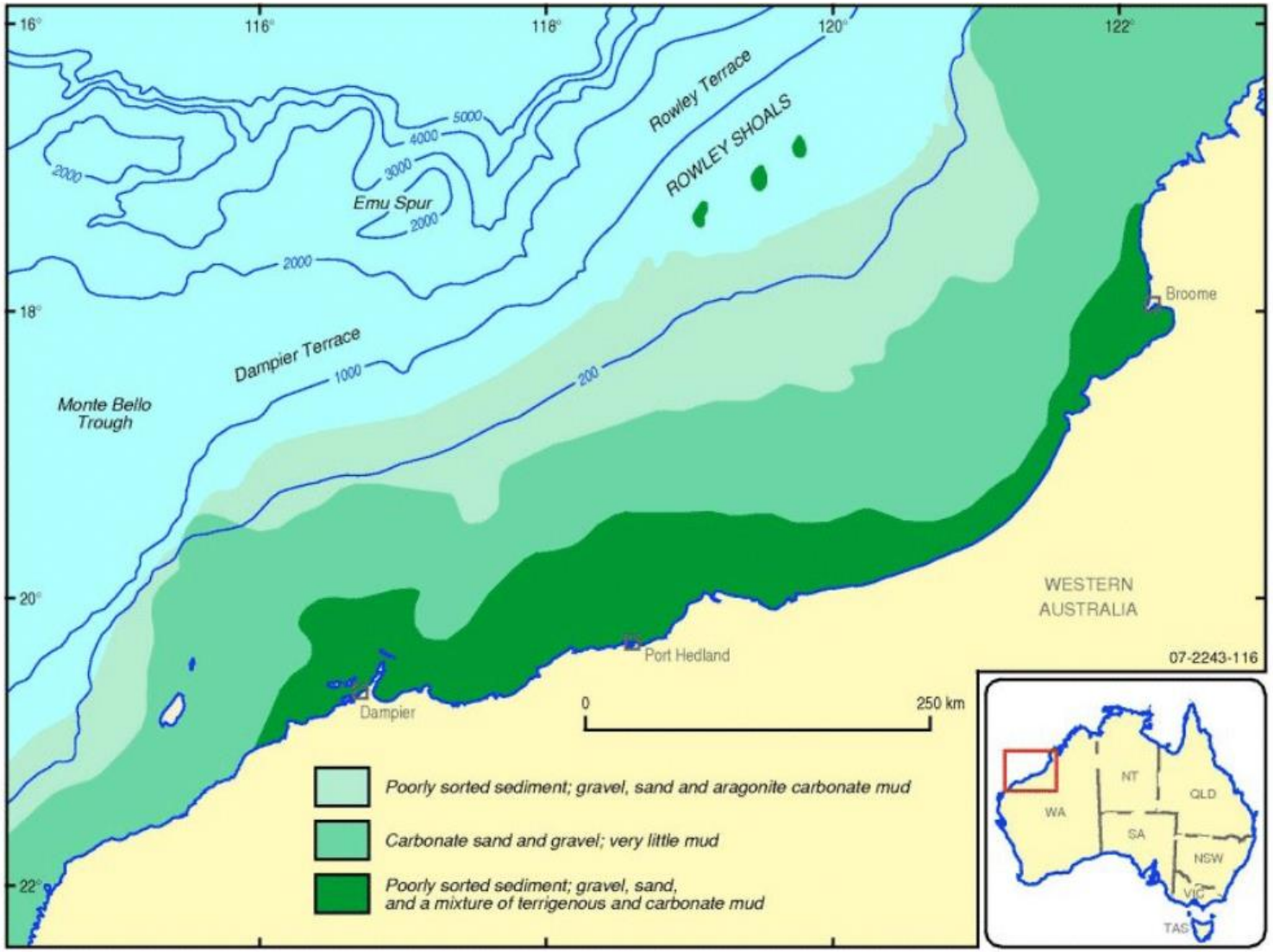

Figure 2-9: Overview of the seabed sediments of the NWMR (data source: Baker et al., 2008)

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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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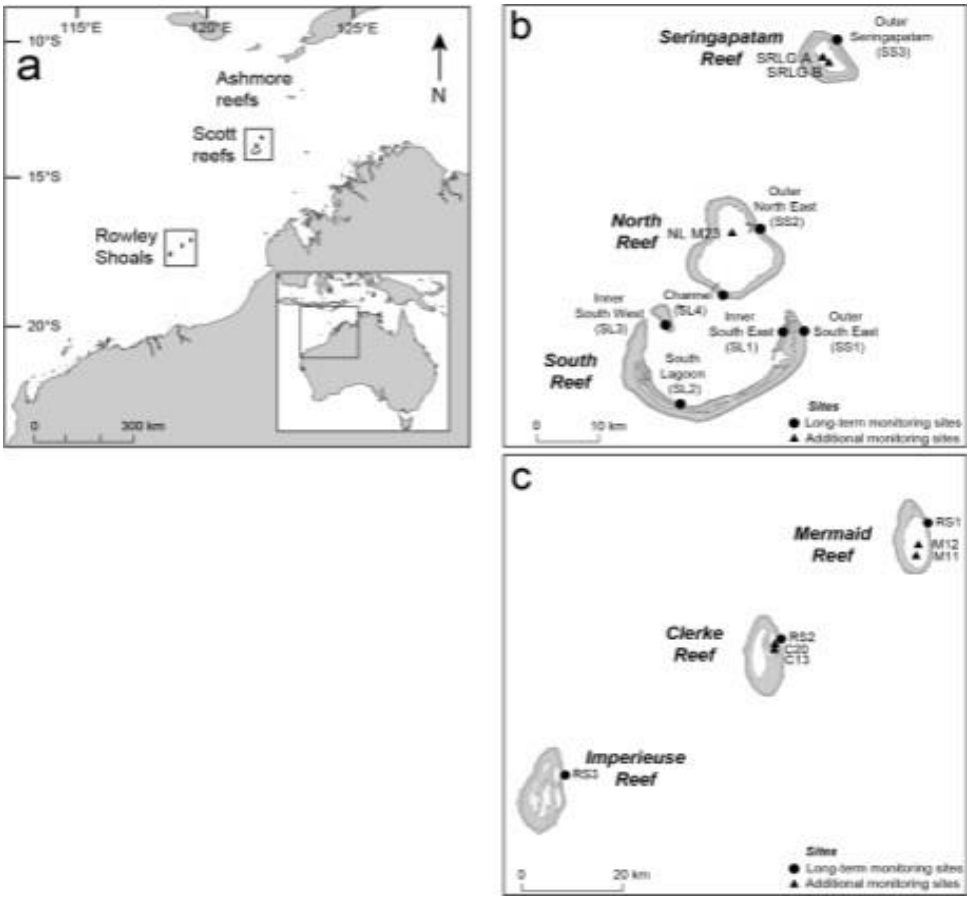

Figure 4-1: The position of Scott Reef, Ashmore and the Rowley Shoals off North-western Australia and location of permanent long-term monitoring sites (source: Gilmour et al., 2023)

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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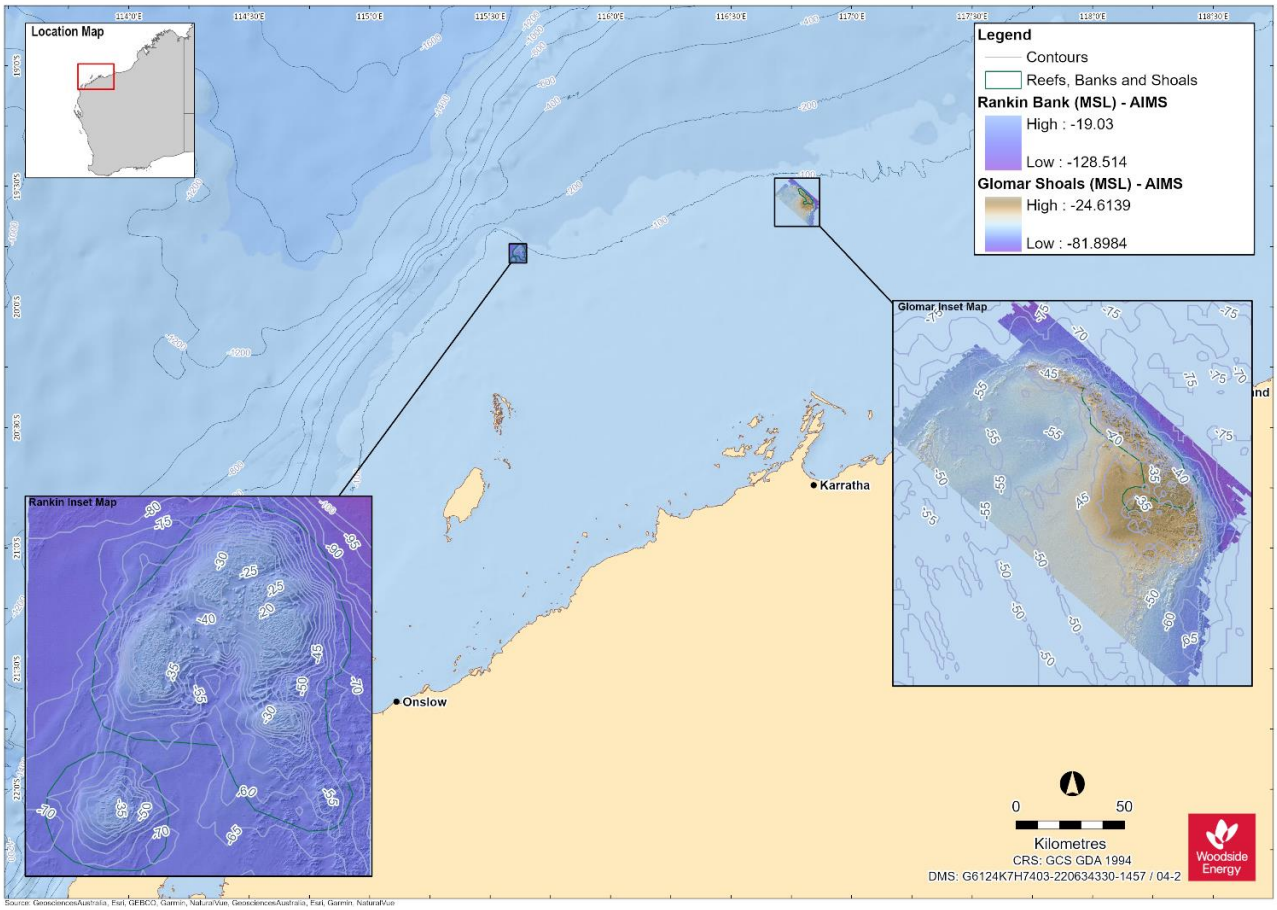

Figure 4-2: Habitat maps of Rankin Bank and Glomar Shoal (source: AIMS, 2014)

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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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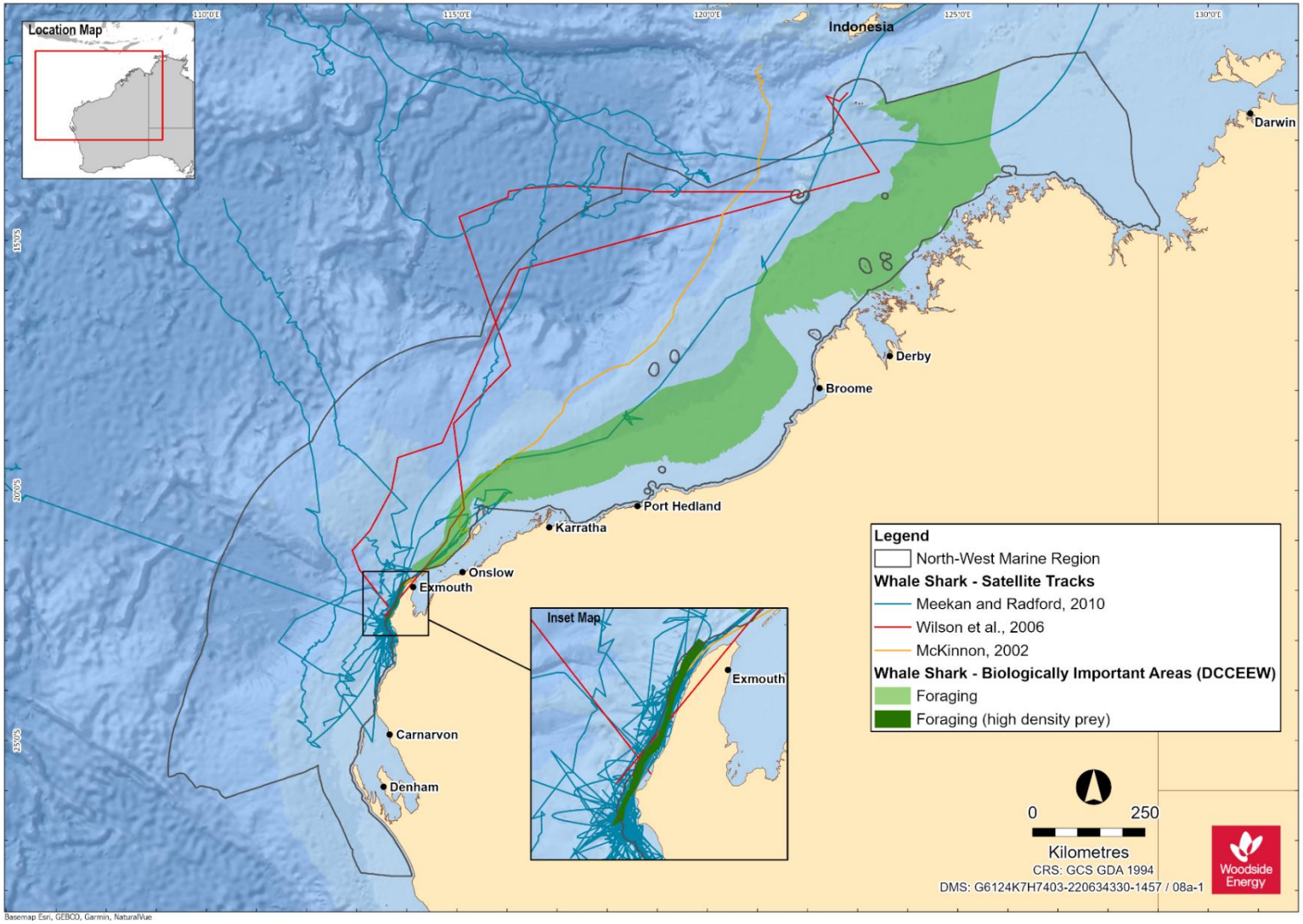

Figure 5-1: Whale shark biologically important areas (BIAs) for the NWMR and tagged whale shark satellite tracks (data source for BIAs: DCCEEW, 2024b)

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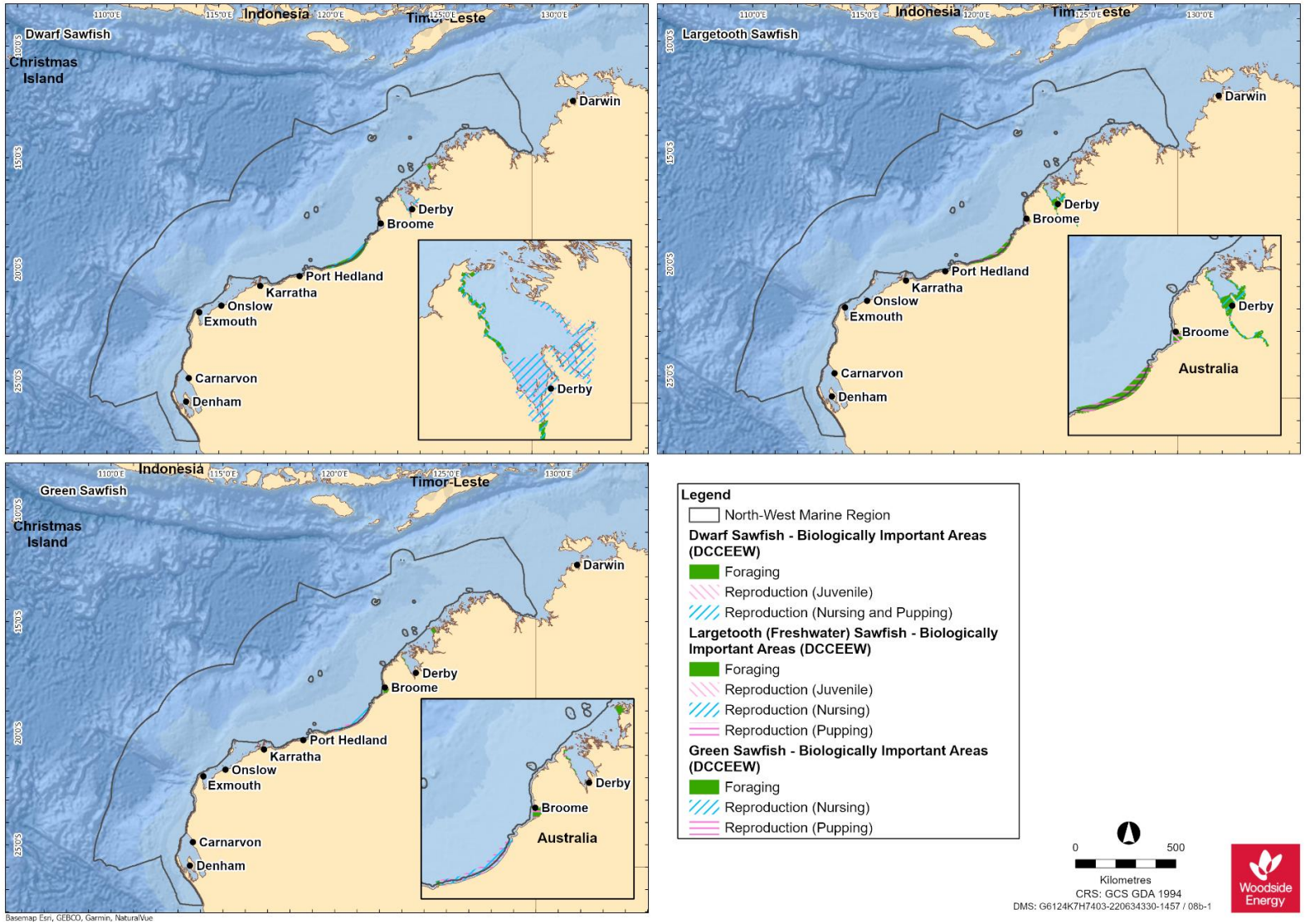

Figure 5-2: Sawfish BIAs for the NWMR (data source: DCCEEW, 2024b)

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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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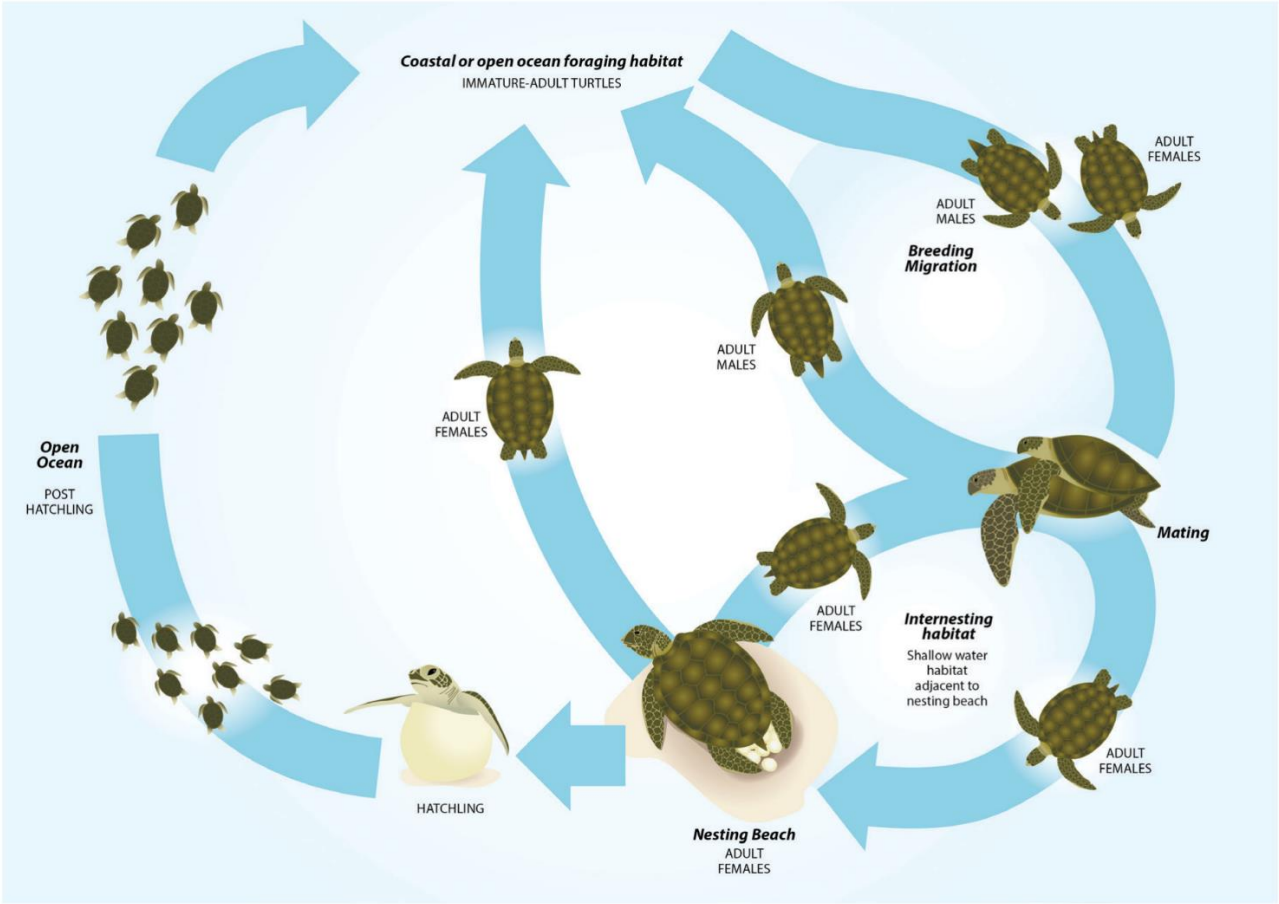

Figure 6-1: Generalised life cycle of marine turtles (Commonwealth of Australia, 2017)

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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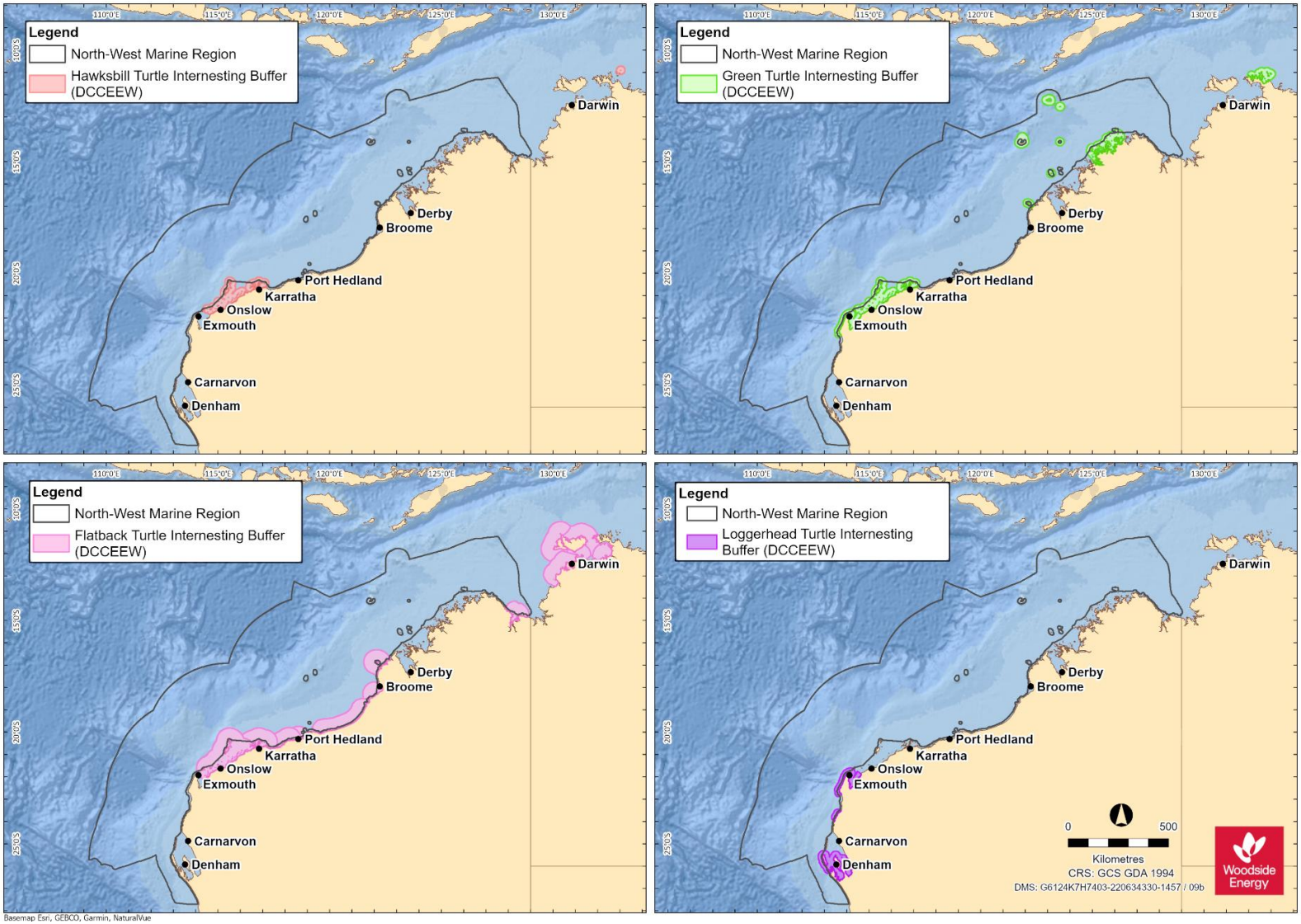

Figure 6-2: Marine turtle species habitat critical to survival (nesting beaches and internesting buffers) for the NWMR (data source: DCCEEW, 2024b)

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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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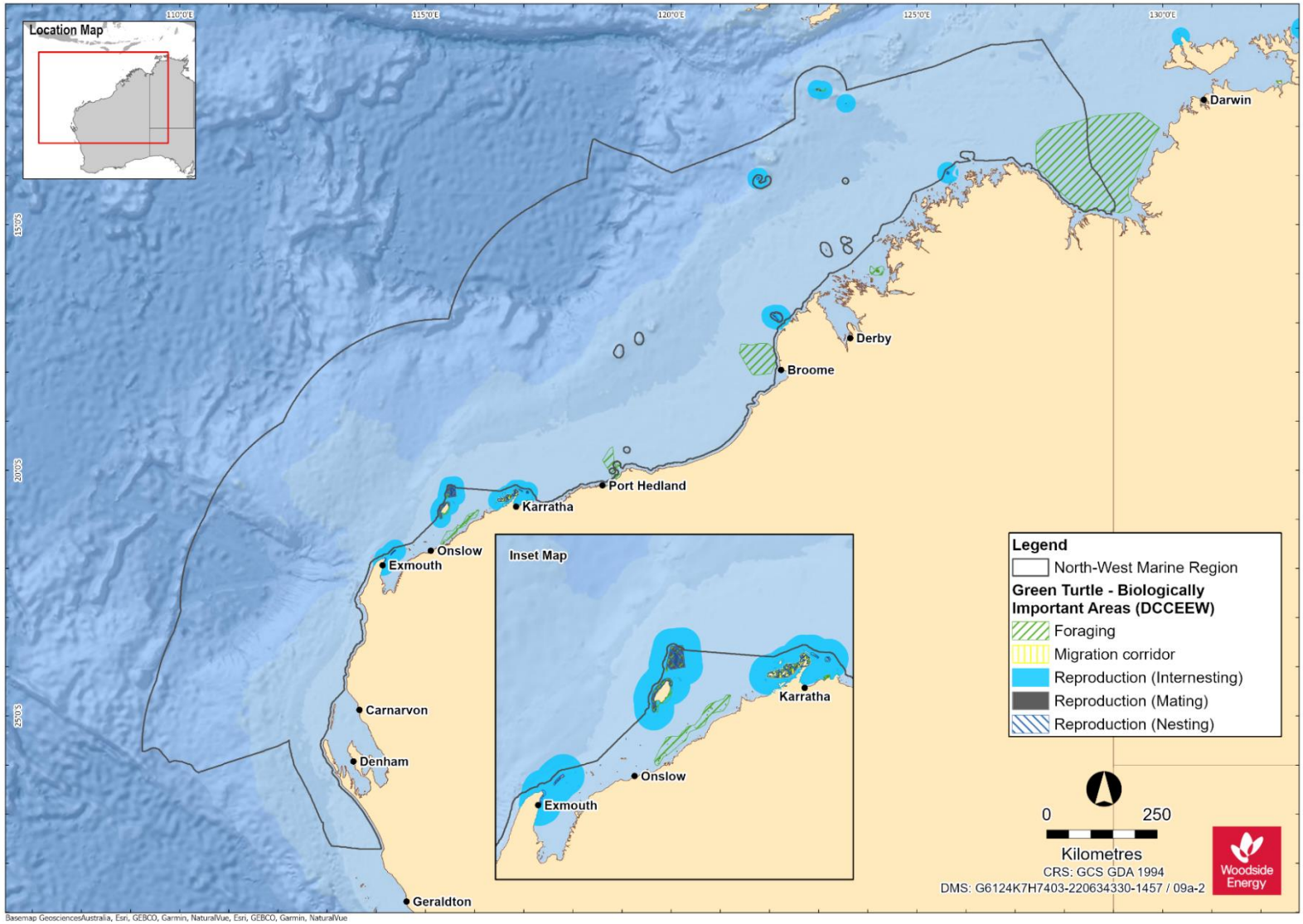

Figure 6-3: Green turtle BIAs within the NWMR (data source: DCCEEW, 2024b)

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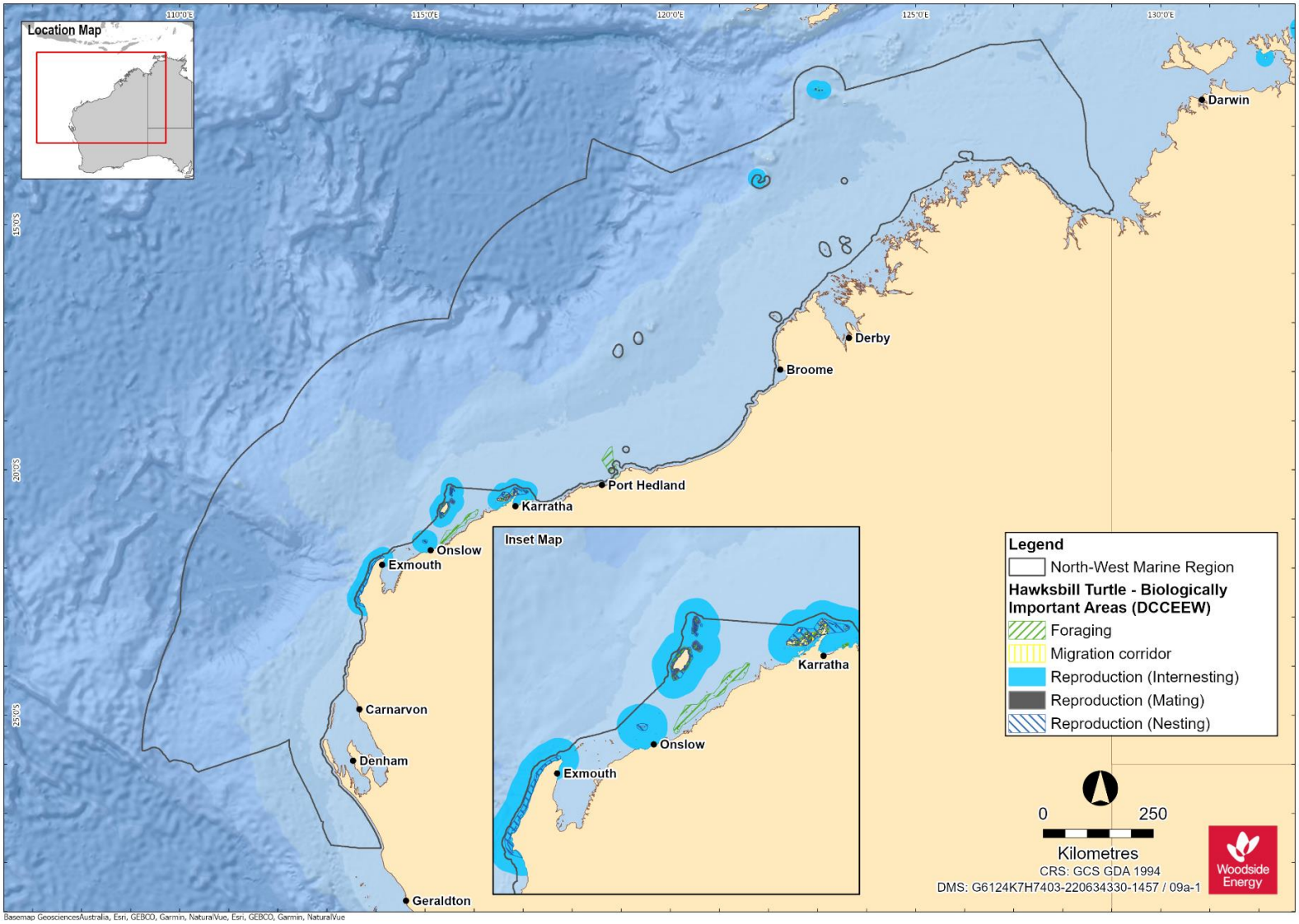

Figure 6-4: Hawksbill turtle BIAs within the NWMR (data source: DCCEEW, 2024b)

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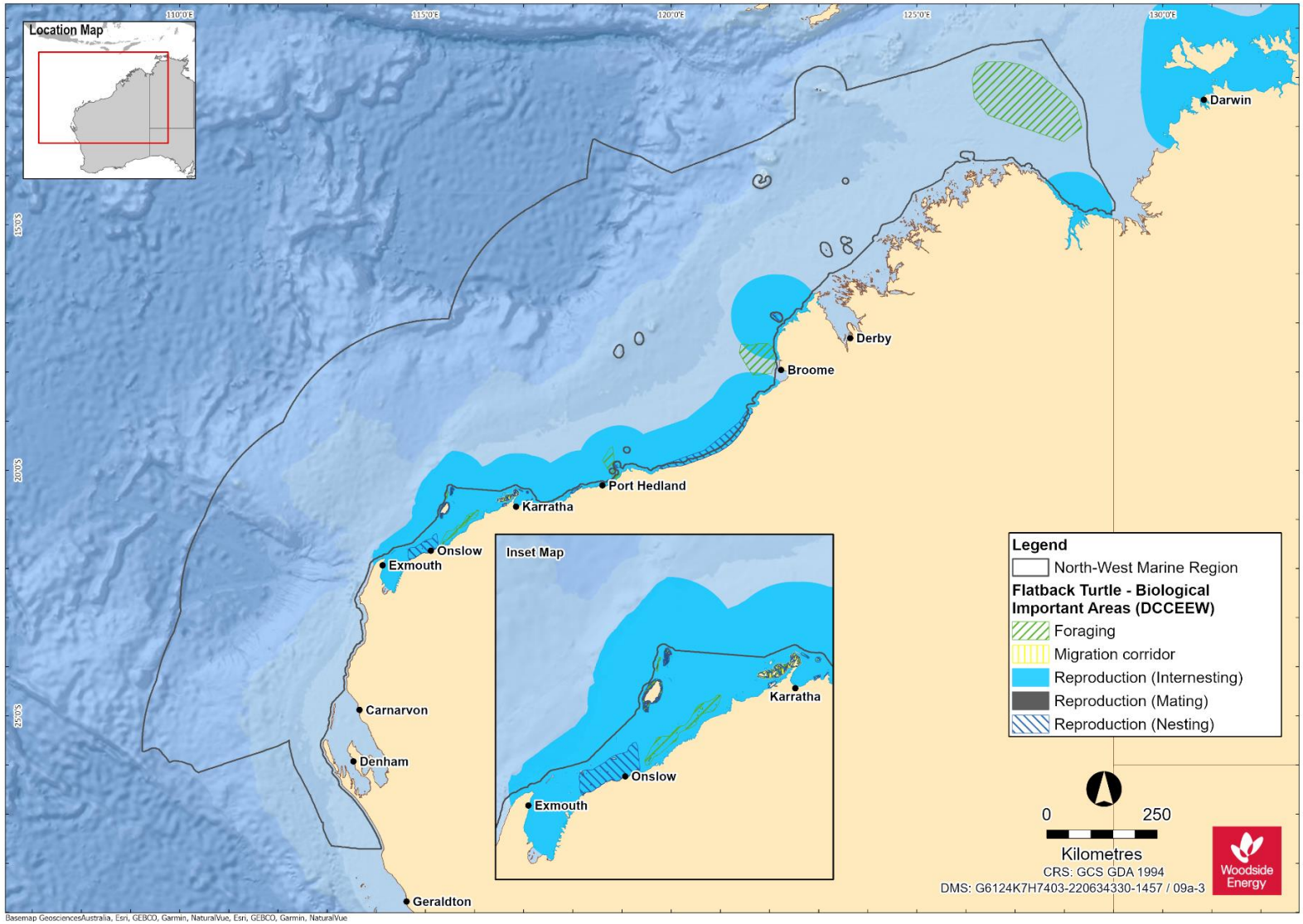

Figure 6-5: Flatback turtle BIAs within the NWMR (data source: DCCEEW, 2024b)

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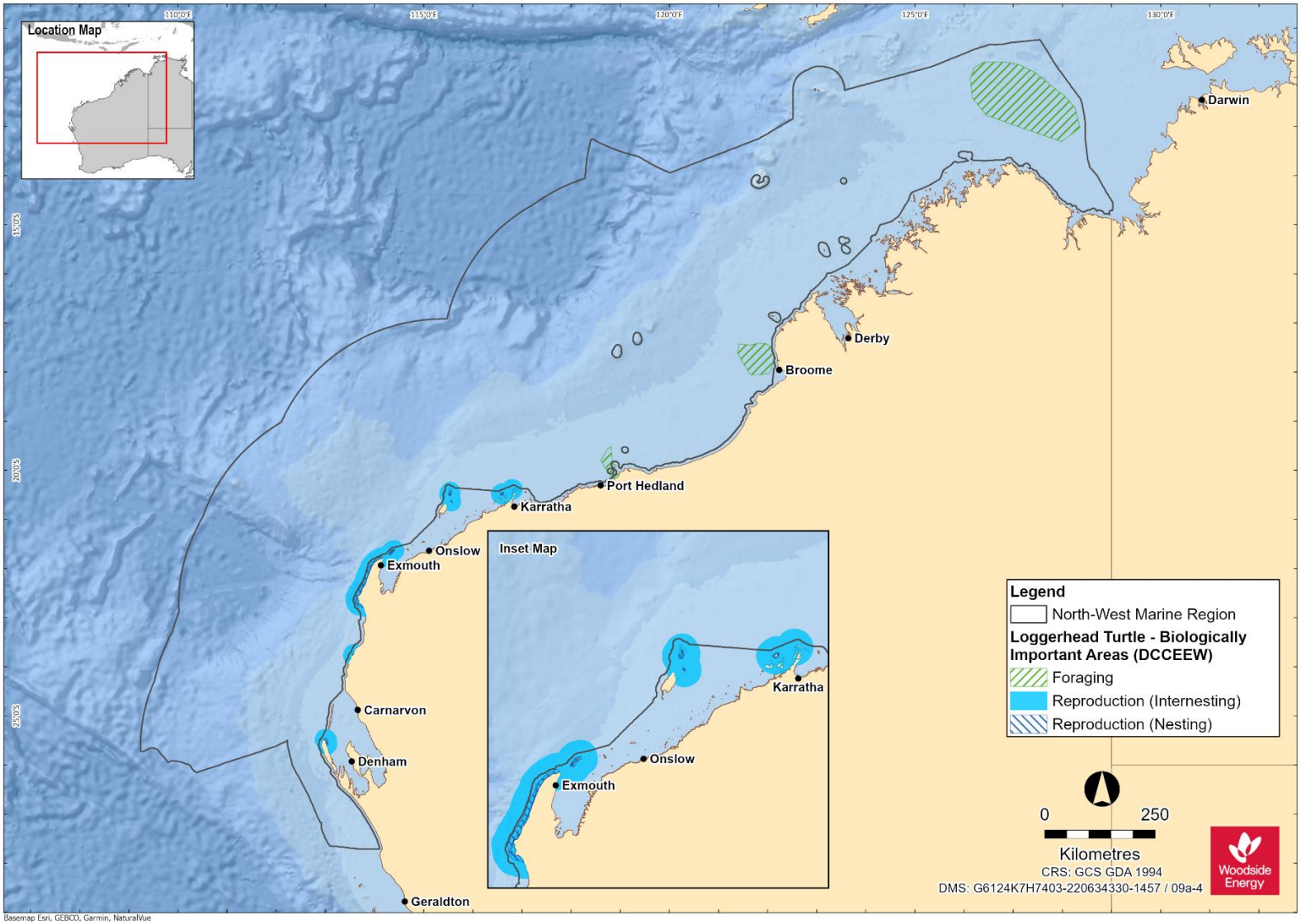

Figure 6-6: Loggerhead turtle BIAs within the NWMR (data source: DCCEEW, 2024b)

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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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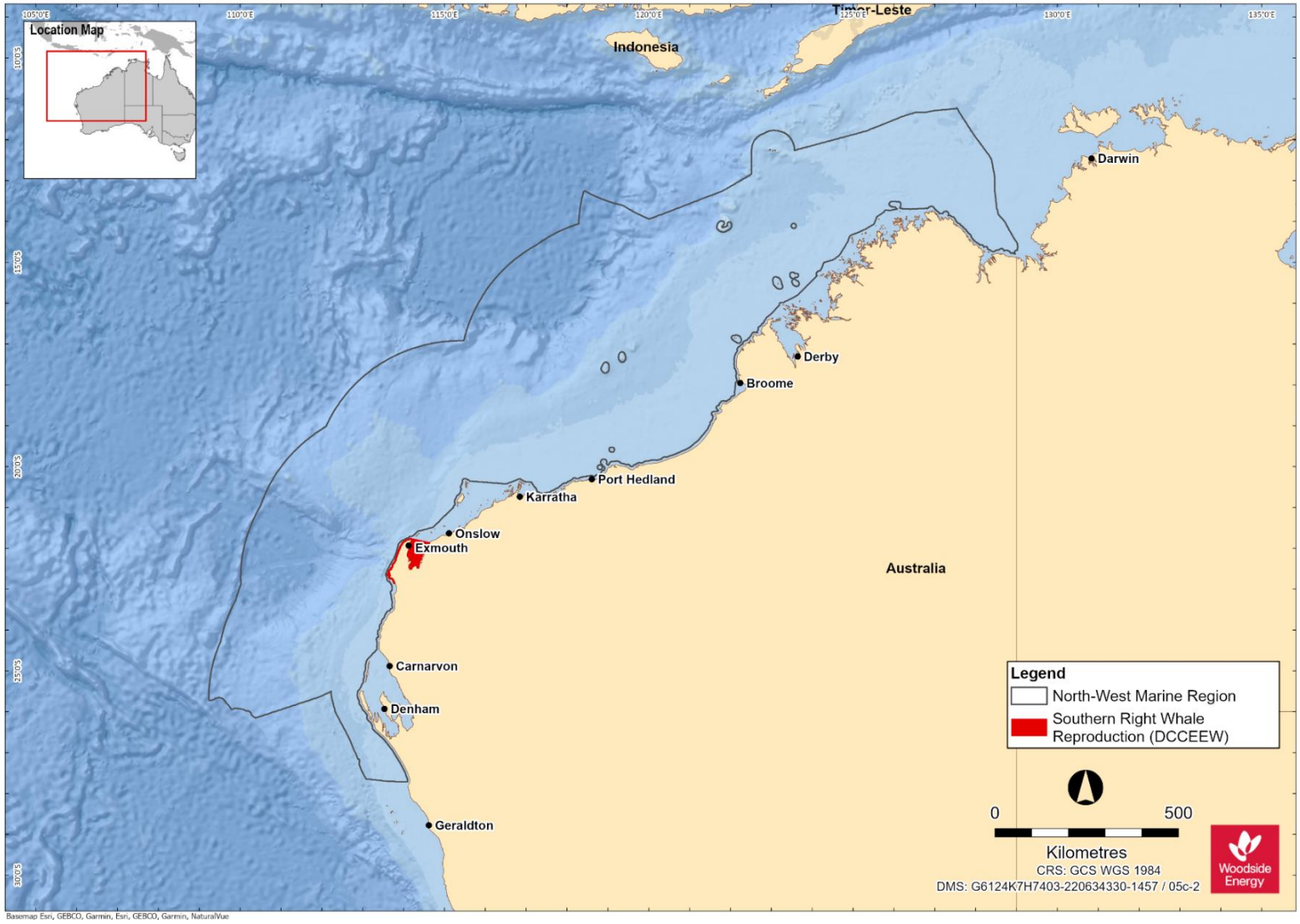

Figure 7-1: Habitat critical to the survival for the southern right whale in the NWMR (DCCEEW, 2024a)

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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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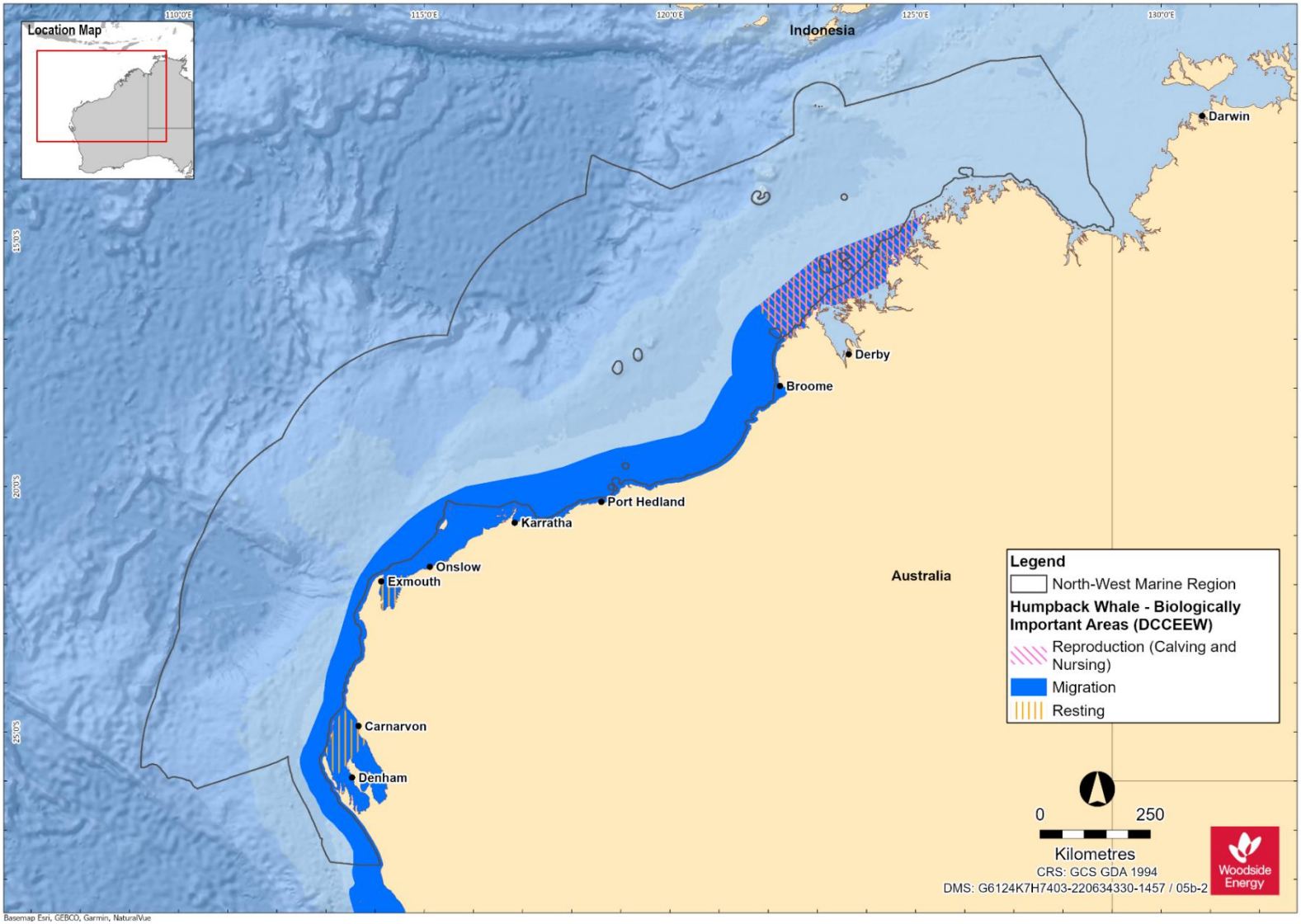

Figure 7-2: Humpback whale BIAs for the NWMR (data source: DCCEEW, 2024b)

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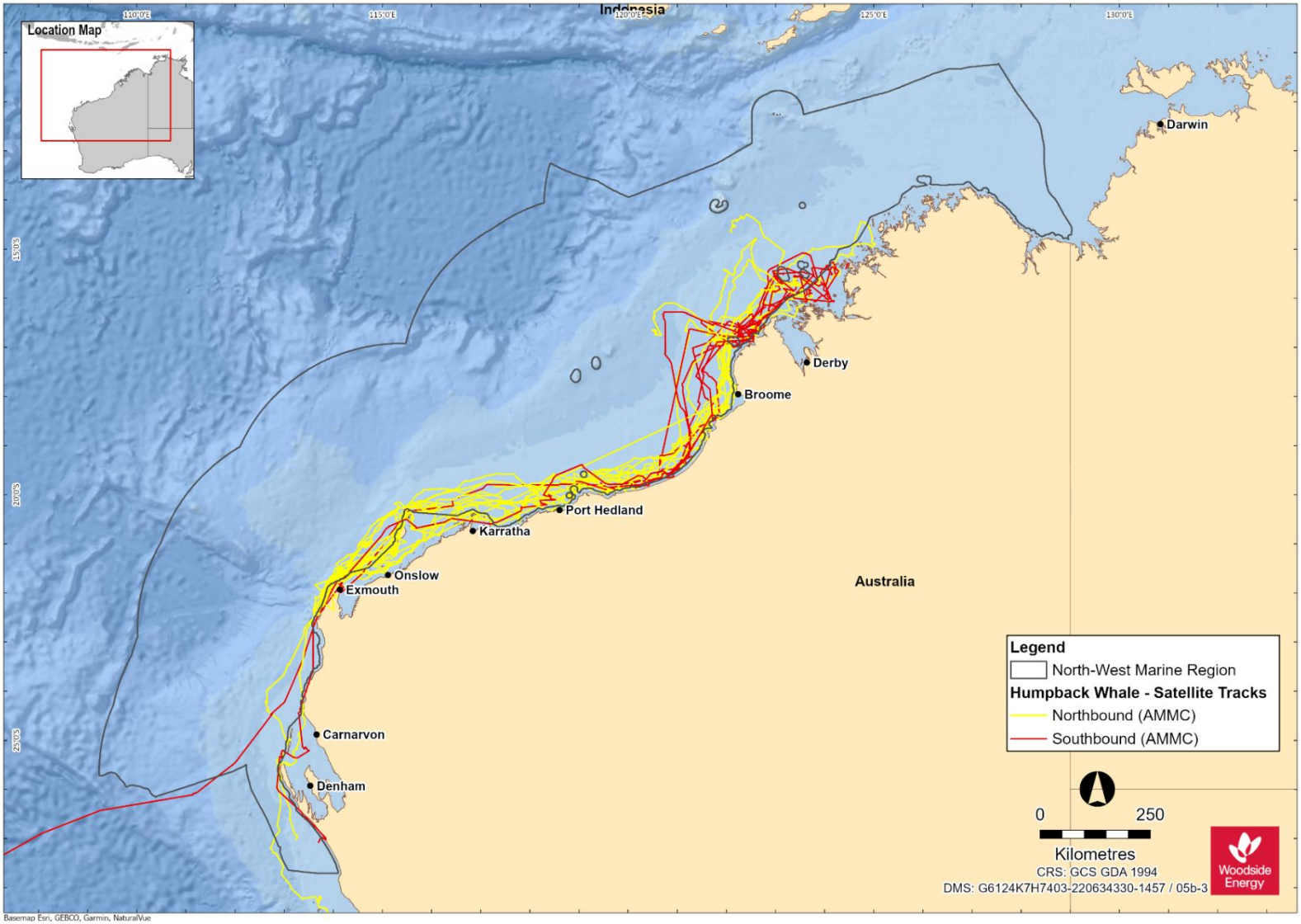

Figure 7-3: Humpback whale tagged tracks for north and south bound migrations (AMMC as published in Double et al. 2010 and 2012)

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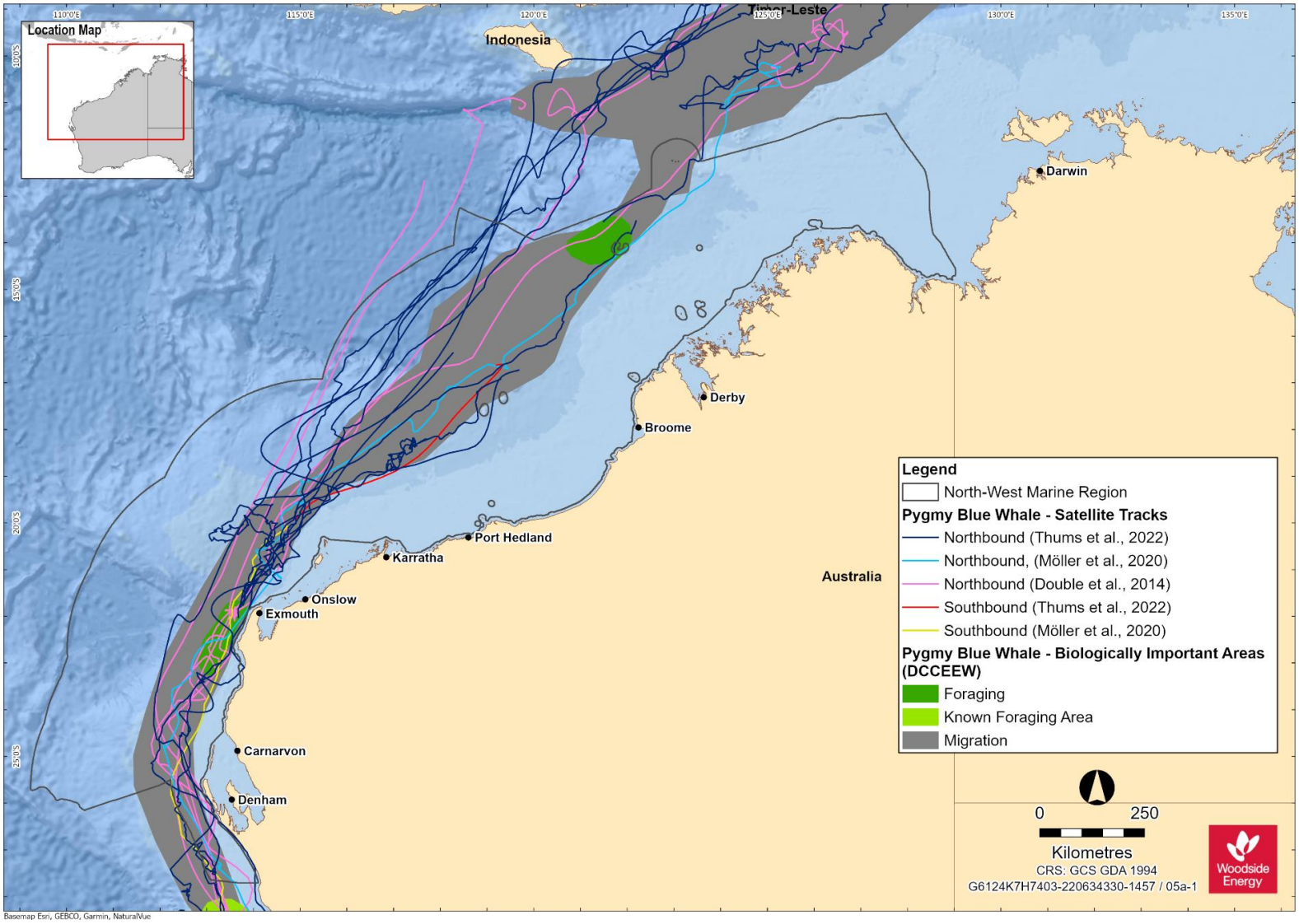

Figure 7-4: Pygmy blue whale BIAs for the NWMR and tagged whale tracks for northbound migration (data source for BIAs: DCCEEW, 2024b)

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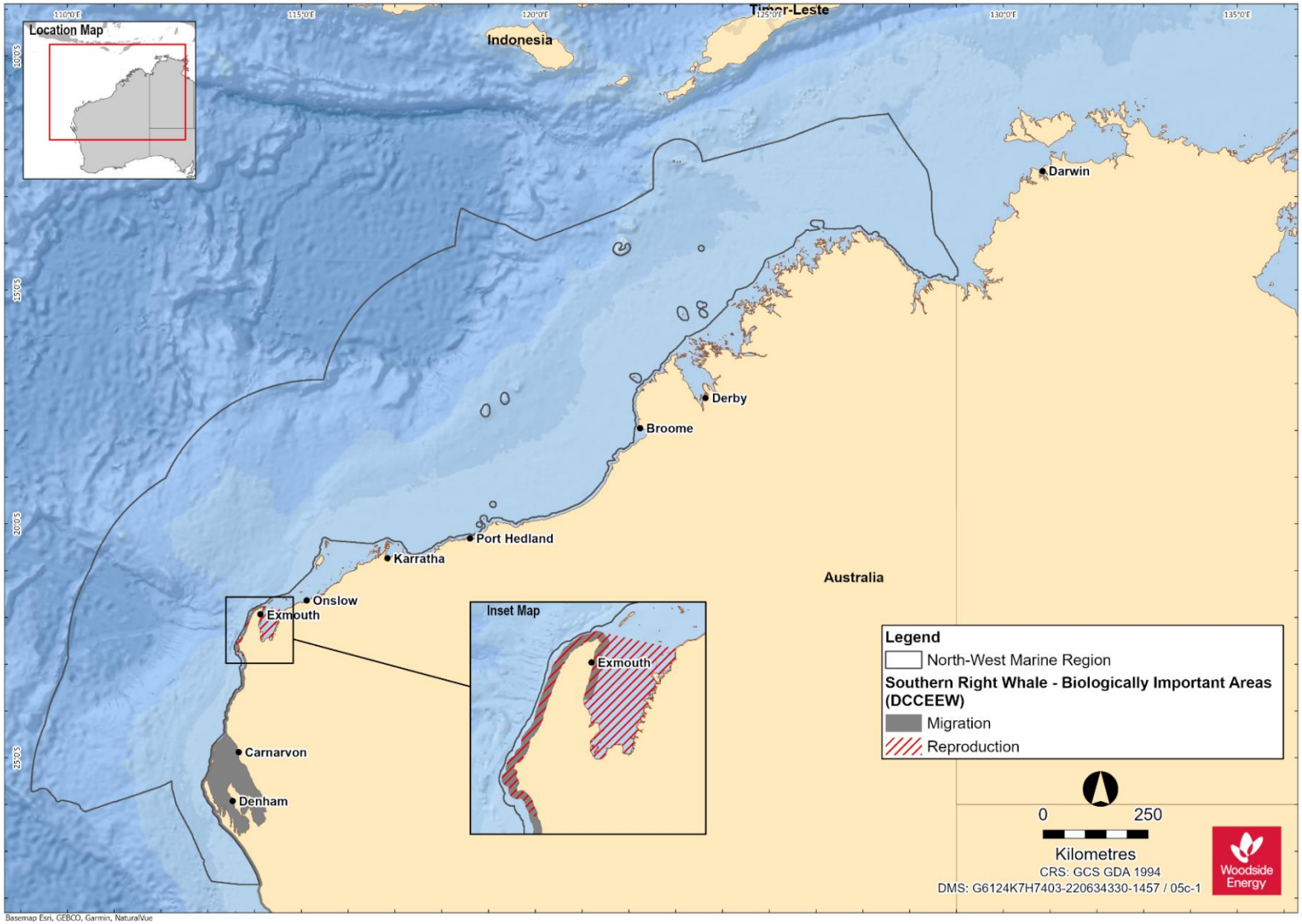

Figure 7-5: Southern right whale BIAs for the NWMR; migration and reproduction BIAs along the coast extend to 3 NM (data source: DCCEEW, 2024b)

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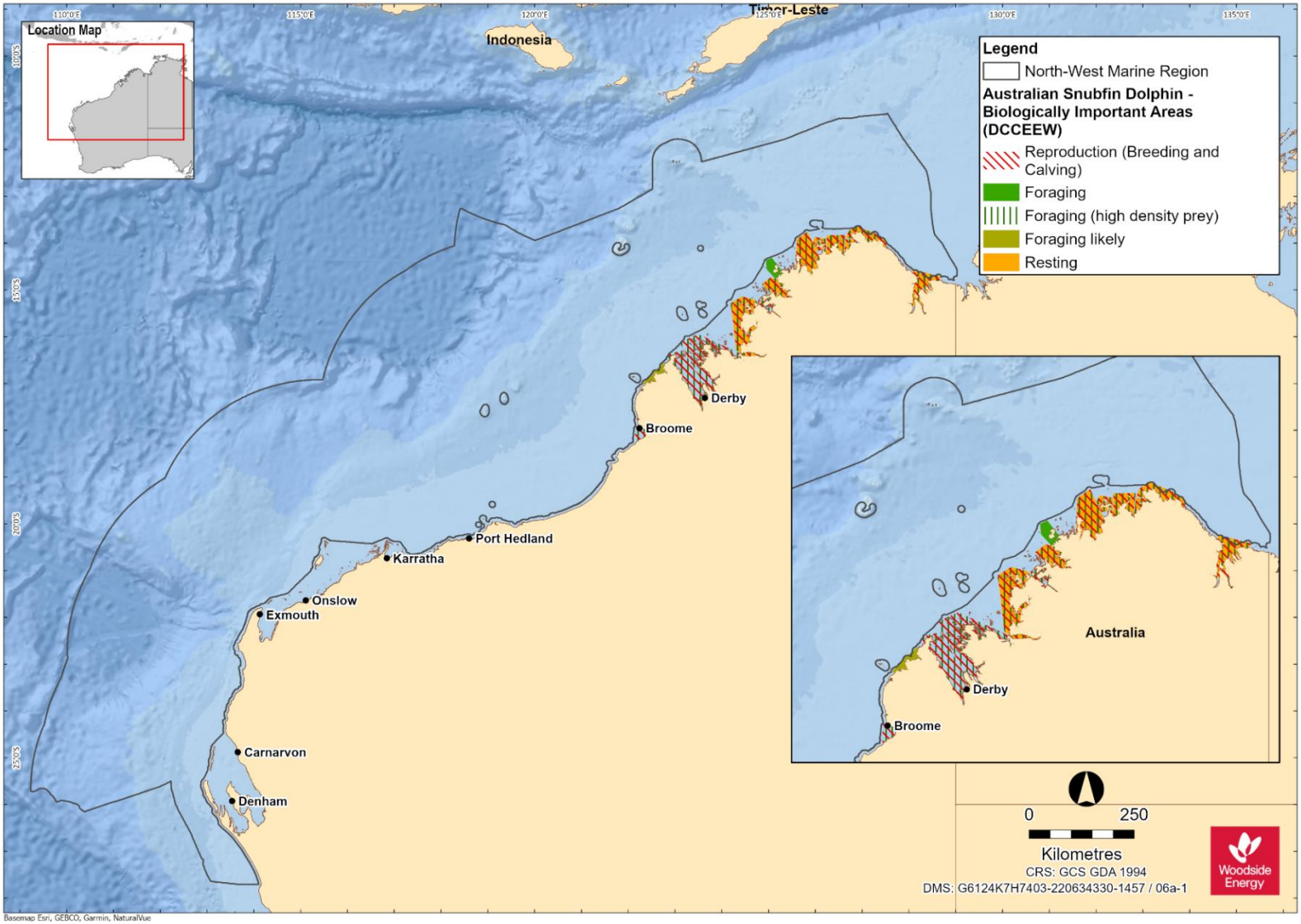

Figure 7-6: Australian snubfin dolphin BIAs for the NWMR (data source: DCCEEW, 2024b)

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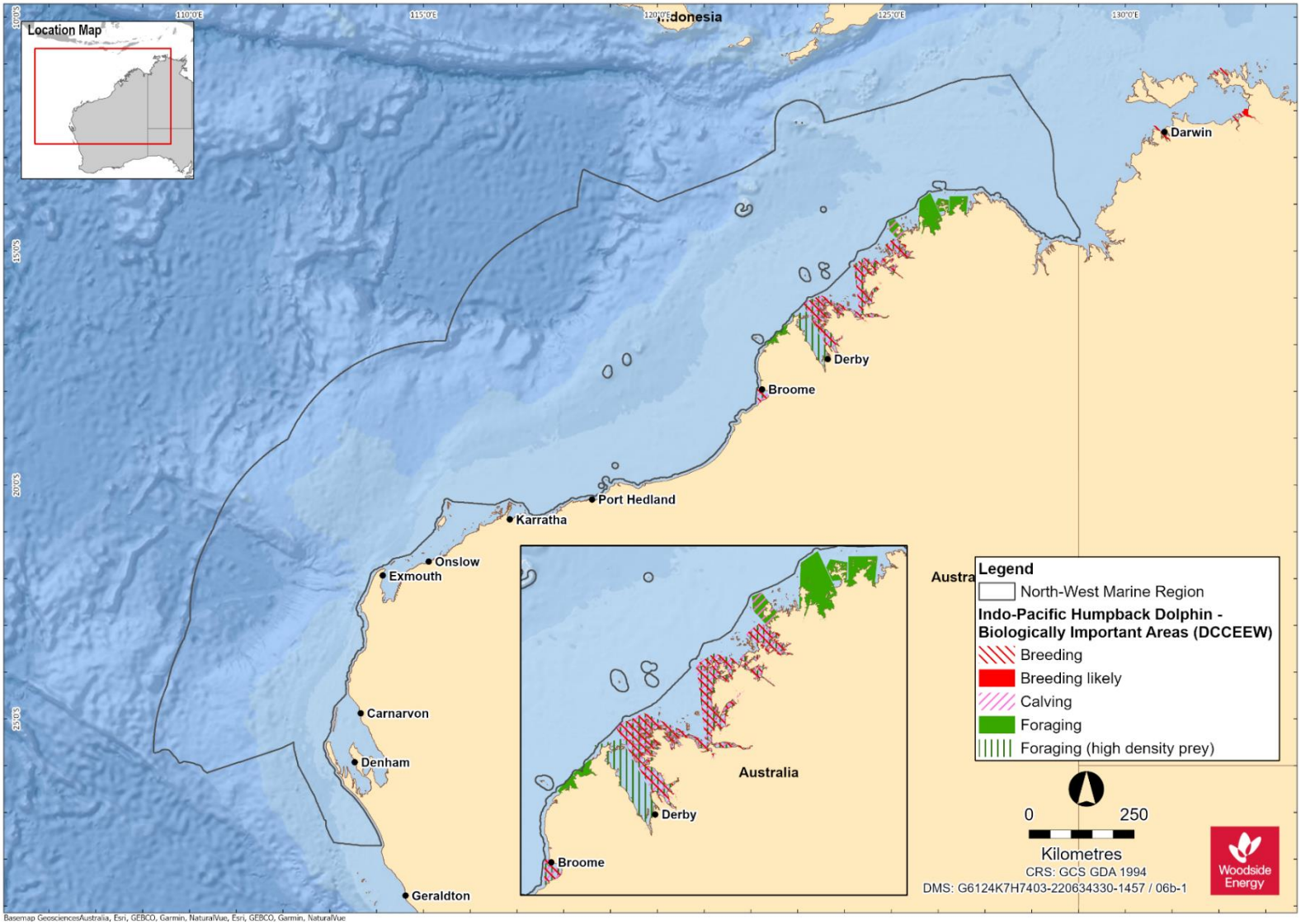

Figure 7-7: Indo-Pacific humpback dolphin BIAs for the NWMR (data source: DCCEEW, 2024b)

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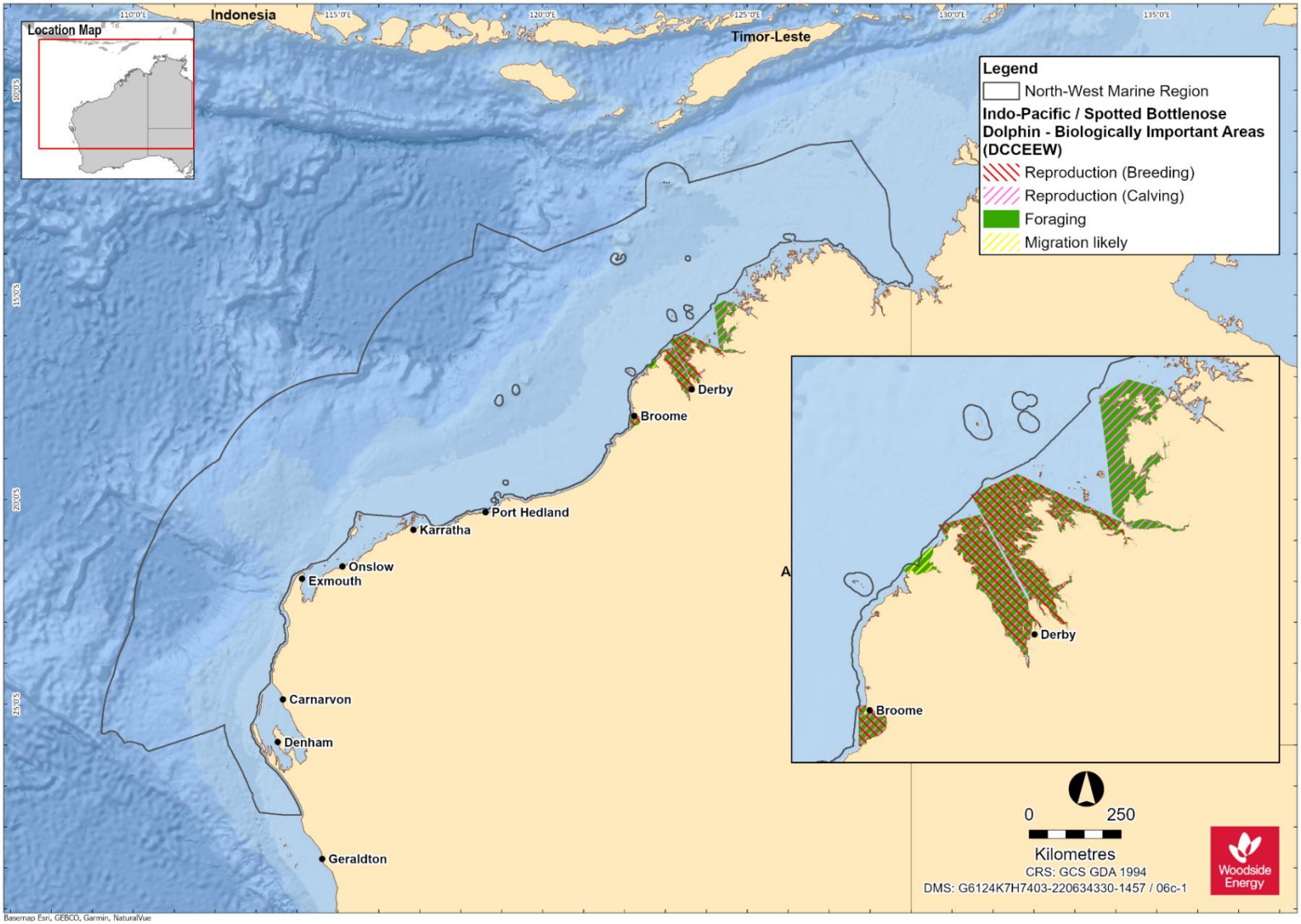

Figure 7-8: Indo-Pacific spotted bottlenose dolphin BIAs for the NWMR (data source: DCCEEW, 2024b)

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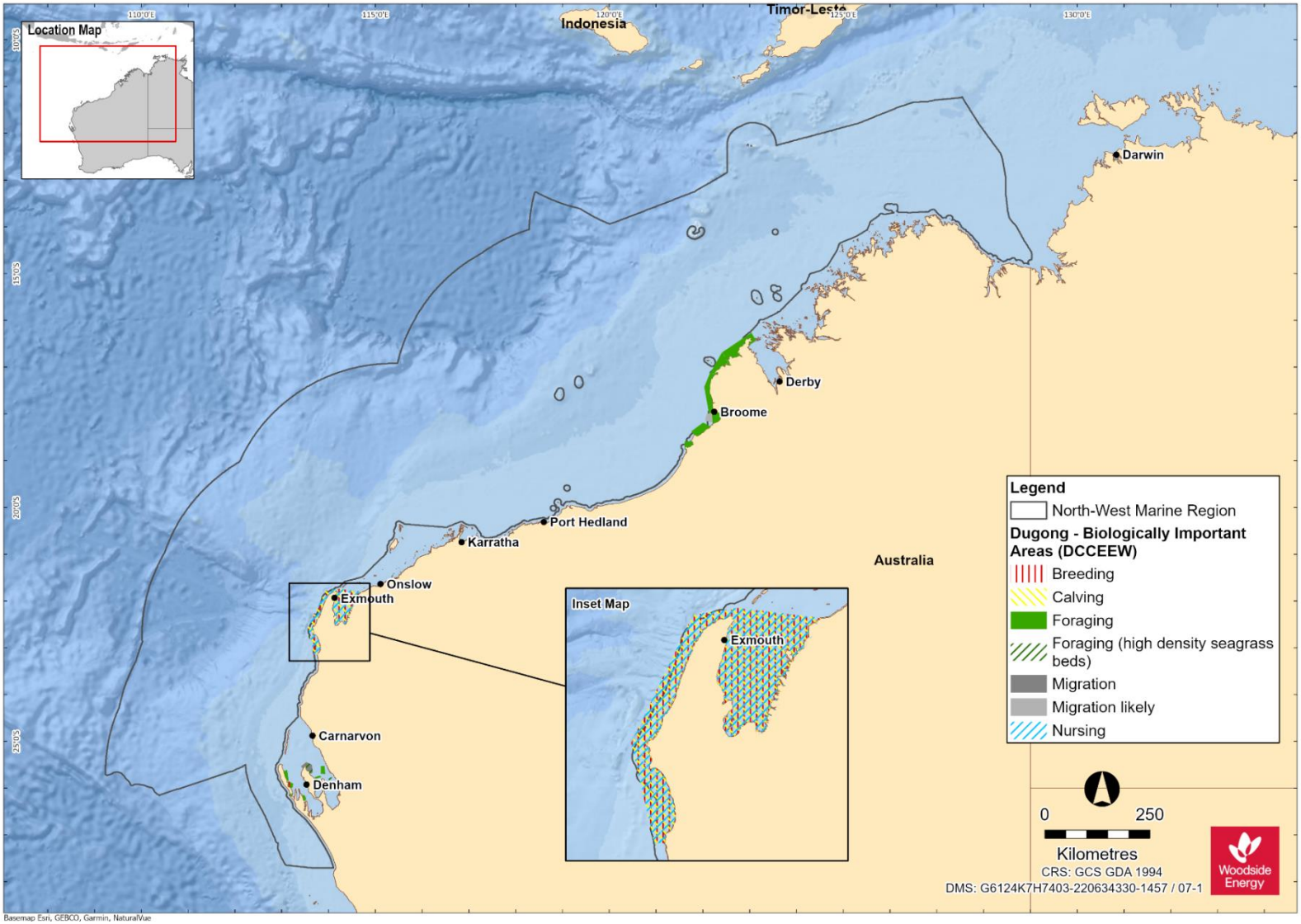

Figure 7-9: Dugong BIAs for the NWMR (data source: DCCEEW, 2024b)

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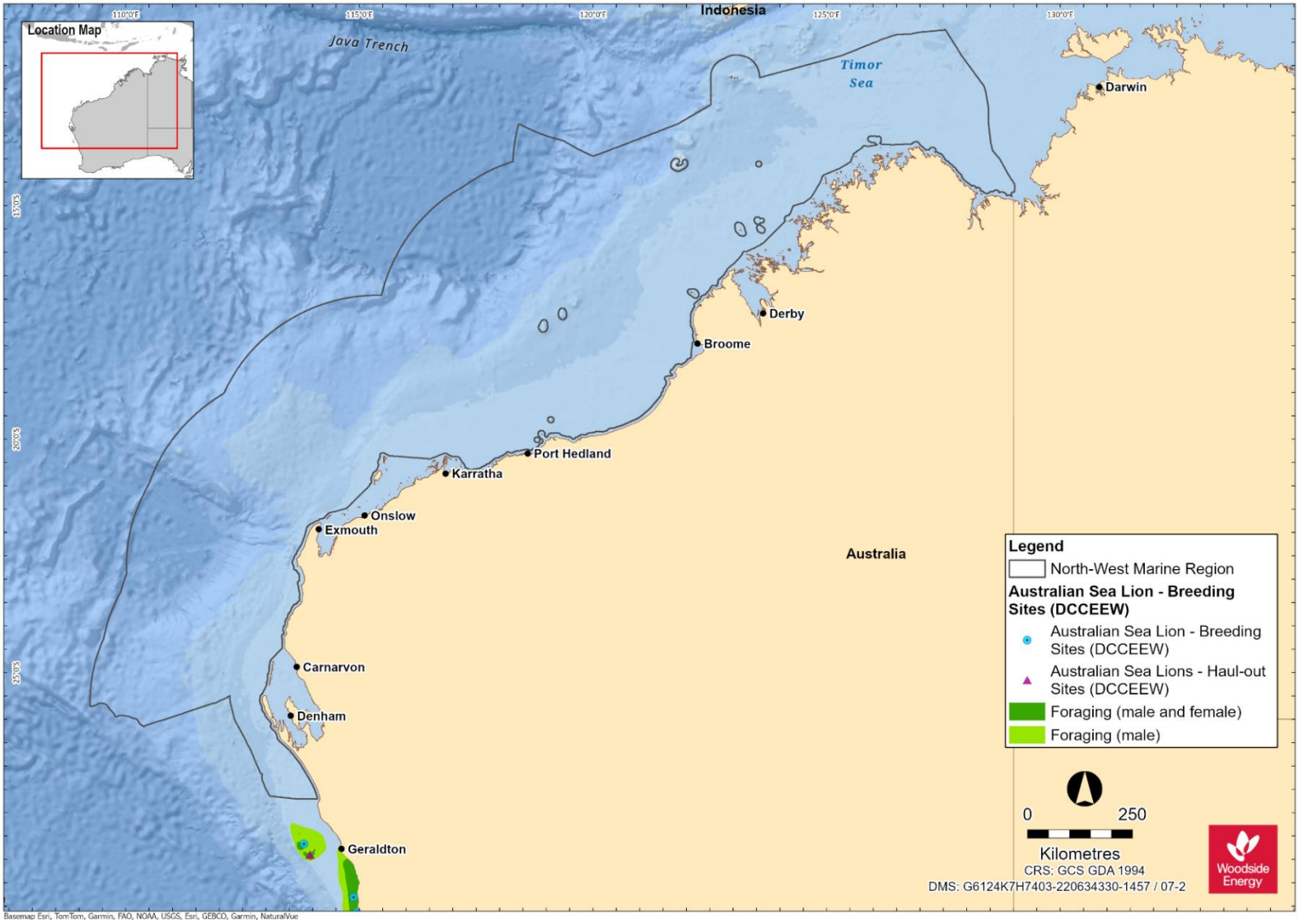

Figure 7-10: Australian sea lion BIAs in the northern extent of the SWMR closest to the NWMR (data source: DCCEEW, 2024b)

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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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		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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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	
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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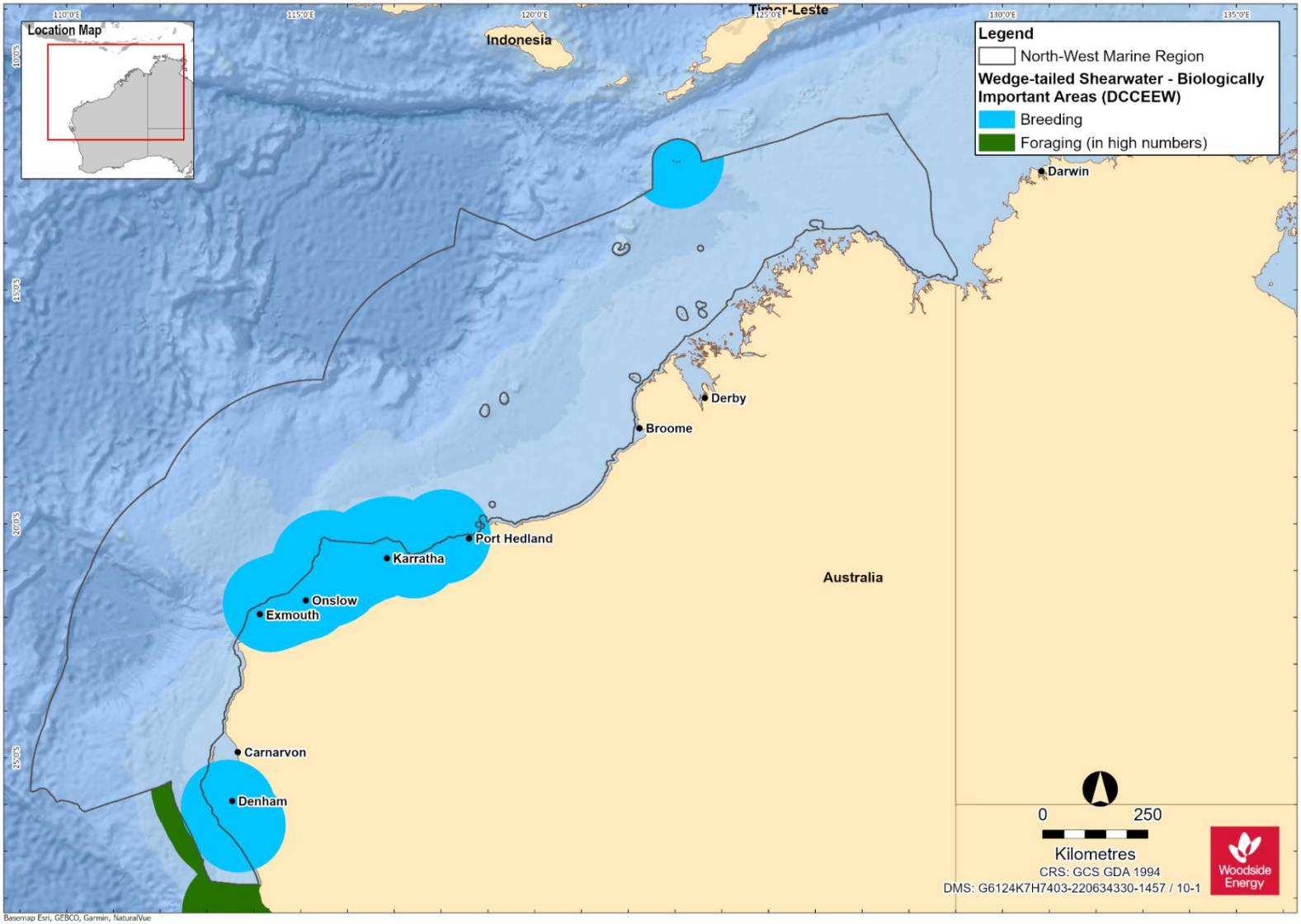

Figure 8-1: Wedge-tailed shearwater BIAs for the NWMR (data source: DCCEEW, 2024b)

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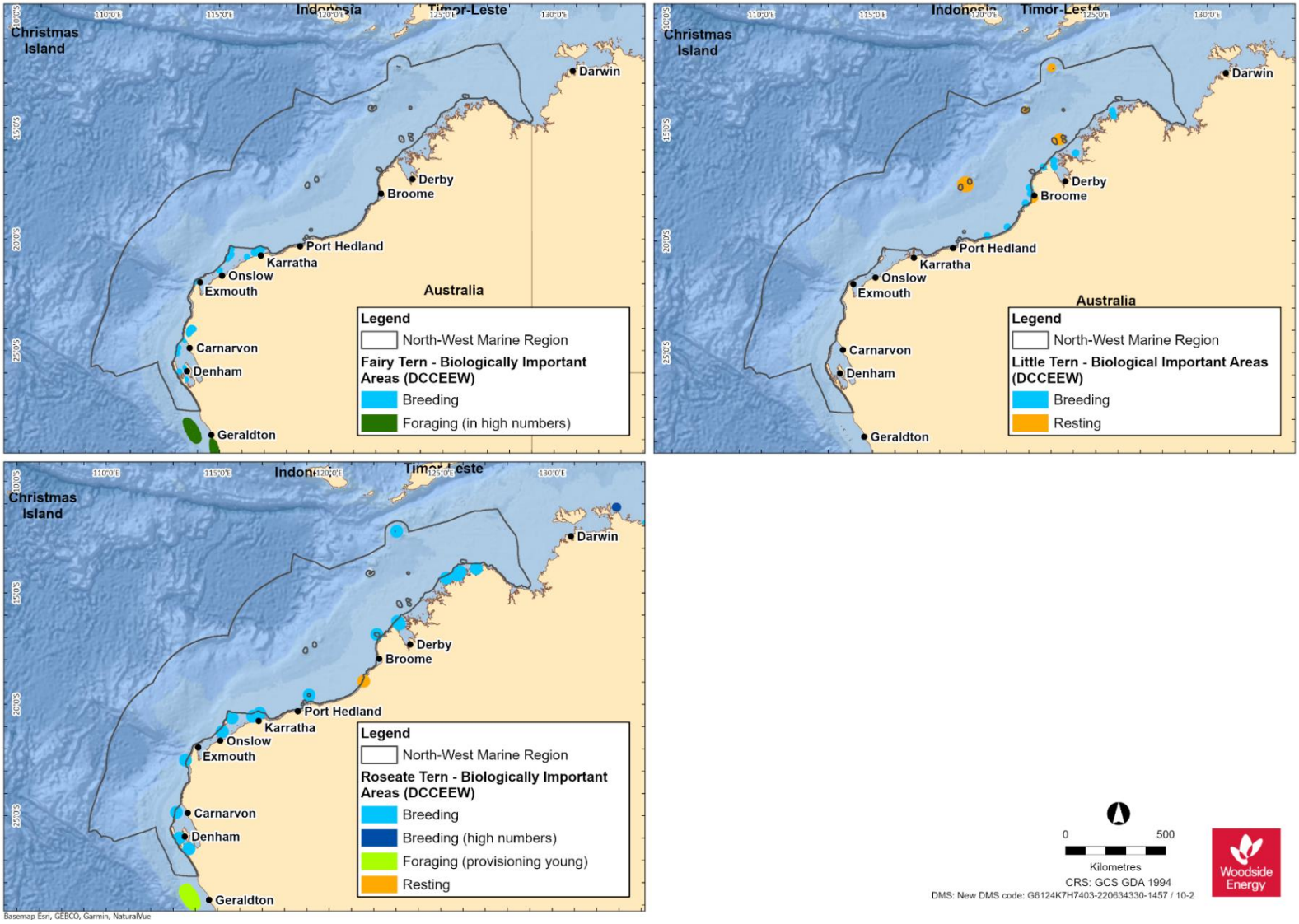

Figure 8-2: Tern species BIAs for the NWMR (data source: DCCEEW, 2024b)

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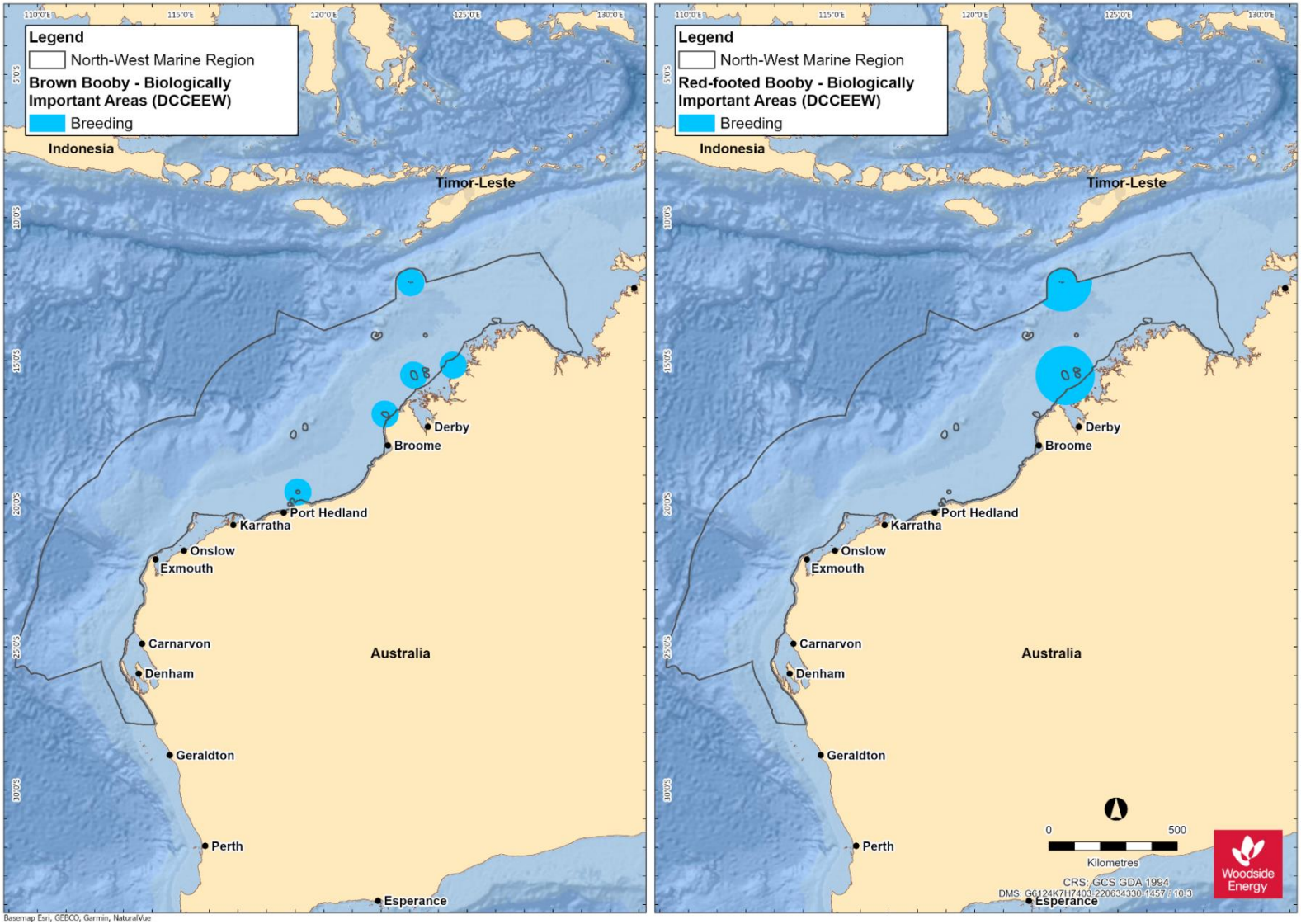

Figure 8-3: Red-footed and brown booby BIAs for the NWMR (data source: DCCEEW, 2024b)

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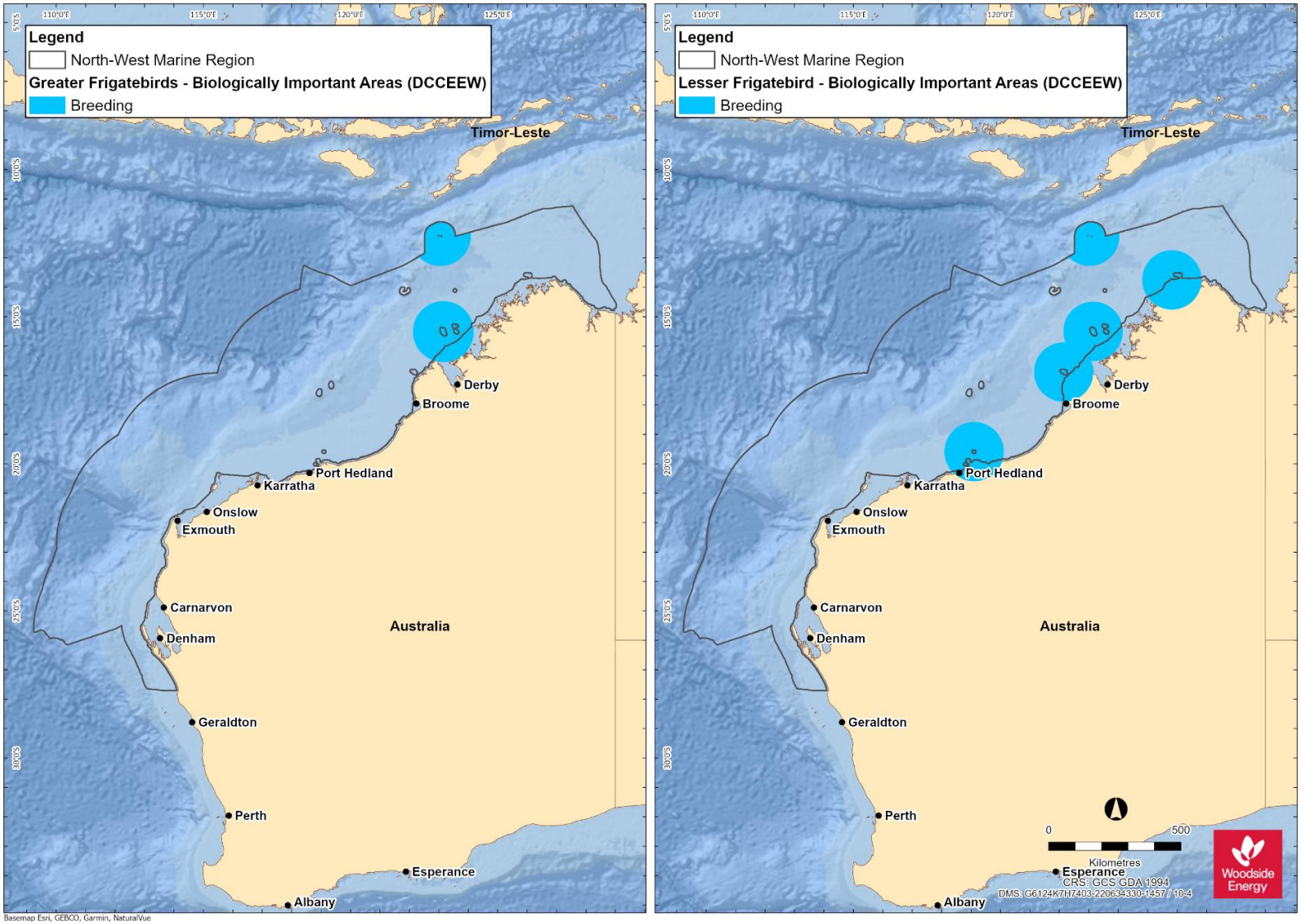

Figure 8-4: Greater and lesser frigatebird BIAs for the NWMR (data source: DCCEEW, 2024b)

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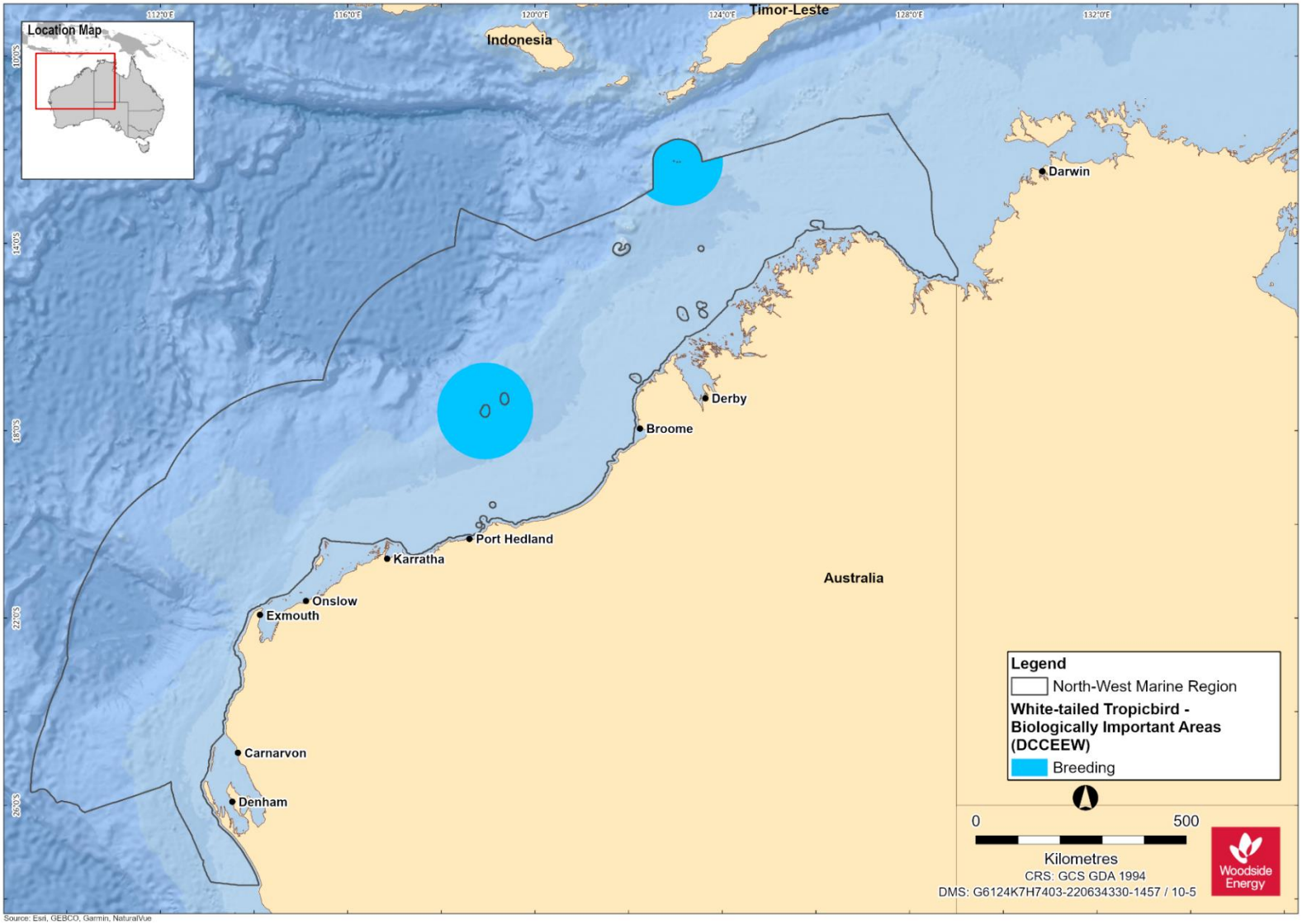

Figure 8-5: White-tailed tropicbird BIAs for the NWMR (data source: DCCEEW, 2024b)

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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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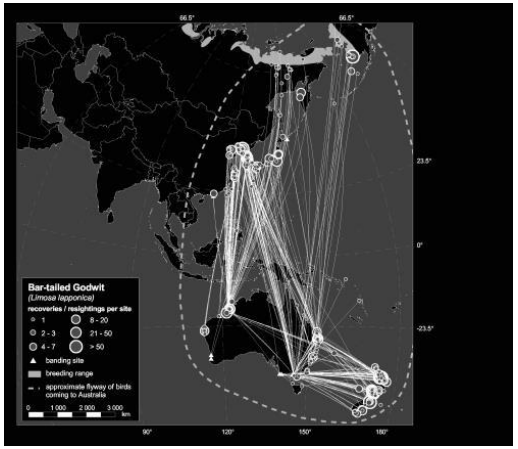
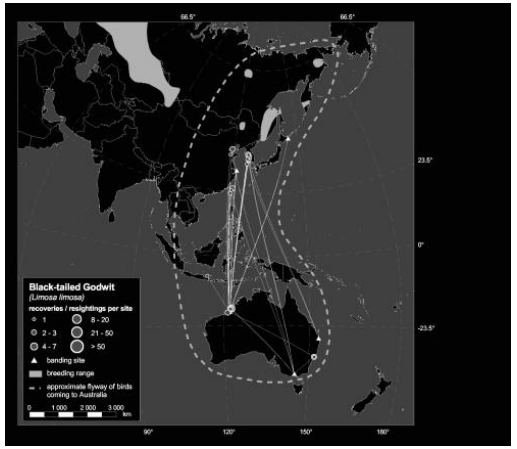
Table 8-4: Species summary for high and selected moderate occurrence key shorebird species

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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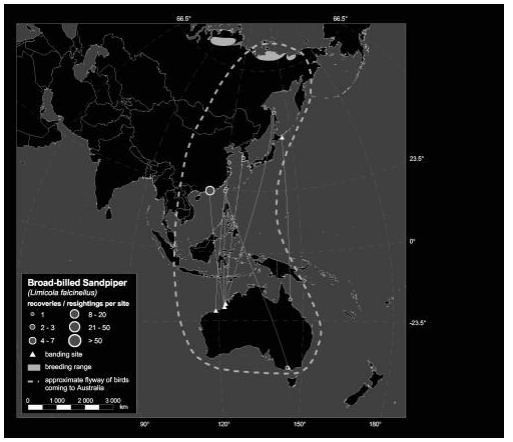
Species	Presence in NWMR	Roosting habitat	Foraging habitat	Diet	Migration From Minton et al (2006)
Broad billed sand piper	Regular visitor to coasts of the Pilbara and Kimberley between Onslow and Broome *Internationally important site:* • Port Hedland Saltworks	Sheltered sandy, shelly or shingly beaches	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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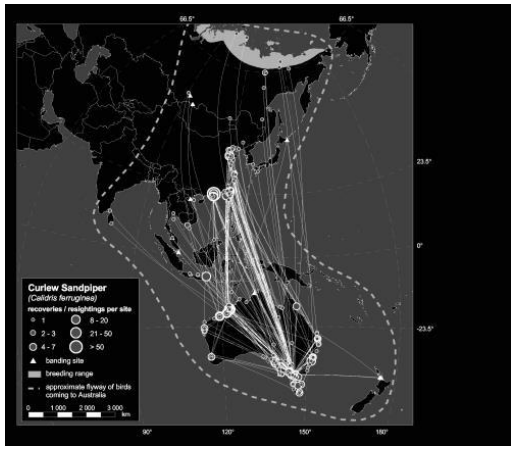
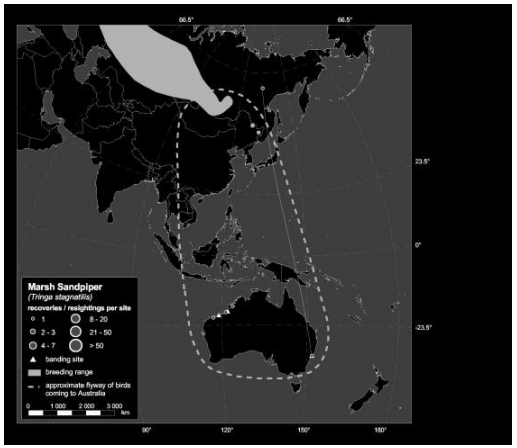
Species	Presence in NWMR	Roosting habitat	Foraging habitat	Diet	Migration From Minton et al (2006)
Curlew sandpiper	Widespread around coastal and subcoastal plains Non-breeding one year old birds may remain in Australia rather than migrating north *Internationally important site:* • Dampier Saltworks • 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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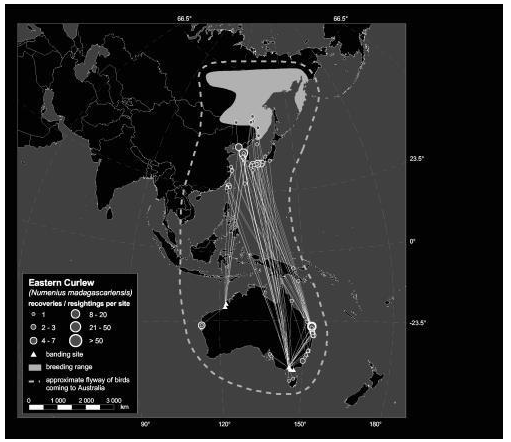
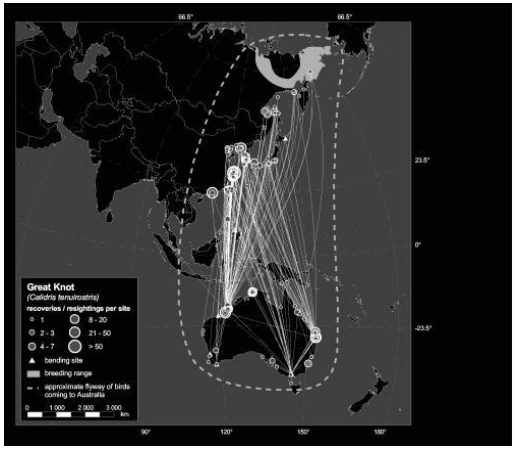
Species	Presence in NWMR	Roosting habitat	Foraging habitat	Diet	Migration From Minton et al (2006)
Eastern curlew	Continuous distribution from Barrow Island and Dampier Archipelago through the Kimberley region *Internationally important site:* • Eighty Mile Beach • Roebuck Bay	Sandy spits, sandbars and 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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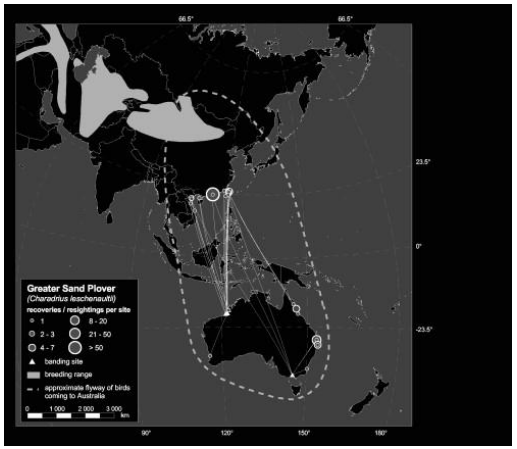
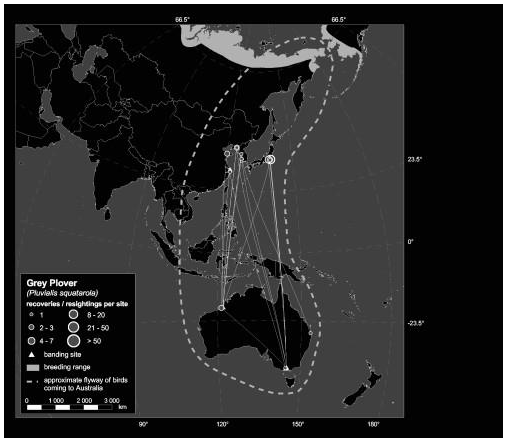
Species	Presence in NWMR	Roosting habitat	Foraging habitat	Diet	**Migration** From Minton et al (2006)
Greater sand plover	Widespread between North-west Cape and Roebuck Bay *Internationally important site:* • Eighty Mile Beach • Roebuck Bay	Sand-spits and banks on beaches or in tidal lagoons	Surface 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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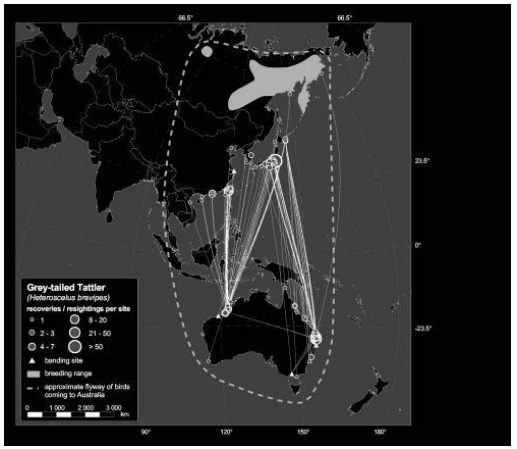
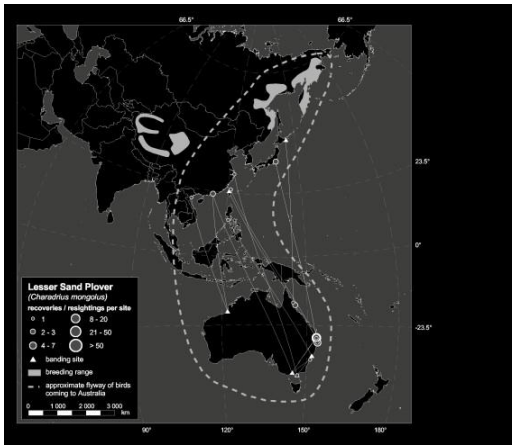
Species	Presence in NWMR	Roosting habitat	Foraging habitat	Diet	Migration From Minton et al (2006)
Grey-tailed tattler	Widespread from Houtman Abrolhos and the mainland adjacent to the Kimberley *Internationally important site:* • Barrow Island • Roebuck Bay • Eighty Mile Beach • Lacepede Islands	Branches 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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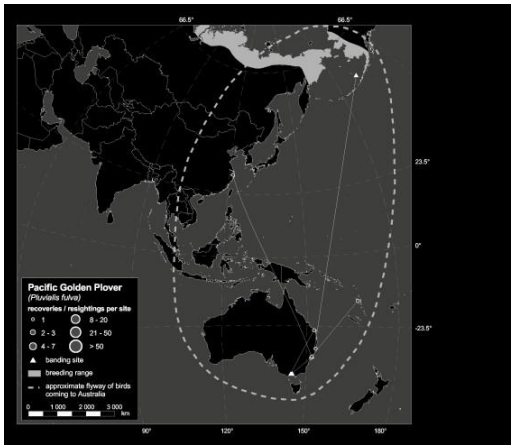
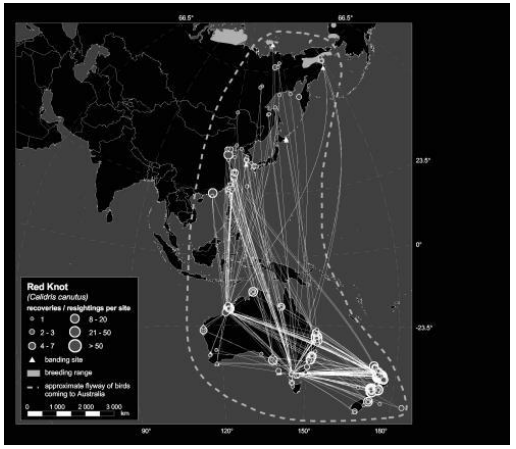
Species	Presence in NWMR	Roosting habitat	Foraging habitat	Diet	Migration From Minton et al (2006)
Pacific golden plover	Widespread along the coasts of the Pilbara and Kimberley *Nationally important site:* • Eighty Mile Beach	Sandy beaches and spits, rocky points, islets, exposed reef, occasionally 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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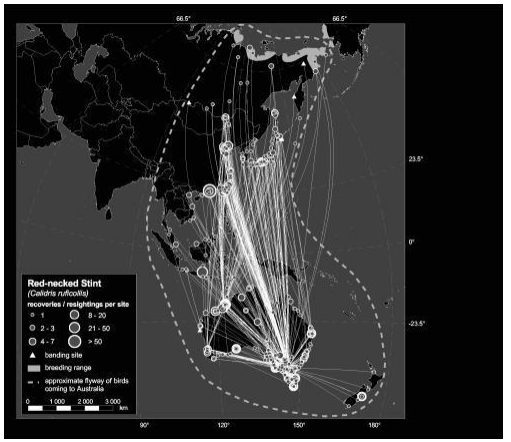
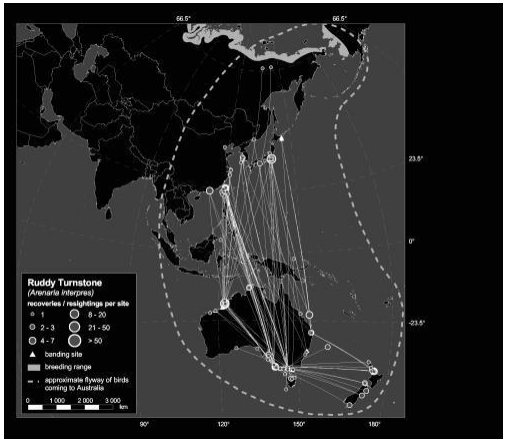
Species	Presence in NWMR	Roosting habitat	Foraging habitat	Diet	Migration From Minton et al (2006)
Red-necked stint	Widespread in coastal areas across Australia *Internationally important site:* • Barrow Island • Port Hedland Saltworks • Eighty Mile Beach • Roebuck Bay	Sheltered beaches, spits, banks 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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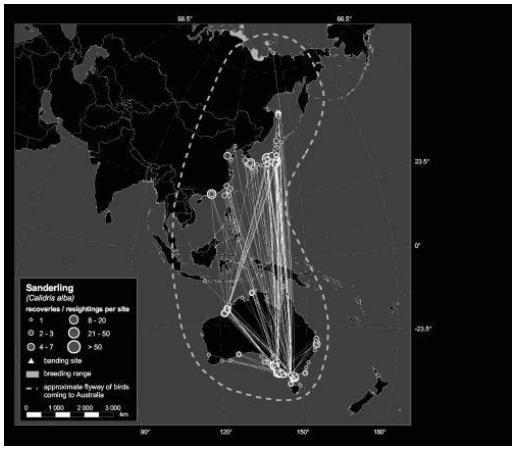
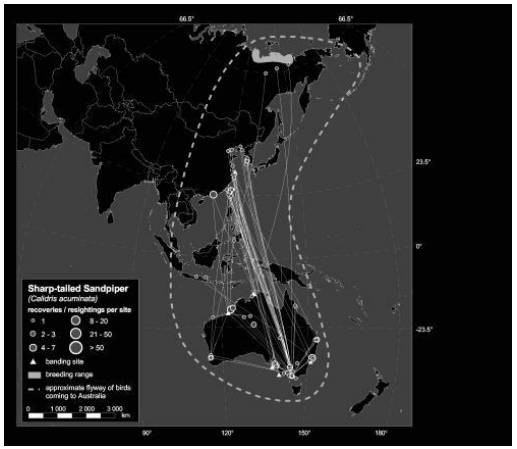
Species	Presence in NWMR	Roosting habitat	Foraging habitat	Diet	Migration From Minton et al (2006)
Sanderling	Occur most of the NWMR coast as far east as Derby *Internationally important site:* • Eighty Mile Beach • Roebuck Bay	Bare sand high on the beach clumps of washed-up kelp coastal dunes rocky 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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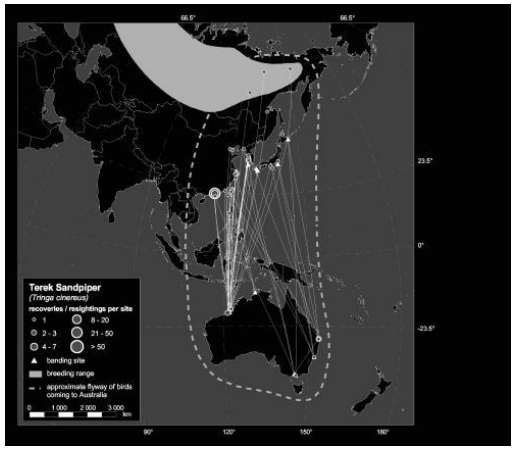
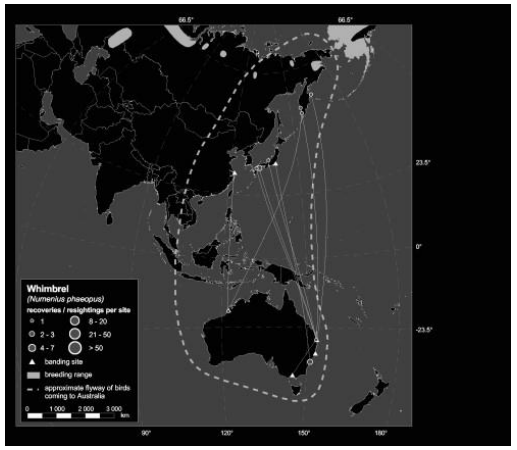
Species	Presence in NWMR	Roosting habitat	Foraging habitat	Diet	Migration From Minton et al (2006)
Terek sandpiper	The species is widespread in the Pilbara and Kimberley, from Dampier to Wyndham, with occasional records around Shark Bay *Internationally important site:* • Eighty Mile Beach • Roebuck 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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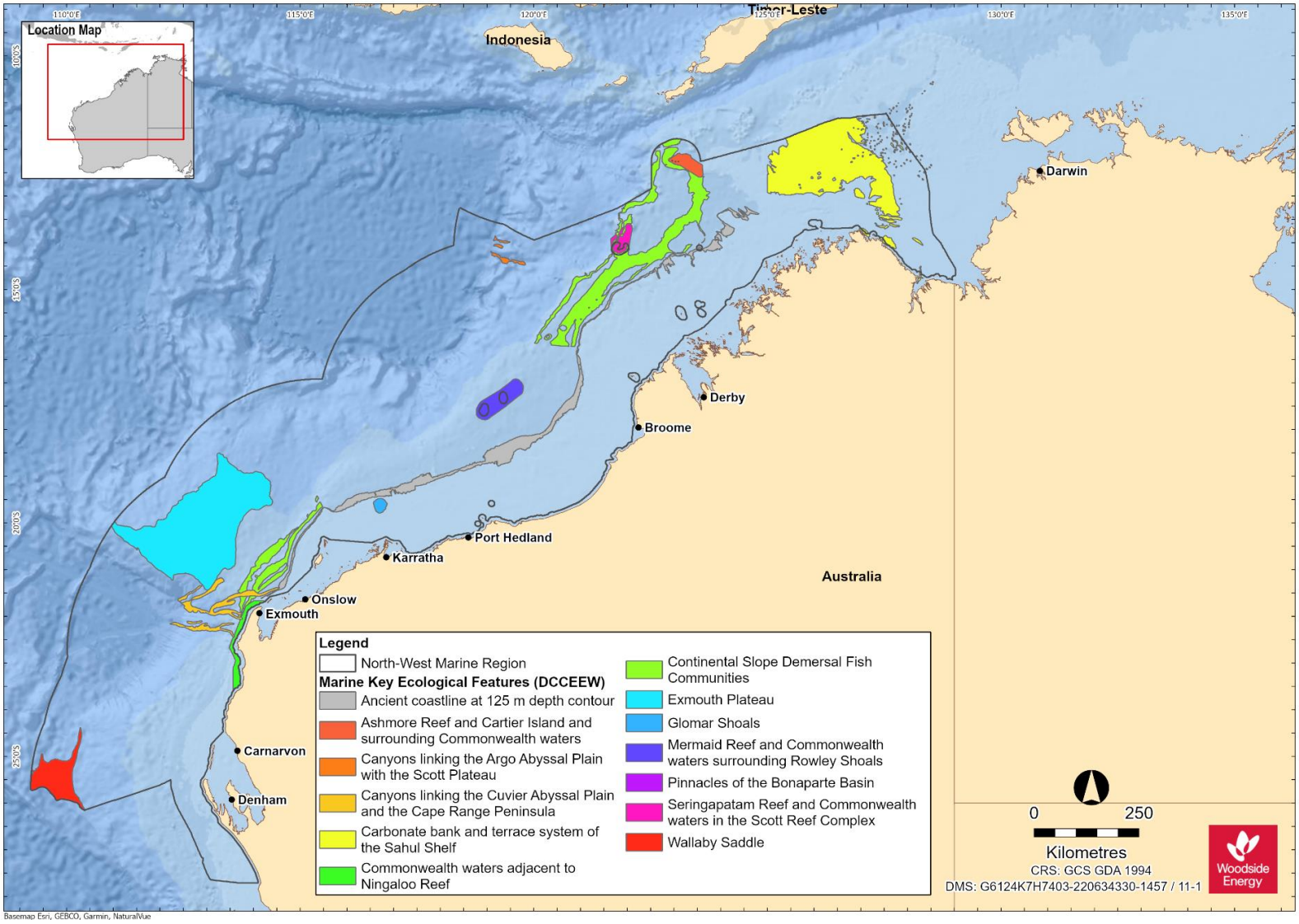

Figure 10-1: KEFs within the NWMR (data source: DCCEEW, 2024d)

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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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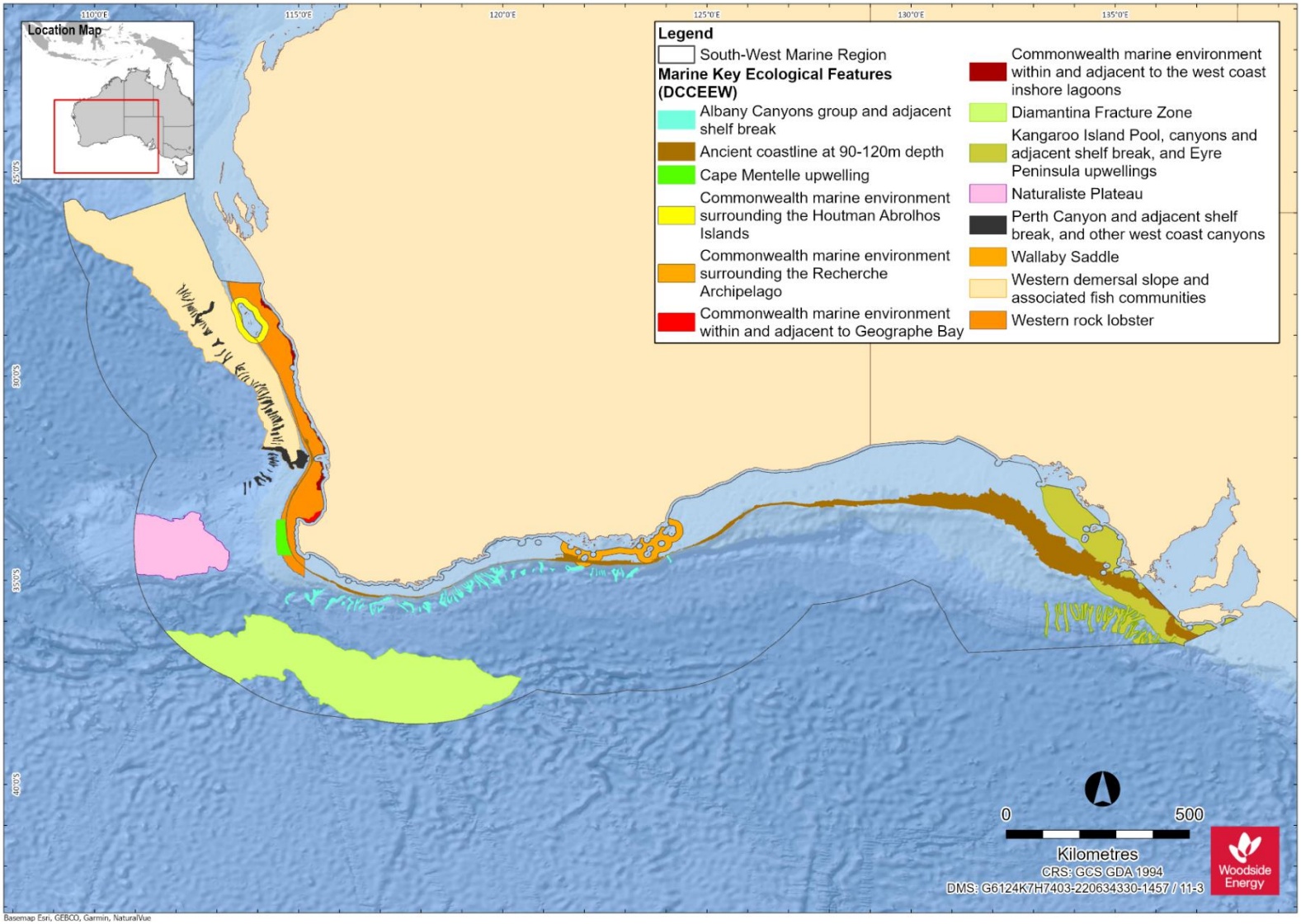

Figure 10-2: KEFs within the SWMR (data source: DCCEEW, 2024d)

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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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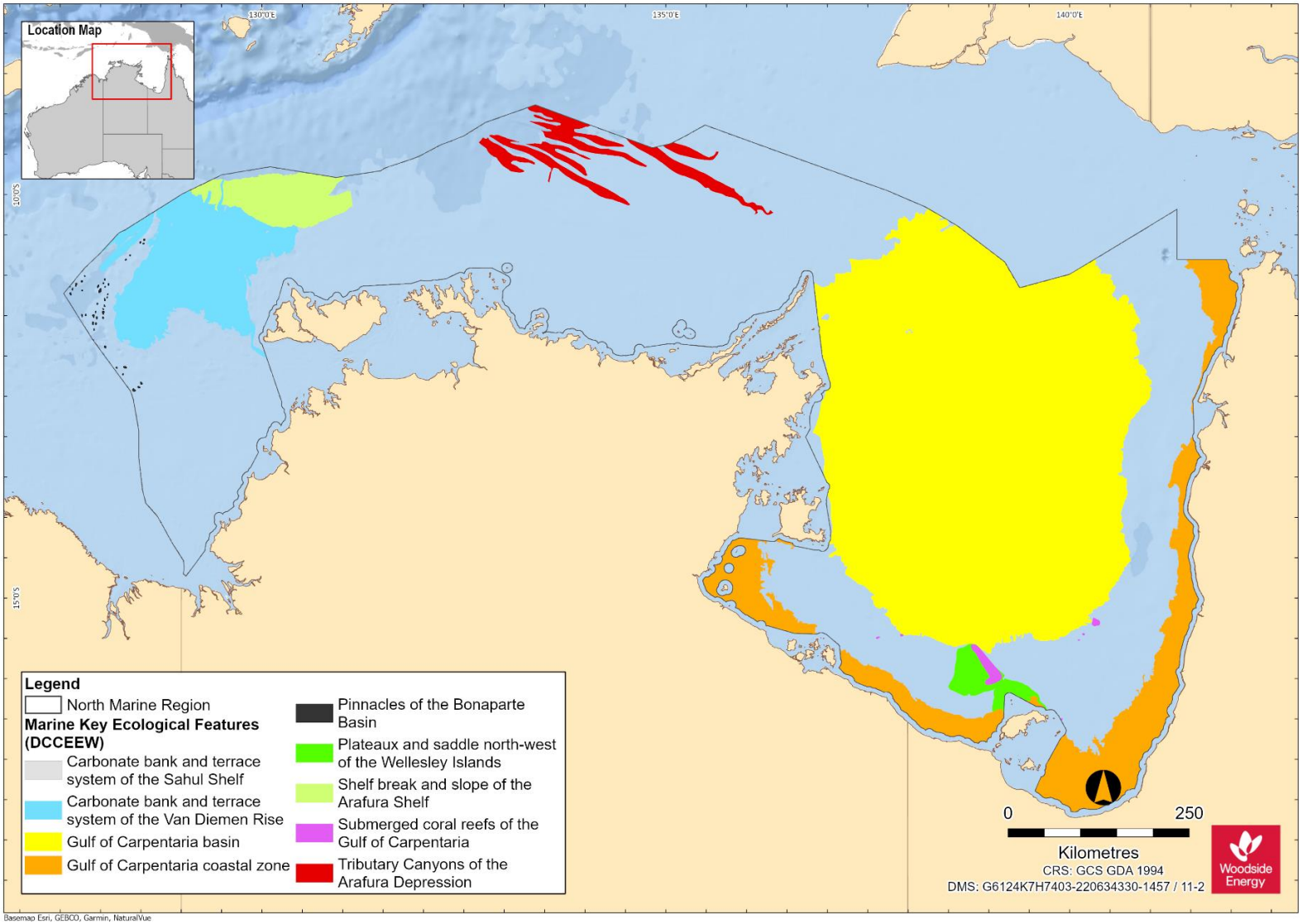

Figure 10-3: KEFs within the NMR (data source: DCCEEW, 2024d)

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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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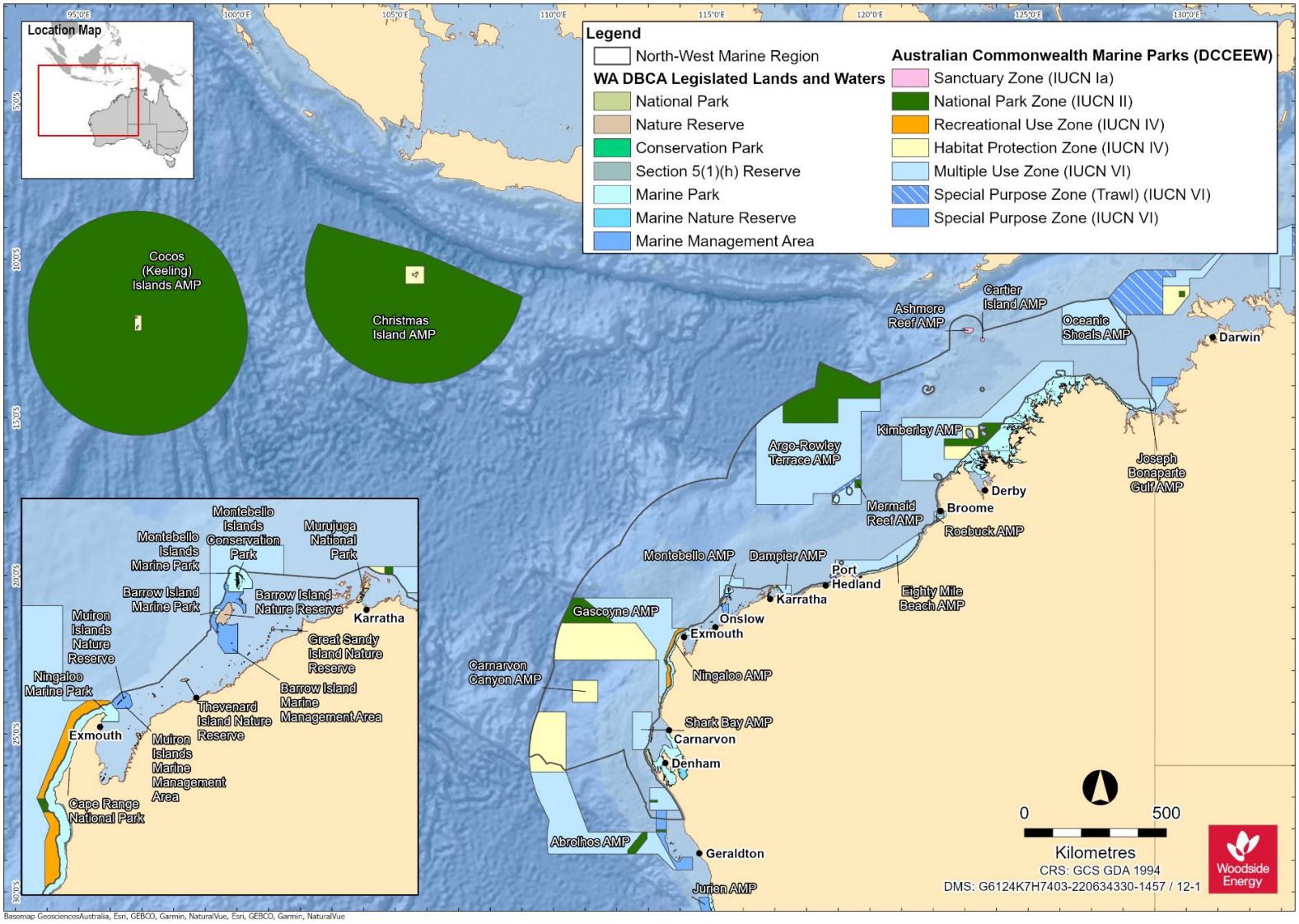

Figure 11-1: Commonwealth and State Marine Protected Areas for the NWMR and Indian Ocean Territories (data source: GA, 2024)

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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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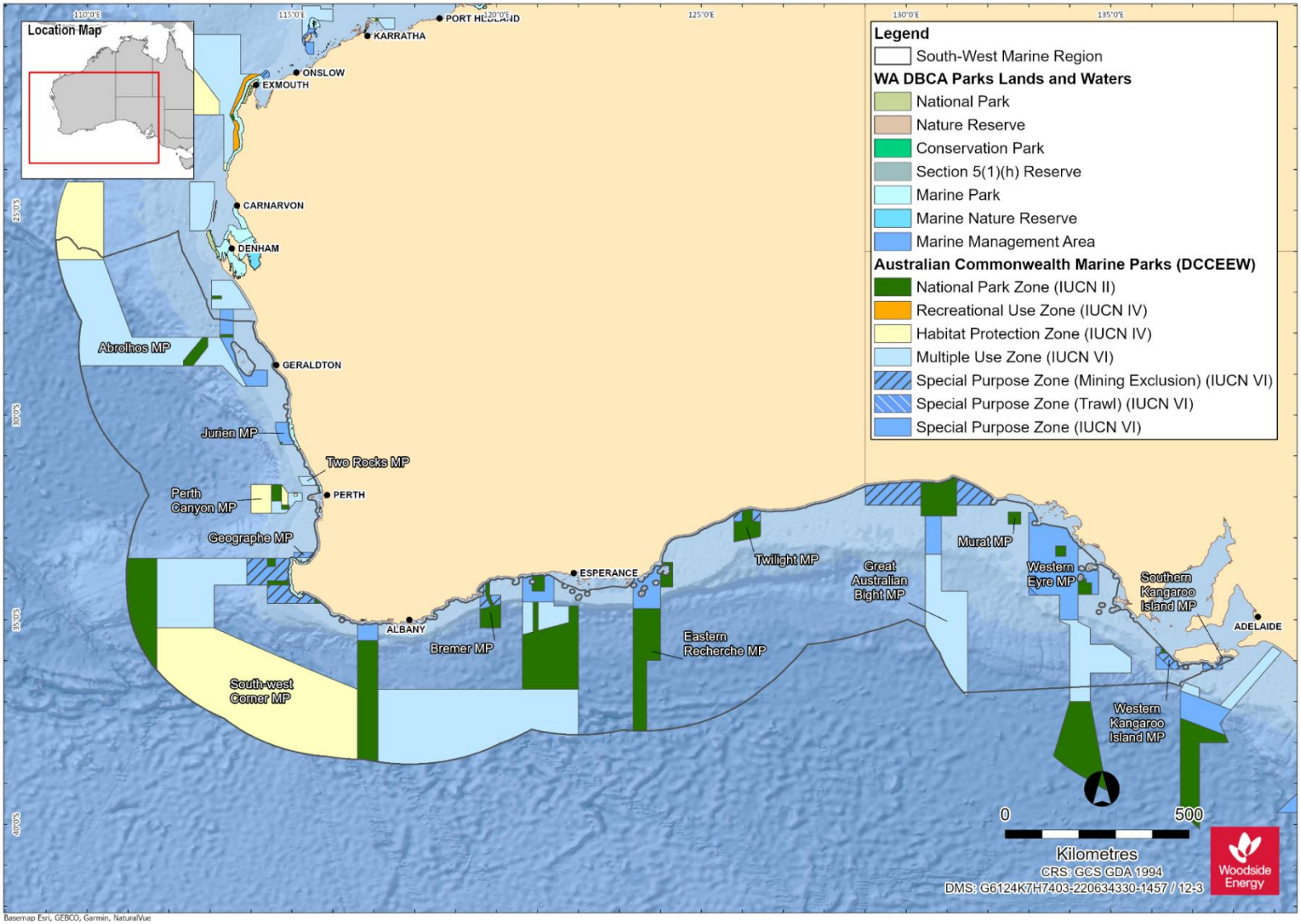

Figure 11-2: Commonwealth and State Marine Protected Areas for the SWMR (data source: GA, 2024)

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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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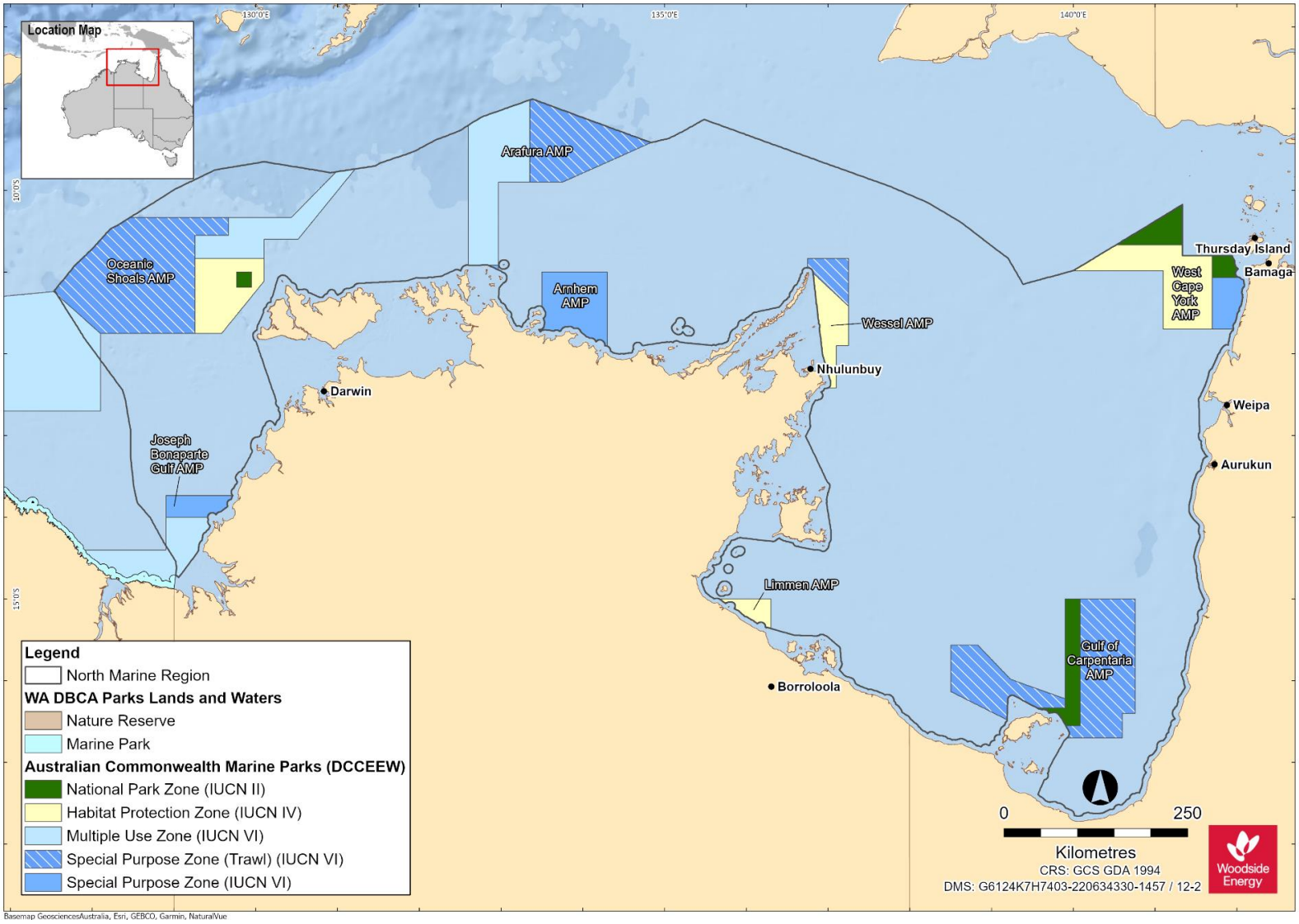

Figure 11-3: Commonwealth and State Marine Protected Areas within the NMR (data source: GA, 2024)

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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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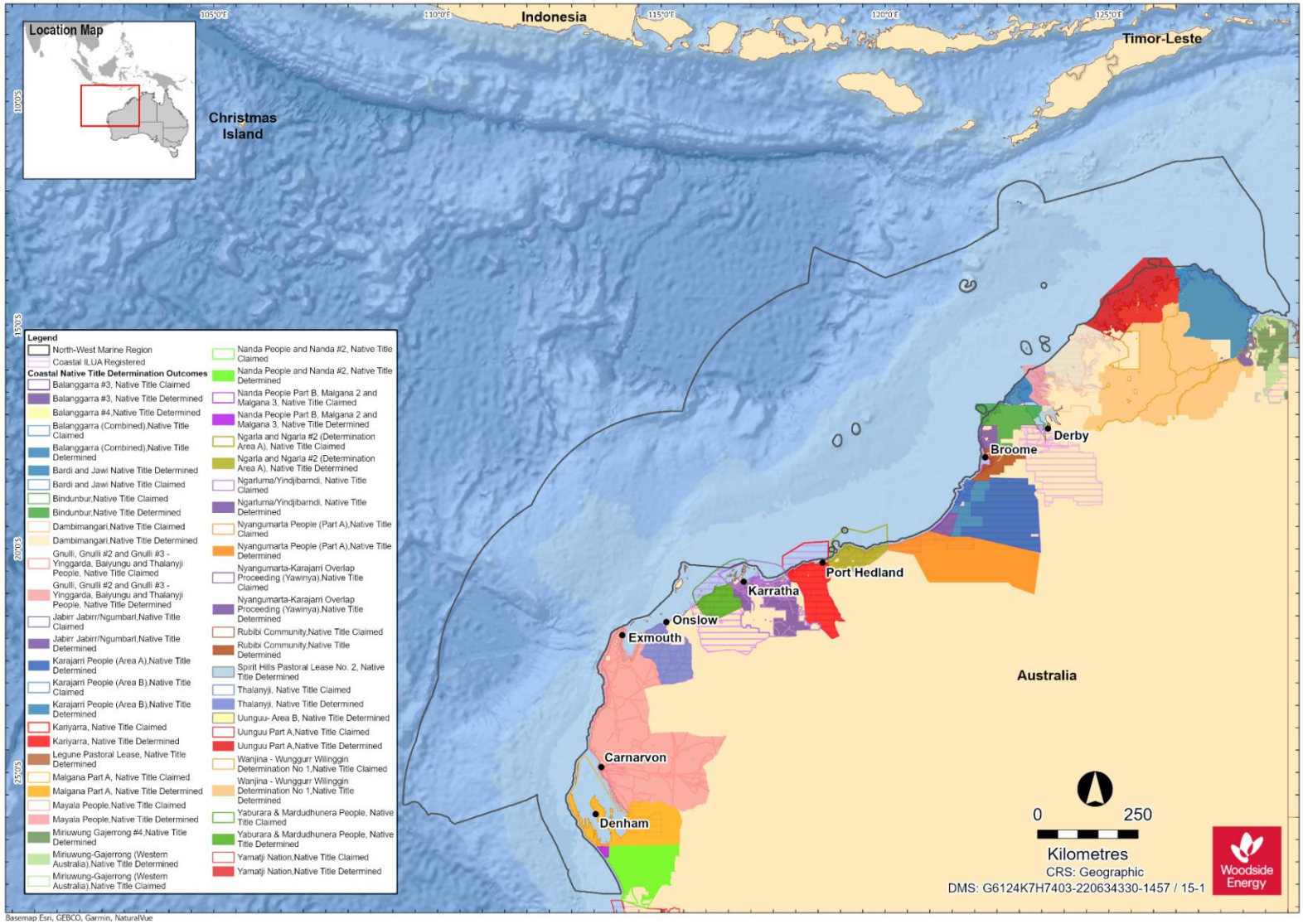

Figure 12-1: Coastal Native Title Claims / Determinations and Indigenous Land Use Agreements (ILUAs) in the NWMR (data source: DPLH, 2024)

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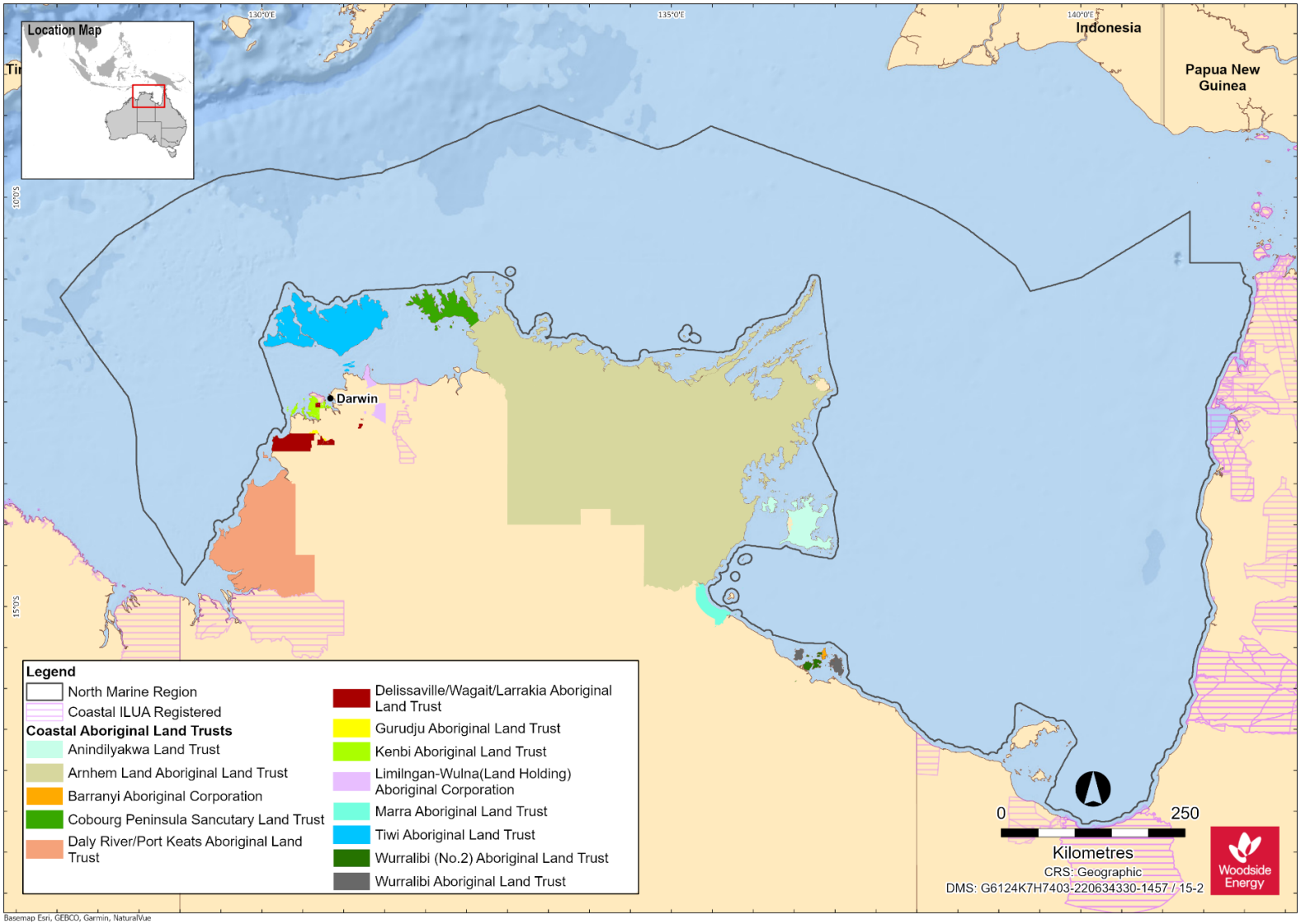

Figure 12-2: Coastal Native Title Claims / Determinations and ILUAs in the NMR (data source: DPLH, 2024)

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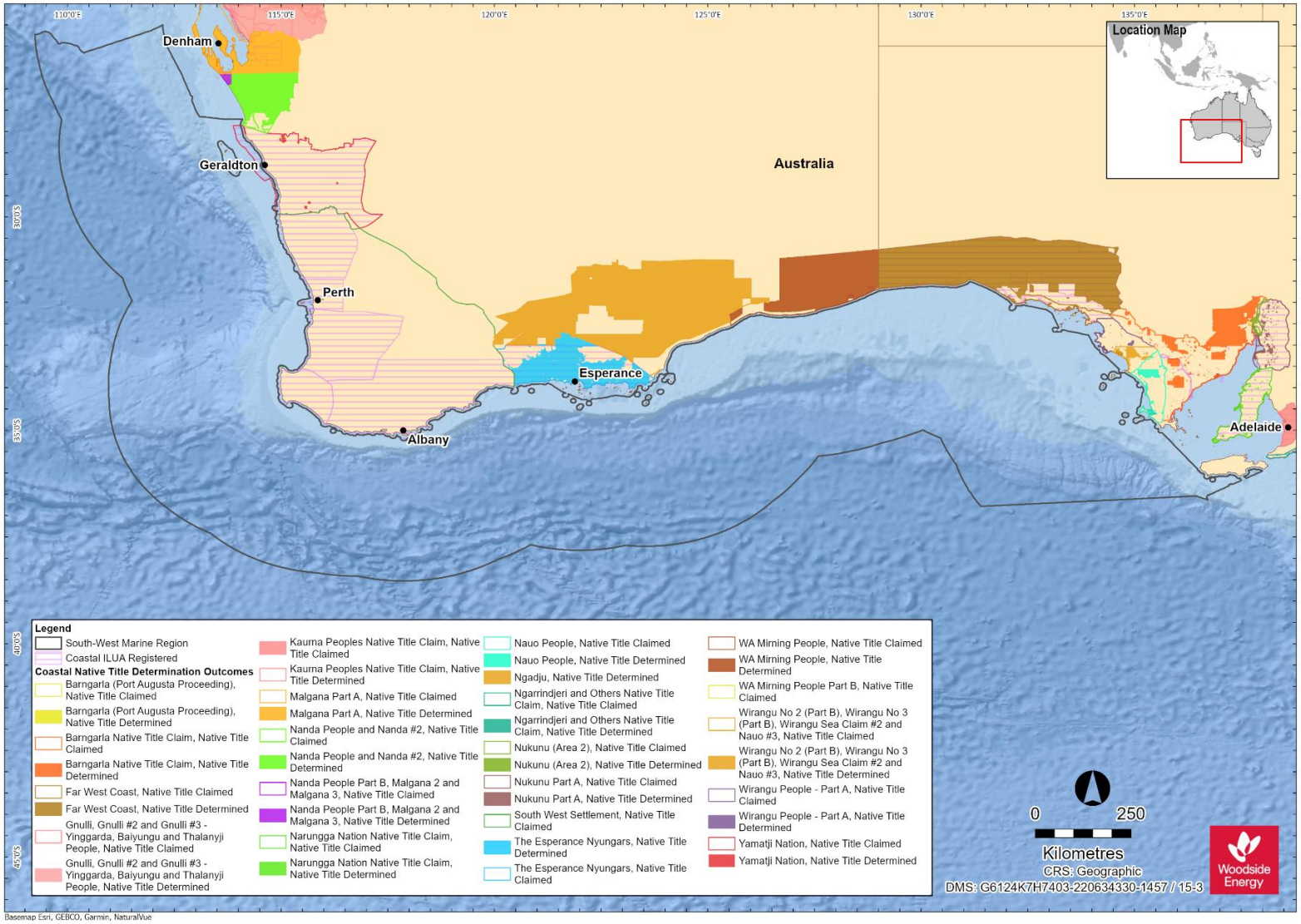

Figure 12-3: Coastal Native Title Claims / Determinations and ILUAs in the SWMR (data source: DPLH, 2024)

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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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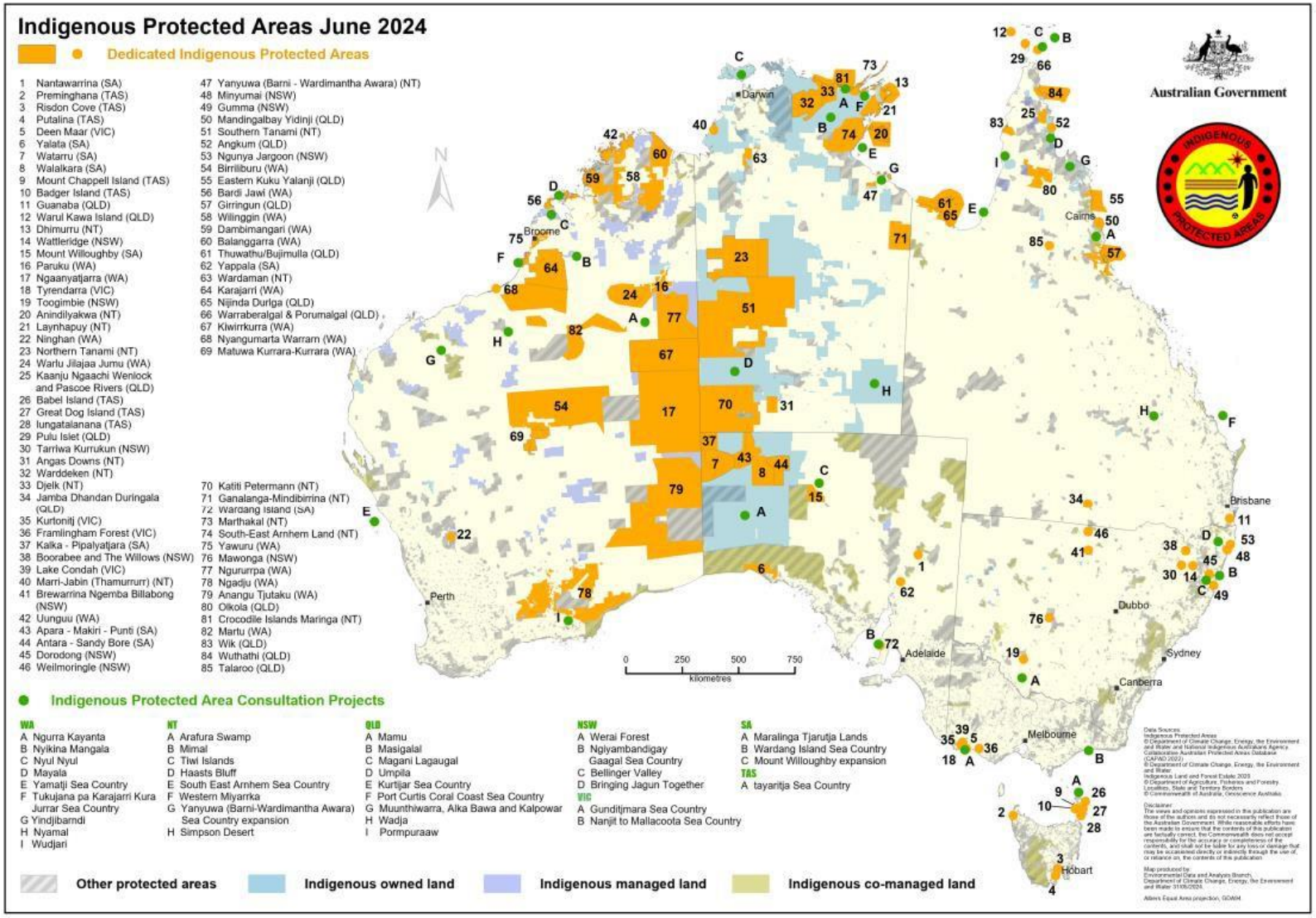

Figure 12-4: IPAs in Australia (data source: DCCEEW and NIAA, 2024)

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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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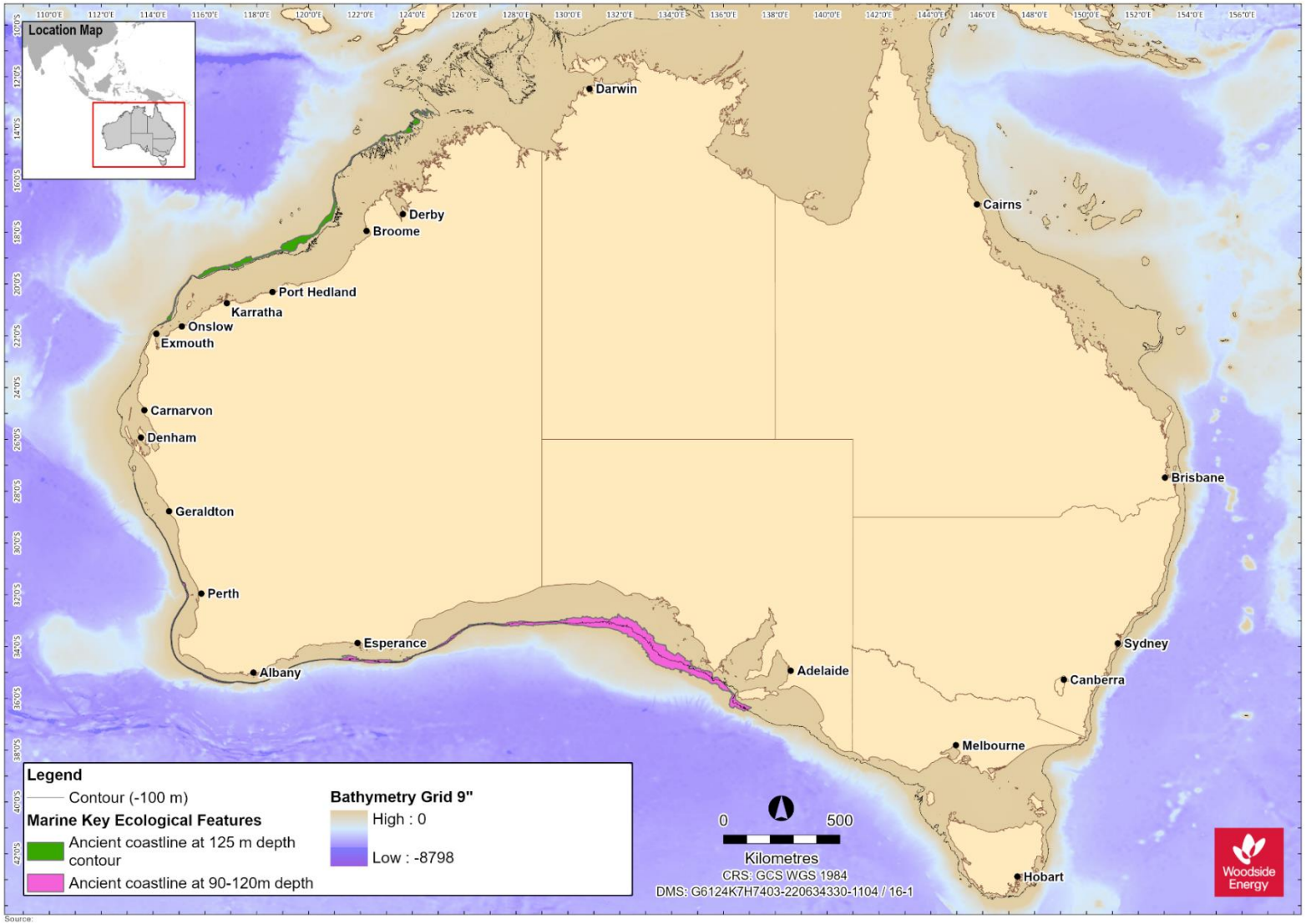

Figure 12-5: Indicative bathymetry of the ancient submerged landscape (data source: GA, 2024; DCCEEW, 2024d

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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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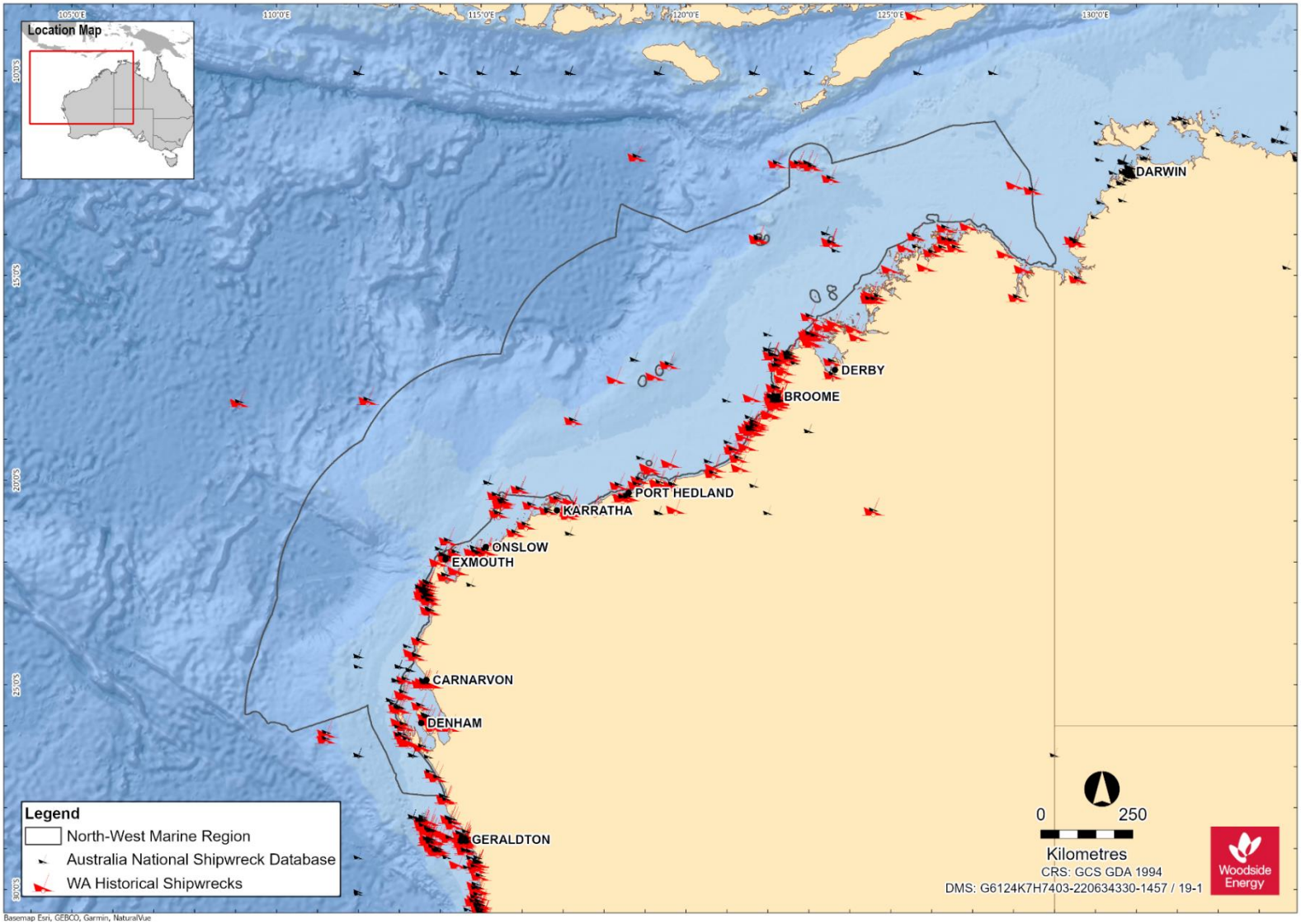

Figure 12-6: Shipwrecks in the NWMR (data source: WAM, 2018 and AODN, 2008)

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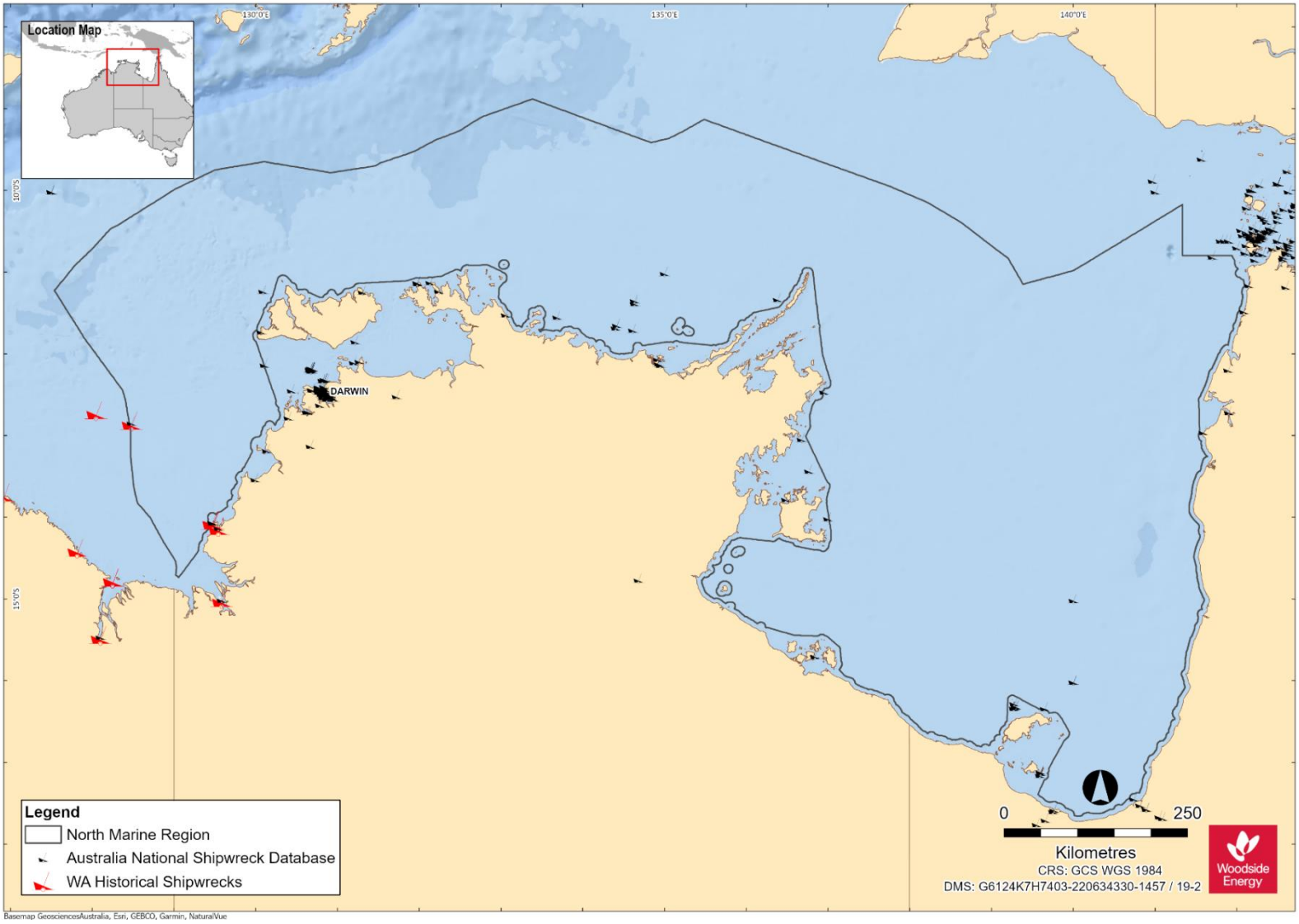

Figure 12-7: Shipwrecks in the NMR (data source: WAM, 2018 and AODN, 2008)

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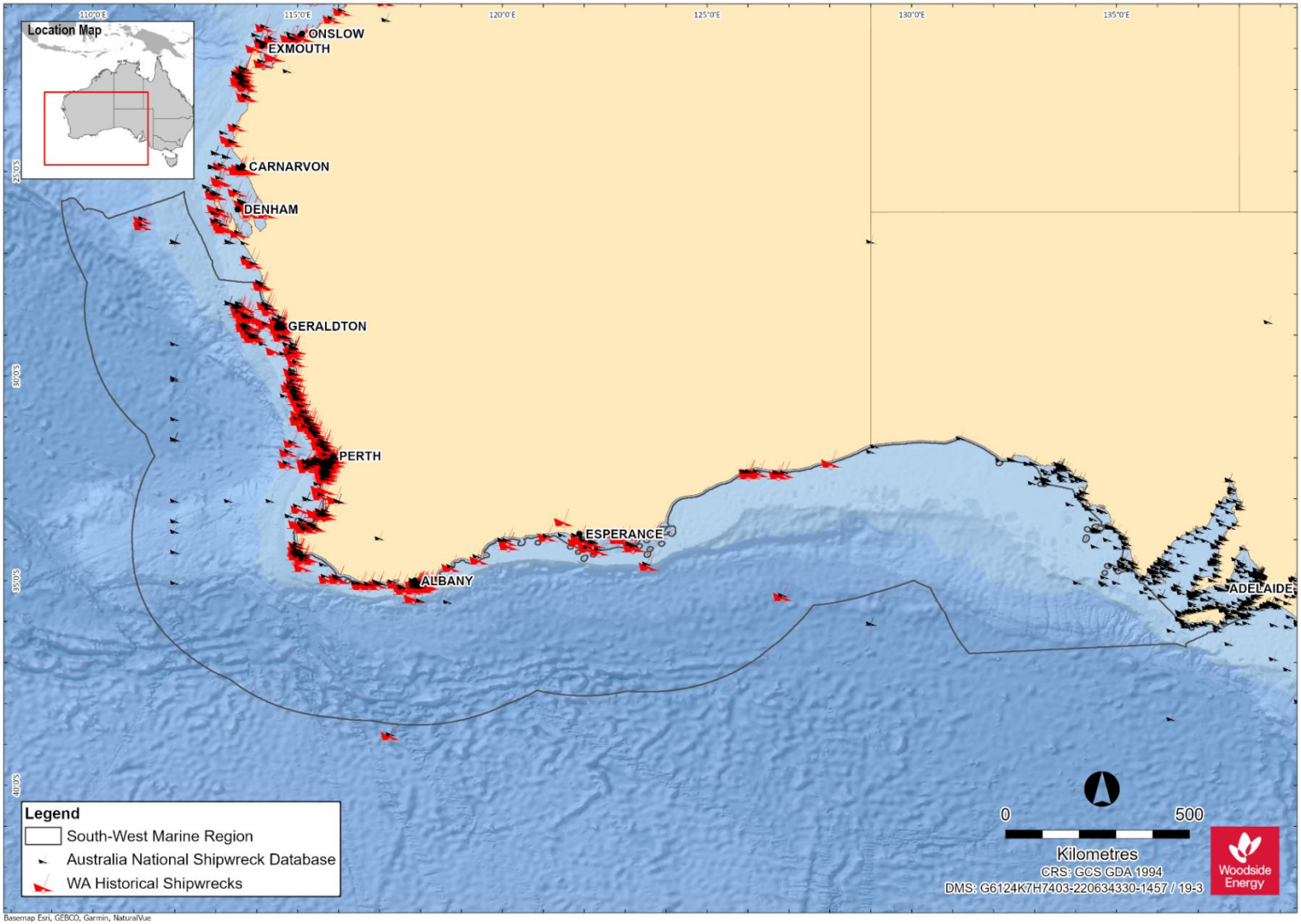

Figure 12-8: Shipwrecks in the SWMR (data source: WAM, 2018 and AODN, 2008)

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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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<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>
</table>

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<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><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>
</table>

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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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<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>
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Fishery	Woodside Activity Area			Description			
	Browse	NWS/IS	NWC				
				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			
	Browse	NWS/IS	NWC				
				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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<tr><td></td><td></td><td></td><td></td><td>Active licences/vessels:</td><td colspan="3">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)</td></tr>
<tr><td rowspan="5">Specimen Shell Managed Fishery</td><td rowspan="5">✓</td><td rowspan="5">✓</td><td rowspan="5">✓</td><td>Management area:</td><td colspan="3">The Specimen Shell Managed Fishery encompasses the entire WA coastline, but effort is concentrated in areas adjacent to 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).</td></tr>
<tr><td colspan="2">Species targeted</td><td>Fishing methods</td><td>Fishing depth</td></tr>
<tr><td colspan="2">The Specimen Shell Managed Fishery targets 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).</td><td>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).</td><td>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).</td></tr>
<tr><td>Fishing effort:</td><td colspan="3">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).</td></tr>
<tr><td>Active licences/ vessels:</td><td colspan="3">An exemption for the trial of remotely operated underwater vehicles (limited to one per licence) was in place during 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).</td></tr>
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Fishery	Woodside Activity Area			Description			
	Browse	NWS/IS	NWC				
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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<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">West Coast Deep Sea Crustacean Managed Fishery</td><td rowspan="5">✓</td><td rowspan="5">✓</td><td rowspan="5">✓</td><td>Management area:</td><td colspan="3">The West Coast Deep Sea Crustacean Managed Fishery extends north from Cape Leeuwin to the WA/NT border in water depths greater than 150 m within the AFZ.</td></tr>
<tr><td colspan="2">Species targeted</td><td>Fishing methods</td><td>Fishing depth</td></tr>
<tr><td colspan="2">The fishery targets deepwater crustaceans:
crystal (snow) crab (Chaceon albus)
giant (king) crab (Pseudocarcinus gigas)
champagne (spiny) crabs (Hypothalassia acerba).
Catches are dominated by crystal crabs of which 99% of their total allowable catch was landed in 2020 (How and Baudains, 2021).</td><td>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.</td><td>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]).</td></tr>
<tr><td>Fishing effort:</td><td colspan="3">Previous years catch based on State of the Fisheries annual reports provided by DPIRD: The total landings were 133.5 t in 2022, 155.5 t in 2021, 156.1 t in 2020, 155.7 t in 2019 and 168 t in 2018.
The total landings of crustaceans in 2022 was dominated by crystal crabs (123.2 t). A further 10 t of champagne crabs and 0.1 t of giant crab were also landed in 2022 (How et al., 2023c).
The stock status for crystal crab is considered adequate. However, it is likely that the stock biomass is near or below its threshold level, but above its limit level (How and Wiberg, 2023a).</td></tr>
<tr><td>Active licences/ vessels:</td><td colspan="3">There were seven licence holders with five vessels active in 2022 (How et al., 2023c).</td></tr>
<tr><td rowspan="3">Abrolhos Islands and Mid-West Trawl Fishery</td><td></td><td></td><td rowspan="3">✓</td><td>Management area:</td><td colspan="3">The Abrolhos Islands and Mid-West Trawl Fishery operates around the Abrolhos Islands within the SWMR.</td></tr>
<tr><td colspan="2">Species targeted</td><td>Fishing methods</td><td>Fishing depth</td></tr>
<tr><td colspan="2">Saucer scallops (Ylistrum balloti, formerly Amusium balloti).</td><td>Otter trawl.</td><td>Saucer scallops occur in inshore waters around 40 m depth at the Abrolhos Islands (Kangas et.al., 2021a).</td></tr>
</table>

[22] https://www.wafic.org.au/fishery/west-coast-deep-sea-crustacean-fishery/

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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 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><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">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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Fishery	Woodside Activity Area			Description			
	Browse	NWS/IS	NWC				
				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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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 Nickol Bay Prawn Managed Fishery landed 51 t in 2022, 123.4 t in 2021, 202.4 t in 2020, 254 t in 2019 and 81 t in 2018 (Wilkin et al., 2023b). Of the total landings in 2022, landings were dominated by 42 t banana prawns and 7 t brown tiger, and 2 t blue endeavour (Wilkin et al., 2023b). Fishing effort was 62 boat days, a decrease from 175 days in 2021 (Wilkin et al., 2023b). The banana prawn stock status within the Nickol Bay Prawn Managed Fishery is considered sustainable-adequate (Wilkin et al., 2023b).		
				Active licences/ vessels:	There were three participating vessels in 2022 (Wilkin et al., 2023b).		
Northern Demersal Scalefish Managed Fishery	✓			**Management area:**	The Northern Demersal Scalefish Managed Fishery is divided into two fishing areas: an inshore sector (Area 1) and an offshore sector (Area 2) (Newman et al., 2018). Area 1 permits line fishing only, between the high-water mark and the 30 m isobath. Area 2 permits handline, dropline and fish trap fishing methods and is further divided into zones. Zone A is an inshore area, Zone B comprises the area with most historical fishing activity, and Zone C is an offshore deep slope area representing waters deeper than 200 m (Fletcher et al., 2017).		
				Species targeted		**Fishing methods**	**Fishing depth**
				Goldband snapper (*Pristipomoides multidens*), blue-spotted emperor (*Lethrinus punctulantus*), red emperor (*Lutjanus sebae*), rankin cod (*Epinephelus multinotatus*).		Handline, dropline and fish trap.	Information not available.
				Fishing effort:	Previous years catch based on State of the Fisheries annual reports provided by DPIRD: The Northern Demersal Scalefish Managed Fishery landed 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).		
				Active licences/ vessels:	Eight active vessels in 2022 (Wakefield et al., 2023a).		

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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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<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 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="3">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="3">The South Coast Crustacean Managed Fishery comprises four fisheries: the Windy Harbour/Augusta Rock Lobster Managed Fishery, the Esperance Rock Lobster Managed Fishery, the Southern Rock Lobster Pot Regulation Fishery and the South Coast Deep-Sea Crab Fishery.</td></tr>
<tr><td colspan="2">Species targeted</td><td>Fishing methods</td><td>Fishing depth</td></tr>
<tr><td colspan="2">Southern rock lobster (Jasus edwardsii), western rock lobster (Panulirus cygnus), giant crab (Pseudocarcinus gigas), crystal crab (Chaceon albus), champagne crab (Hypothalassia acerba).</td><td>Pots.</td><td>Information not available.</td></tr>
<tr><td>Fishing effort:</td><td colspan="3">Previous years catch based on State of the Fisheries annual reports provided by DPIRD: The South Coast Crustacean Managed Fishery reported a total catch of 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><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>
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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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<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">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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<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">West Coast Purse Seine Managed Fishery</td><td rowspan="5">-</td><td rowspan="5">-</td><td rowspan="5">-</td><td>Management area:</td><td colspan="3">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).</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 such as:
scaly mackerel (Sardinella lemuru)
pilchards (Sardinops sagax)
Australian anchovy (Engraulis australis)
yellowtail scad (Trachurus novaezelandiae)
maray (Etrumeus teres)</td><td>Purse seine.</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 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).</td></tr>
<tr><td>Active licences/ vessels:</td><td colspan="3">Five active vessels in 2022 (Norriss and Blazeski, 2023d).</td></tr>
<tr><td rowspan="3">West Coast Rock Lobster Managed Fishery</td><td></td><td></td><td>✓</td><td>Management area:</td><td colspan="3">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.</td></tr>
<tr><td colspan="2">Species targeted</td><td>Fishing methods</td><td>Fishing depth</td></tr>
<tr><td colspan="2">Western rock lobster (Panulirus cygnus).</td><td>Baited pots.</td><td>Information not available.</td></tr>
</table>

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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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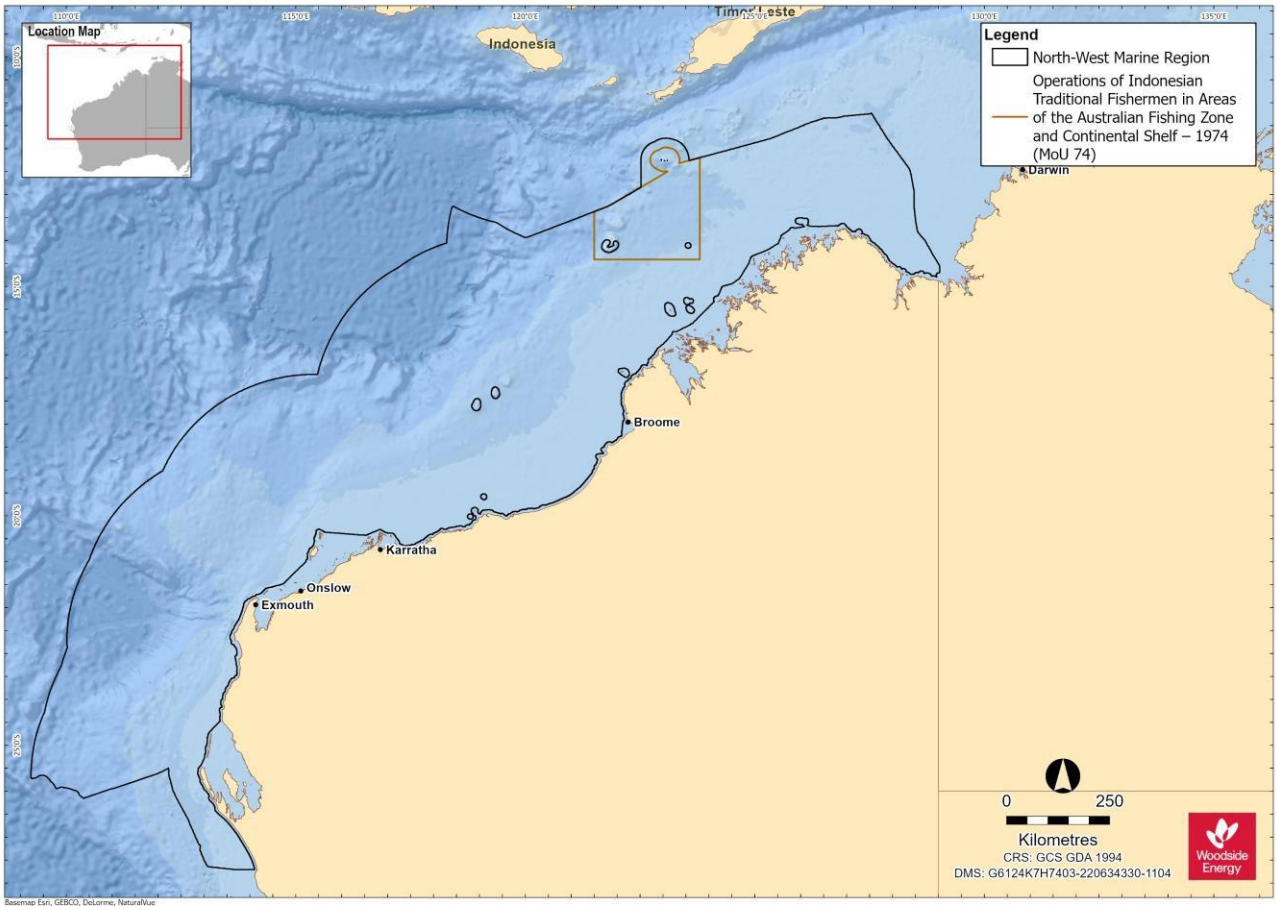

Figure 12-9: MOU 74 Box: operations of Indonesian traditional fishermen in areas of the Australian Fishing Zone and Continental Shelf – 1974

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	2006/2667 Action	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	2004/1890 Action	Not Controlled	Completed
Cazadores 2D seismic survey	2004/1720 Action	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	2013/7013 Action	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) Action	2001/417	Not Controlled	Completed
Jansz-2 and 3 Appraisal Wells Action	2002/754	Not Controlled	Completed
Klammer 2D Seismic Survey Action	2002/868	Not Controlled	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 Action	2000/17	Not Controlled	Completed
Manaslu - 1 and Huascaran - 1 Offshore Exploration Wells	2001/235 Action	Not Controlled	Completed
Marine Seismic Survey in WA-239-P Action	2000/24	Not Controlled	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 Action	2000/3	Not Controlled	Completed
Port Hedland Channel Risk and Optimisation Project, WA	2017/7915 Action	Not Controlled	Completed
Project Highclere Geophysical Survey Controlled Action	2021/9023	Not	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	2009/5212	Not Controlled Action (Particular Manner)	Post-Approval
Apache Northwest Shelf Van Gogh Field Appraisal Drilling Program	2007/3495	Not Controlled Action (Particular Manner)	Post-Approval
Aperio 3D Marine Seismic Survey, WA	2012/6648	Not Controlled Action (Particular Manner)	Post-Approval
Artemis-1 Drilling Program (WA-360-P)	2010/5432	Not Controlled Action (Particular Manner)	Post-Approval
Aurora MC3D Marine Seismic Survey	2010/5510	Not Controlled Action (Particular Manner)	Post-Approval
Australia to Singapore Fibre Optic Submarine Cable System	2011/6127	Not Controlled Action (Particular Manner)	Post-Approval
Babylon 3D Marine Seismic Survey, Commonwealth Waters, nr Exmouth WA	2013/7081	Not Controlled Action (Particular Manner)	Post-Approval
Balnaves Condensate Field Development	2011/6188	Not Controlled Action (Particular Manner)	Post-Approval
Bonaventure 3D seismic survey	2006/2514	Not Controlled Action (Particular Manner)	Post-Approval
Braveheart 2D Infill Marine Seismic Survey 100km offshore	2008/4442	Not Controlled Action (Particular Manner)	Post-Approval
Braveheart 2D Marine Seismic Survey	2005/2322	Not Controlled Action (Particular Manner)	Post-Approval
Cable Seismic Exploration Permit areas WA-323-P and WA-330-P	2008/4227	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Manner)			
Cape Preston East - Iron Ore Export Facilities, Pilbara, WA	2013/6844	Not Controlled Action (Particular Manner)	Post-Approval
Caswell MC3D Marine Seismic Survey	2012/6594	Not Controlled Action (Particular Manner)	Post-Approval
Cerberus exploration drilling campaign, Carnarvon Basin, WA	2016/7645	Not Controlled Action (Particular Manner)	Post-Approval
CGGVERITAS 2010 2D Seismic Survey	2010/5714	Not Controlled Action (Particular Manner)	Post-Approval
Charon 3D Marine Seismic Survey	2007/3477	Not Controlled	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 Action (Particular Manner)	2008/4558	Not Controlled	Post-Approval
Enfield oilfield 3D Seismic Survey Action (Particular Manner)	2006/3132	Not Controlled	Post-Approval
Exmouth West 2D Marine Seismic Survey	2008/4132	Not Controlled Action (Particular Manner)	Post-Approval
Exploration drilling of Zeus-1 well Action (Particular Manner)	2008/4351	Not Controlled	Post-Approval
Exploration Drilling Program - Permit areas - WA-314-P, WA-315-P, WA-398-P.	2008/4064	Not Controlled Action (Particular Manner)	Post-Approval
Fletcher-Finucane Development, WA26-L and WA191-P	2011/6123	Not Controlled Action (Particular Manner)	Post-Approval
Foxhound 3D Non-Exclusive Marine Seismic Survey	2009/4703	Not Controlled Action (Particular Manner)	Post-Approval
Gazelle 3D Marine Seismic Survey in WA-399-P and WA-42-L	2010/5570	Not Controlled Action (Particular Manner)	Post-Approval
Geco Eagle 3D Marine Seismic Survey	2008/3958	Not Controlled Action (Particular Manner)	Post-Approval
Geoscience Australia - Marine survey in Browse Basin to acquire data to assist assessment of CO2 sto	2013/6747	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Gigas 2D Pilot Ocean Bottom Cable Marine Seismic Survey	2007/3839	Not Controlled Action (Particular Manner)	Post-Approval
Glencoe 3D Marine Seismic Survey WA-390-P	2007/3684	Not Controlled Action (Particular Manner)	Post-Approval
Greater Western Flank Phase 1 gas Development	2011/5980	Not Controlled Action (Particular Manner)	Post-Approval
Grimalkin 3D Seismic Survey	2008/4523	Not Controlled Action (Particular Manner)	Post-Approval
Guacamole 2D Marine Seismic Survey	2008/4381	Not Controlled Action (Particular Manner)	Post-Approval
Harmony 3D Marine Seismic Survey	2012/6699	Not Controlled Action (Particular Manner)	Post-Approval
Harpy 1 exploration well	2001/183	Not Controlled Action (Particular Manner)	Post-Approval
Honeycombs MC3D Marine Seismic Survey	2012/6368	Not Controlled Action (Particular Manner)	Post-Approval
Huzzas MC3D Marine Seismic Survey (HZ-13) Carnarvon Basin, offshore WA	2013/7003	Not Controlled Action (Particular Manner)	Post-Approval
Huzzas phase 2 marine seismic survey, Exmouth Plateau, Northern Carnarvon Basin, WA	2013/7093	Not Controlled Action (Particular Manner)	Post-Approval
Ichthys 3D Marine Seismic Survey	2010/5550	Not Controlled Action (Particular Manner)	Post-Approval
INDIGO Marine Cable Route Survey (INDIGO)	2017/7996	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Manner)			
John Ross & Rosella Off Bottom Cable Seismic Exploration Program	2008/3966	Not Controlled Action (Particular Manner)	Post-Approval
Judo Marine 3D Seismic Survey within and adjacent to WA-412-P	2008/4630	Not Controlled Action (Particular Manner)	Post-Approval
Judo Marine 3D Seismic Survey within and adjacent to WA-412-P	2009/4801	Not Controlled Action (Particular Manner)	Post-Approval
Julimar Brunello Gas Development Project	2011/5936	Not Controlled Action (Particular Manner)	Post-Approval
Kingtree & Ironstone-1 Exploration Wells	2011/5935	Not Controlled Action (Particular Manner)	Post-Approval
Klimt 2D Marine Seismic Survey	2007/3856	Not Controlled	Post-Approval
Action (Particular Manner)			
Koolama 2D Seismic Survey Dampier Basin	2010/5420	Not Controlled Action (Particular Manner)	Post-Approval
Kraken, Lusca & Asperus 3D Marine Seismic Survey	2013/6730	Not Controlled Action (Particular Manner)	Post-Approval
Laverda 3D Marine Seismic Survey and Vincent M1 4D Marine Seismic Survey	2010/5415	Not Controlled Action (Particular Manner)	Post-Approval
Laying a submarine optical fibre telecommunications cable, Perth to Singapore and Jakarta	2014/7332	Not Controlled Action (Particular Manner)	Post-Approval
Leopard 2D marine seismic survey	2005/2290	Not Controlled	Post-Approval
Action (Particular Manner)			

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	Post-Approval	Action (Particular Manner)
Westralia SPAN Marine Seismic Survey, WA & NT	2012/6463	Not Controlled Action (Particular Manner)	Post-Approval	
Wheatstone 3D MAZ Marine Seismic Survey	2011/6058	Not Controlled Action (Particular Manner)	Post-Approval	
Wheatstone Iago Appraisal Well Drilling	2007/3941	Not Controlled Action (Particular Manner)	Post-Approval	
Wheatstone Iago Appraisal Well Drilling	2008/4134	Not Controlled Action (Particular Manner)	Post-Approval	

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Woodside Southern Browse 3D Seismic Survey, WA	2007/3534	Not Controlled Action (Particular Manner)	Post-Approval
Zeemeermin MC3D seismic survey, Browse Basin, Offshore WA	2009/5023	Not Controlled Action (Particular Manner)	Post-Approval
Referral decision			
3D Marine Seismic Survey in the offshore northwest Carnarvon Basin	2011/6175	Referral Decision	Completed
3D Seismic Survey	2008/4219	Referral Decision	Completed
Aurora extension MC3D Marine Seismic Survey	2011/5887	Referral Decision	Completed
Bianchi 3D Marine Seismic Survey, Carnavon Basin, WA	2013/7078	Referral Decision	Completed
BRSN08 3D Marine Seismic Survey	2008/4582	Referral Decision	Completed
CVG 3D Marine Seismic Survey	2012/6270	Referral Decision	Completed
Enfield 4D Marine Seismic Surveys, Production Permit WA-28-L	2005/2370	Referral Decision	Completed
Experimental Study of Behavioural and Physiological Impact on Fish of Seismic Ex	2006/2625	Referral Decision	Completed
Mardie Salt Project, Pilbara region, WA	2018/8183	Referral Decision	Completed
Outer Harbour Development and associated marine and terrestial infrastructure	2008/4148	Referral Decision	Completed
Pilot Appraisal Well - Torosa South-1	2008/3985	Referral Decision	Completed
Rose 3D Seismic acquisition survey	2008/4220	Referral Decision	Completed
Seismic Data Acquisition, Browse Basin	2010/5475	Referral Decision	Completed
Stybarrow Baseline 4D Marine Seismic Survey (Permit Areas WA-255-P, WA-32-L, WA-	2008/4165	Referral Decision	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Referral decision			
Tidal Power Generation Turbine	2009/5235	Referral Decision	Completed
Two Dimensional Transition Zone Seismic Survey - TP/7 (R1)	2010/5507	Referral Decision	Completed
Varanus Island Compression Project	2012/6698	Referral Decision	Completed

Key Ecological Features [Resource Information]

Key Ecological Features are the parts of the marine ecosystem that are considered to be important for the biodiversity or ecosystem functioning and integrity of the Commonwealth Marine Area.

Name	Region
Ancient coastline at 125 m depth contour	North-west
Ancient coastline at 90-120m depth	South-west
Canyons linking the Argo Abyssal Plain with the Scott Plateau	North-west
Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula	North-west
Commonwealth waters adjacent to Ningaloo Reef	North-west
Continental Slope Demersal Fish Communities	North-west
Exmouth Plateau	North-west
Glomar Shoals	North-west
Mermaid Reef and Commonwealth waters surrounding Rowley Shoals	North-west
Seringapatam Reef and Commonwealth waters in the Scott Reef Complex	North-west
Wallaby Saddle	North-west
Western demersal slope and associated fish communities	South-west
Western rock lobster	South-west

Biologically Important Areas [Resource Information]

Scientific Name	Behaviour	Presence
Dolphins		
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Breeding	Known to occur

Scientific Name	Behaviour	Presence
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Calving	Known to occur
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Foraging (high density prey)	Known to occur
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Foraging likely	Known to occur
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Resting	Known to occur
Sousa chinensis Indo-Pacific Humpback Dolphin [50]	Breeding	Likely to occur
Sousa chinensis Indo-Pacific Humpback Dolphin [50]	Breeding	Known to occur
Sousa chinensis Indo-Pacific Humpback Dolphin [50]	Calving	Known to occur
Sousa chinensis Indo-Pacific Humpback Dolphin [50]	Calving	Likely to occur
Sousa chinensis Indo-Pacific Humpback Dolphin [50]	Foraging	Likely to occur
Sousa chinensis Indo-Pacific Humpback Dolphin [50]	Foraging (high density prey)	Known to occur
Tursiops aduncus Indo-Pacific/Spotted Bottlenose Dolphin [68418]	Breeding	Known to occur
Tursiops aduncus Indo-Pacific/Spotted Bottlenose Dolphin [68418]	Calving	Known to occur
Tursiops aduncus Indo-Pacific/Spotted Bottlenose Dolphin [68418]	Foraging	Known to occur
Tursiops aduncus Indo-Pacific/Spotted Bottlenose Dolphin [68418]	Foraging likely	Known to occur

Scientific Name	Behaviour	Presence
Tursiops aduncus Indo-Pacific/Spotted Bottlenose Dolphin [68418]	Migration likely	Known to occur
Dugong Dugong dugon Dugong [28]	Breeding	Known to occur
Dugong dugon Dugong [28]	Calving	Known to occur
Dugong dugon Dugong [28]	Foraging	Known to occur
Dugong dugon Dugong [28]	Foraging	Likely to occur
Dugong dugon Dugong [28]	Foraging (high density seagrass beds)	Known to occur
Dugong dugon Dugong [28]	Migration	Known to occur
Dugong dugon Dugong [28]	Migration likely	Known to occur
Dugong dugon Dugong [28]	Nursing	Known to occur
Marine Turtles Caretta caretta Loggerhead Turtle [1763]	Foraging	Known to occur
Caretta caretta Loggerhead Turtle [1763]	Internesting	Known to occur
Caretta caretta Loggerhead Turtle [1763]	Internesting buffer	Known to occur
Caretta caretta Loggerhead Turtle [1763]	Nesting	Known to occur

Scientific Name	Behaviour	Presence
Chelonia mydas Green Turtle [1765]	Aggregation	Known to occur
Chelonia mydas Green Turtle [1765]	Basking	Known to occur
Chelonia mydas Green Turtle [1765]	Foraging	Known to occur
Chelonia mydas Green Turtle [1765]	Foraging	Likely to occur
Chelonia mydas Green Turtle [1765]	Internesting	Likely to occur
Chelonia mydas Green Turtle [1765]	Internesting	Known to occur
Chelonia mydas Green Turtle [1765]	Internesting buffer	Known to occur
Chelonia mydas Green Turtle [1765]	Mating	Known to occur
Chelonia mydas Green Turtle [1765]	Migration corridor	Known to occur
Chelonia mydas Green Turtle [1765]	Nesting	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Foraging	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Foraging	Likely to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Internesting	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Internesting buffer	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Mating	Known to occur

Scientific Name	Behaviour	Presence
Eretmochelys imbricata Hawksbill Turtle [1766]	Migration corridor	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Nesting	Known to occur
Natator depressus Flatback Turtle [59257]	Aggregation	Known to occur
Natator depressus Flatback Turtle [59257]	Foraging	Known to occur
Natator depressus Flatback Turtle [59257]	Internesting	Known to occur
Natator depressus Flatback Turtle [59257]	Internesting buffer	Known to occur
Natator depressus Flatback Turtle [59257]	Mating	Known to occur
Natator depressus Flatback Turtle [59257]	Migration corridor	Known to occur
Natator depressus Flatback Turtle [59257]	Nesting	Known to occur
River shark Pristis clavata Dwarf Sawfish [68447]	Foraging	Known to occur
Pristis clavata Dwarf Sawfish [68447]	Juvenile	Known to occur
Pristis clavata Dwarf Sawfish [68447]	Nursing	Known to occur
Pristis clavata Dwarf Sawfish [68447]	Pupping	Known to occur
Pristis pristis Freshwater Sawfish [60756]	Foraging	Known to occur

Scientific Name		Behaviour	Presence
Pristis pristis Freshwater Sawfish [60756]		Nursing	Likely to occur
Pristis pristis Freshwater Sawfish [60756]		Nursing	Known to occur
Pristis pristis Freshwater Sawfish [60756]		Pupping	Likely to occur
Pristis zijsron Green Sawfish [68442]		Foraging	Known to occur
Pristis zijsron Green Sawfish [68442]		Nursing	Known to occur
Pristis zijsron Green Sawfish [68442]		Pupping	Known to occur
Seabirds	Ardenna pacifica Wedge-tailed Shearwater [84292]	Breeding	Known to occur
Ardenna pacifica Wedge-tailed Shearwater [84292]		Foraging (in high numbers)	Known to occur
Fregata ariel Lesser Frigatebird [1012]		Breeding	Known to occur
Fregata minor Greater Frigatebird [1013]		Breeding	Known to occur
Hydroprogne caspia Caspian Tern [808]		Foraging (provisioning young)	Known to occur
Onychoprion anaethetus Bridled Tern [82845]		Foraging (in high numbers)	Known to occur
Onychoprion fuscata Sooty Tern [82847]		Foraging	Known to occur
Pelagodroma marina White-faced Storm petrel [1016]		Foraging (in high	Known to occur

Scientific Name		Behaviour	Presence
numbers)			
[Phaethon lepturus](#)			
White-tailed Tropicbird [1014]		Breeding	Known to occur
[Puffinus assimilis tunneyi](#)			
Little Shearwater [59363]		Foraging (in high numbers)	Known to occur
[Sterna dougallii](#)			
Roseate Tern [817]		Breeding	Known to occur
[Sterna dougallii](#)			
Roseate Tern [817]		Resting	Known to occur
[Sternula albifrons sinensis](#)			
Little Tern [82850]		Breeding	Known to occur
[Sternula albifrons sinensis](#)			
Little Tern [82850]		Resting	Known to occur
[Sternula nereis](#)			
Fairy Tern [82949]		Breeding	Known to occur
[Sula leucogaster](#)			
Brown Booby [1022]		Breeding	Known to occur
[Sula sula](#)			
Red-footed Booby [1023]		Breeding	Known to occur
[Thalasseus bengalensis](#)			
Lesser Crested Tern [66546]		Breeding	Known to occur
Sharks	[Rhincodon typus](#)		
Whale Shark [66680]		Foraging	Known to occur
[Rhincodon typus](#)			
Whale Shark [66680]		Foraging (high density prey)	Known to occur
Whales	[Balaenoptera musculus brevicauda](#)		
Pygmy Blue Whale [81317]		Distribution	Known to occur

Scientific Name	Behaviour	Presence
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Foraging	Known to occur
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Migration	Known to occur
Megaptera novaeangliae Humpback Whale [38]	Calving	Known to occur
Megaptera novaeangliae Humpback Whale [38]	Migration	Known to occur
Megaptera novaeangliae Humpback Whale [38] (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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Department of Climate Change, Energy, the Environment and Water GPO Box 3090
Canberra ACT 2601 Australia
+61 2 6274 1111

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

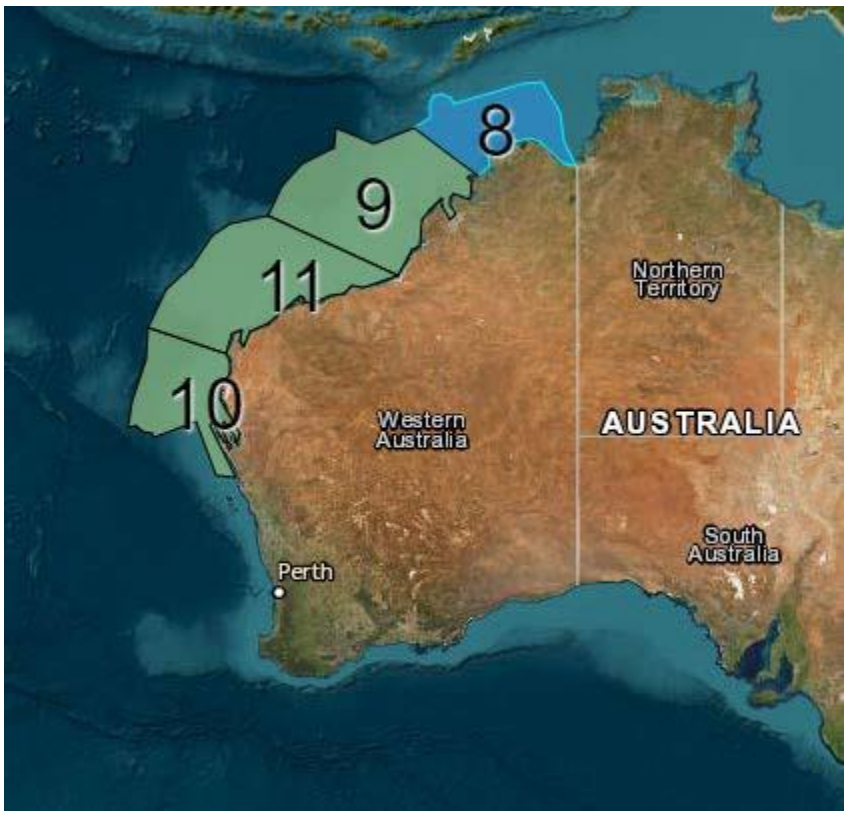
Details

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 within area	Foraging, feeding or related behaviour likely to occur
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 Action (Particular Manner)	Post-Approval
2D Seismic survey	2009/5076	Not Controlled Action (Particular Manner)	Post-Approval
2D seismic survey in permit areas WA-274P and WA-281P	2004/1521	Not Controlled Action (Particular Manner)	Post-Approval
2D Seismic Survey in WA Permit Area TP/22 and Commonwealth Permit Area WA-280-P	2005/2100	Not Controlled Action (Particular Manner)	Post-Approval
3D Marine Seismic Survey	2008/4437	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
3D Marine Seismic Survey, Permit AC/P 23	2005/2364	Not Controlled Action (Particular Manner)	Post-Approval
3D Seismic Survey, Browse Basin, WA	2009/5048	Not Controlled Action (Particular Manner)	Post-Approval
3D Seismic Survey, near Scott Reef, Browse Basin	2005/2126	Not Controlled Action (Particular Manner)	Post-Approval
3D Seismic Survey, petroleum exploration permit AC/P33	2006/2918	Not Controlled Action (Particular Manner)	Post-Approval
3D seismic survey of AC/P4, AC/P17 and AC/P24	2006/2857	Not Controlled Action (Particular Manner)	Post-Approval
3D Seismic Survey WA-406-P Bonaparte Basin	2007/3904	Not Controlled Action (Particular Manner)	Post-Approval
AC/P37 3D Seismic Survey Ashmore Cartier	2007/3774	Not Controlled Action (Particular Manner)	Post-Approval
Auralandia 3D marine seismic survey 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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Department of Climate Change, Energy, the Environment and Water GPO Box 3090
Canberra ACT 2601 Australia
+61 2 6274 1111

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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Department of Climate Change, Energy, the Environment and Water GPO Box 3090
Canberra ACT 2601 Australia
+61 2 6274 1111

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, Moororong, Black-footed Rock Wallaby [66647]	Endangered	Translocated population known to occur within area
Phascogale calura Red-tailed Phascogale, Red-tailed Wambenger, Kenngoor [316]	Vulnerable	Species or species habitat may occur within area
Potorous gilbertii Gilbert's Potoroo, Ngilkat [66642]	Critically Endangered	Species or species habitat known to occur within area
Pseudocheirus occidentalis Western Ringtail Possum, Ngwayir, Womp, Woder, Ngoor, Ngoolangit [25911]	Critically Endangered	Breeding known to occur within area
Pseudomys shortridgei Heath Mouse, Dayang, Heath Rat [77]	Endangered	Species or species habitat likely to occur within area
Setonix brachyurus Quokka [229]	Vulnerable	Species or species habitat known to occur within area
OTHER		
Westralunio carteri Carter's Freshwater Mussel, Freshwater Mussel [86266]	Vulnerable	Species or species habitat known to occur within area
PLANT		
Adenanthos dobagii Fitzgerald Woollybush [21253]	Endangered	Species or species habitat likely to occur within area
Adenanthos ellipticus Oval-leaf Adenanthos [4570]	Vulnerable	Species or species habitat likely to occur within area
Andersonia gracilis Slender Andersonia [14470]	Endangered	Species or species habitat may occur within area
Andersonia pinaster Two Peoples Bay Andersonia [67444]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Anigozanthos bicolor subsp. minor Little Kangaroo Paw, Two-coloured Kangaroo Paw, Small Two-colour Kangaroo Paw [21241]	Endangered	Species or species habitat likely to occur within area
Banksia brownii Brown's Banksia, Feather-leaved Banksia [8277]	Critically Endangered	Species or species habitat known to occur within area
Banksia nivea subsp. uliginosa Swamp Honeypot [82766]	Endangered	Species or species habitat may occur within area
Banksia squarrosa subsp. argillacea Whicher Range Dryandra [82769]	Vulnerable	Species or species habitat likely to occur within area
Banksia verticillata Granite Banksia, Albany Banksia, River Banksia [8333]	Vulnerable	Species or species habitat known to occur within area
Boronia clavata Bremer Boronia [5538]	Endangered	Species or species habitat may occur within area
Brachyscias verecundus Ironstone Brachyscias [81321]	Critically Endangered	Species or species habitat may occur within area
Caladenia busselliana Bussell's Spider-orchid [24369]	Endangered	Species or species habitat likely to occur within area
Caladenia caesarea subsp. maritima Cape Spider-orchid [64856]	Endangered	Species or species habitat known to occur within area
Caladenia excelsa Giant Spider-orchid [56717]	Endangered	Species or species habitat likely to occur within area
Caladenia granitora [65292]	Endangered	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Caladenia harringtoniae Harrington's Spider-orchid, Pink Spider-orchid [56786]	Vulnerable	Species or species habitat may occur within area
Caladenia huegelii King Spider-orchid, Grand Spider-orchid, Rusty Spider-orchid [7309]	Endangered	Species or species habitat known to occur within area
Caladenia lodgeana Lodge's Spider-orchid [68664]	Critically Endangered	Species or species habitat likely to occur within area
Caladenia procera Carbunup King Spider Orchid [68679]	Critically Endangered	Species or species habitat known to occur within area
Caladenia viridescens Dunsborough Spider-orchid [56776]	Endangered	Species or species habitat known to occur within area
Calectasia cyanea Blue Tinsel Lily [7669]	Critically Endangered	Species or species habitat likely to occur within area
Chamelaucium lullfitzii listed as Chamelaucium sp. Gingin (N.G.Marchant 6) Gingin Wax [92777]	Endangered (listed as Chamelaucium sp. Gingin	Species or species habitat likely to occur within area
Chamelaucium sp. S coastal plain (R.D.Royce 4872) Royce's Waxflower [87814]	Vulnerable	Species or species habitat likely to occur within area
Chordifex abortivus Manypeaks Rush [64868]	Endangered	Species or species habitat likely to occur within area
Commersonia apella Many-flowered Commersonia [86877]	Critically Endangered	Species or species habitat known to occur within area
Coopernookia georgei Mauve Coopernookia [21218]	Endangered	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Daviesia obovata Paddle-leaf Daviesia [17311]	Endangered	Species or species habitat likely to occur within area
Diuris drummondii Tall Donkey Orchid [4365]	Vulnerable	Species or species habitat likely to occur within area
Diuris micrantha Dwarf Bee-orchid [55082]	Vulnerable	Species or species habitat known to occur within area
Diuris purdiei Purdie's Donkey-orchid [12950]	Endangered	Species or species habitat may occur within area
Drakaea elastica Glossy-leafed Hammer Orchid, Glossy-leaved Hammer Orchid, Warty Hammer Orchid [16753]	Endangered	Species or species habitat likely to occur within area
Drakaea micrantha Dwarf Hammer-orchid [56755]	Vulnerable	Species or species habitat likely to occur within area
Eucalyptus argutifolia Yanchep Mallee, Wabling Hill Mallee [24263]	Vulnerable	Species or species habitat may occur within area
Eucalyptus insularis Twin Peak Island Mallee [3057]	Endangered	Species or species habitat likely to occur within area
Eucalyptus x phylacis Meelup Mallee [87817]	Endangered	Species or species habitat known to occur within area
Gastrolobium papilio Butterfly-leaved Gastrolobium [78415]	Endangered	Species or species habitat may occur within area
Grevillea elongata Ironstone Grevillea [64578]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Grevillea infundibularis Fan-leaf Grevillea [5772]	Endangered	Species or species habitat likely to occur within area
Isopogon uncinatus Albany Cone Bush, Hook-leaf Isopogon [20871]	Endangered	Species or species habitat likely to occur within area
Kennedia glabrata Northcliffe Kennedia [16452]	Vulnerable	Species or species habitat known to occur within area
Lambertia echinata subsp. echinata Prickly Honeysuckle [56729]	Endangered	Species or species habitat known to occur within area
Lambertia echinata subsp. occidentalis Western Prickly Honeysuckle [64528]	Endangered	Species or species habitat may occur within area
Morelotia australiensis listed as Tetraria australiensis Southern Tetraria [92784]	Vulnerable	Species or species habitat may occur within area
Petrophile latericola Laterite Petrophile [64532]	Endangered	Species or species habitat may occur within area
Phaius australis Lesser Swamp-orchid [5872]	Endangered	Species or species habitat may occur within area
Reedia spathacea Reedia [2995]	Critically Endangered	Species or species habitat may occur within area
Ricinocarpos trichophorus Barrens Wedding Bush [19931]	Endangered	Species or species habitat may occur within area
Sphenotoma drummondii Mountain Paper-heath [21160]	Endangered	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Stylidium galioides		
Yellow Mountain Triggerplant [4666]	Vulnerable	Species or species habitat may occur within area
Synaphea sp. Fairbridge Farm (D.Papenfus 696)		
Selena's Synaphea [82881]	Critically Endangered	Species or species habitat may occur within area
Verticordia crebra		
[55678]	Vulnerable	Species or species habitat likely to occur within area
Verticordia densiflora var. pedunculata		
Long-stalked Featherflower [55689]	Endangered	Species or species habitat may occur within area
Verticordia plumosa var. ananeotes		
Tufted Plumed Featherflower [23871]	Endangered	Species or species habitat may occur within area
Verticordia plumosa var. vassensis		
Vasse Featherflower [55804]	Endangered	Species or species habitat may occur within area
Wurmbea calcicola		
Naturaliste Nancy [64691]	Endangered	Species or species habitat known to occur within area

REPTILE

Caretta caretta		
Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
Chelonia mydas		
Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Dermochelys coriacea		
Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area

Scientific Name	Threatened Category	Presence Text
[Natator depressus](#) Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area

SHARK

[Carcharias taurus (west coast population)](#) Grey Nurse Shark (west coast population) [68752]	Vulnerable	Congregation or aggregation known to occur within area
[Carcharodon carcharias](#) White Shark, Great White Shark [64470]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
[Centrophorus uyato](#) Little Gulper Shark [68446]	Conservation Dependent	Species or species habitat likely to occur within area
[Galeorhinus galeus](#) School Shark, Eastern School Shark, Snapper Shark, Tope, Soupfin Shark [68453]	Conservation Dependent	Species or species habitat may occur within area
[Pristis pristis](#) Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat may occur within area
[Rhincodon typus](#) Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
[Sphyrna lewini](#) Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat known to occur within area

Listed Migratory Species [Resource Information]

Scientific Name	Threatened Category	Presence Text
Migratory Marine Birds		
[Anous stolidus](#) Common Noddy [825]		Species or species habitat likely to occur within area
[Apus pacificus](#) Fork-tailed Swift [678]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Ardenna carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Breeding known to occur within area
Ardenna grisea Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area
Ardenna pacifica Wedge-tailed Shearwater [84292]		Breeding known to occur within area
Ardenna tenuirostris Short-tailed Shearwater [82652]		Breeding known to occur within area
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat likely to occur within area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea dabbenena Tristan Albatross [66471]	Endangered	Species or species habitat likely to occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Species or species habitat may occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area
Hydroprogne caspia Caspian Tern [808]		Breeding known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area

Onychoprion anaethetus
Bridled Tern [82845] Breeding known to occur within area

Phaethon rubricauda
Red-tailed Tropicbird [994] Breeding known to occur within area

Phoebetria fusca
Sooty Albatross [1075] Vulnerable Species or species habitat likely to occur within area

Sterna dougallii
Roseate Tern [817] Breeding known to occur within area

Sternula albifrons
Little Tern [82849] Species or species habitat may occur within area

Thalassarche carteri
Indian Yellow-nosed Albatross [64464] Vulnerable Species or species habitat likely to occur within area

Thalassarche cauta
Shy Albatross [89224] Endangered Foraging, feeding or related behaviour likely to occur within area

Thalassarche chrysostoma
Grey-headed Albatross [66491] Endangered Species or species habitat may occur within area

Thalassarche impavida
Campbell Albatross, Campbell Black-browed Albatross [64459] Vulnerable Species or species habitat may occur within area

Thalassarche melanophris
Black-browed Albatross [66472] Vulnerable Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area
Migratory Marine Species Balaenoptera bonaerensis Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat likely to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Foraging, feeding or related behaviour known to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Caperea marginata Pygmy Right Whale [39]		Foraging, feeding or related behaviour likely to occur within area
Carcharhinus longimanus Oceanic Whitetip Shark [84108]		Species or species habitat likely to occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area

Scientific Name	Threatened Category	Presence Text
Chelonia mydas Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered 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
Commonwealth Land - [50498]	WA
Commonwealth Land - [50419]	WA
Commonwealth Land - [50418]	WA
Commonwealth Land - [50629]	WA
Commonwealth Land - [50624]	WA
Commonwealth Land - [50608]	WA
Commonwealth Land - [50573]	WA
Commonwealth Land - [50628]	WA
Commonwealth Land - [50485]	WA
Commonwealth Land - [51889]	WA
Commonwealth Land - [50446]	WA
Commonwealth Land - [50500]	WA
Commonwealth Land - [50486]	WA

Commonwealth Land Name	State
Commonwealth Land - [50475]	WA
Commonwealth Land - [50456]	WA
Commonwealth Land - [50457]	WA
Commonwealth Land - [52281]	WA
Commonwealth Land - [50455]	WA
Commonwealth Land - [50522]	WA
Commonwealth Land - [50529]	WA
Commonwealth Land - [50527]	WA
Commonwealth Land - [50525]	WA
Commonwealth Land - [50571]	WA
Commonwealth Land - [50570]	WA
Commonwealth Land - [50492]	WA
Commonwealth Land - [51890]	WA
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
Commonwealth Land - [50539]	WA
Commonwealth Land - [50538]	WA
Commonwealth Land - [50531]	WA
Commonwealth Land - [50530]	WA
Commonwealth Land - [50533]	WA
Commonwealth Land - [50613]	WA
Commonwealth Land - [50415]	WA
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
Commonwealth Land - [50617]	WA
Commonwealth Land - [50580]	WA
Commonwealth Land - [50616]	WA
Commonwealth Land - [50465]	WA
Commonwealth Land - [51411]	WA
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
Commonwealth Land - [50618]	WA
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
Commonwealth Land - [51116]	WA
Commonwealth Land - [51115]	WA
Commonwealth Land - [51113]	WA
Commonwealth Land - [50602]	WA
Commonwealth Land - [51974]	WA
Commonwealth Land - [50528]	WA
Commonwealth Land - [50552]	WA
Commonwealth Land - [51119]	WA
Commonwealth Land - [50555]	WA
Commonwealth Land - [50554]	WA
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	Completed Action
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	Completed Action
Limestone quarry expansion	2005/2268	Not Controlled	Completed Action
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] (provisioning young)	Foraging	Known to occur
Hydroprogne caspia Caspian Tern [808] (provisioning young)	Foraging	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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Department of Climate Change, Energy, the Environment and Water GPO Box 3090
Canberra ACT 2601 Australia
+61 2 6274 1111

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	Foraging, feeding or related behaviour known to occur within area

Scientific Name	Threatened Category	Presence Text
[Natator depressus](#) Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area

SHARK

[Carcharias taurus (west coast population)](#) Grey Nurse Shark (west coast population) [68752]	Vulnerable	Congregation or aggregation known to occur within area
[Carcharodon carcharias](#) White Shark, Great White Shark [64470]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
[Centrophorus uyato](#) Little Gulper Shark [68446]	Conservation Dependent	Species or species habitat likely to occur within area
[Galeorhinus galeus](#) School Shark, Eastern School Shark, Snapper Shark, Tope, Soupfin Shark [68453]	Conservation Dependent	Species or species habitat may occur within area
[Pristis pristis](#) Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat may occur within area
[Rhincodon typus](#) Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
[Sphyrna lewini](#) Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat known to occur within area

Listed Migratory Species [Resource Information]

Scientific Name	Threatened Category	Presence Text
Migratory Marine Birds		
[Anous stolidus](#) Common Noddy [825]		Species or species habitat likely to occur within area
[Apus pacificus](#) Fork-tailed Swift [678]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Ardenna carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Breeding known to occur within area
Ardenna grisea Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area
Ardenna pacifica Wedge-tailed Shearwater [84292]		Breeding known to occur within area
Ardenna tenuirostris Short-tailed Shearwater [82652]		Breeding known to occur within area
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat likely to occur within area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea dabbenena Tristan Albatross [66471]	Endangered	Species or species habitat likely to occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Species or species habitat may occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area
Hydroprogne caspia Caspian Tern [808]		Breeding known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area

Onychoprion anaethetus
Bridled Tern [82845] Breeding known to occur within area

Phaethon rubricauda
Red-tailed Tropicbird [994] Breeding known to occur within area

Phoebetria fusca
Sooty Albatross [1075] Vulnerable Species or species habitat likely to occur within area

Sterna dougallii
Roseate Tern [817] Breeding known to occur within area

Sternula albifrons
Little Tern [82849] Species or species habitat may occur within area

Thalassarche carteri
Indian Yellow-nosed Albatross [64464] Vulnerable Species or species habitat likely to occur within area

Thalassarche cauta
Shy Albatross [89224] Endangered Foraging, feeding or related behaviour likely to occur within area

Thalassarche chrysostoma
Grey-headed Albatross [66491] Endangered Species or species habitat may occur within area

Thalassarche impavida
Campbell Albatross, Campbell Black-browed Albatross [64459] Vulnerable Species or species habitat may occur within area

Thalassarche melanophris
Black-browed Albatross [66472] Vulnerable Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area
Migratory Marine Species Balaenoptera bonaerensis Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat likely to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Foraging, feeding or related behaviour known to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Caperea marginata Pygmy Right Whale [39]		Foraging, feeding or related behaviour likely to occur within area
Carcharhinus longimanus Oceanic Whitetip Shark [84108]		Species or species habitat likely to occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area

Scientific Name	Threatened Category	Presence Text
Chelonia mydas Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered 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
Commonwealth Land - [50471]	WA
Commonwealth Land - [50525]	WA
Commonwealth Land - [50522]	WA
Commonwealth Land - [50570]	WA
Commonwealth Land - [50527]	WA
Commonwealth Land - [51890]	WA
Commonwealth Land - [50571]	WA
Commonwealth Land - [50492]	WA
Commonwealth Land - [50452]	WA
Commonwealth Land - [50624]	WA
Commonwealth Land - [50621]	WA
Commonwealth Land - [50620]	WA
Commonwealth Land - [50623]	WA
Commonwealth Land - [50622]	WA
Commonwealth Land - [50450]	WA
Commonwealth Land - [50451]	WA
Commonwealth Land - [50454]	WA
Commonwealth Land - [50458]	WA
Commonwealth Land - [50639]	WA
Commonwealth Land - [50632]	WA
Commonwealth Land - [50463]	WA

Commonwealth Land Name	State
Commonwealth Land - [50589]	WA
Commonwealth Land - [51480]	WA
Commonwealth Land - [50634]	WA
Commonwealth Land - [50635]	WA
Commonwealth Land - [50466]	WA
Commonwealth Land - [50464]	WA
Commonwealth Land - [51487]	WA
Commonwealth Land - [50557]	WA
Commonwealth Land - [50569]	WA
Commonwealth Land - [50401]	WA
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Commonwealth Land - [50530]	WA
Commonwealth Land - [50533]	WA
Commonwealth Land - [50415]	WA
Commonwealth Land - [52119]	WA
Commonwealth Land - [50438]	WA
Commonwealth Land - [50613]	WA
Commonwealth Land - [50389]	WA
Commonwealth Land - [50442]	WA
Commonwealth Land - [50443]	WA
Commonwealth Land - [50441]	WA
Commonwealth Land - [50447]	WA
Commonwealth Land - [52200]	WA
Commonwealth Land - [50484]	WA
Commonwealth Land - [50523]	WA

Commonwealth Land Name	State
Commonwealth Land - [50387]	WA
Commonwealth Land - [51987]	WA
Commonwealth Land - [50388]	WA
Commonwealth Land - [50434]	WA
Commonwealth Land - [50449]	WA
Commonwealth Land - [50536]	WA
Commonwealth Land - [50433]	WA
Commonwealth Land - [50432]	WA
Commonwealth Land - [50580]	WA
Commonwealth Land - [50581]	WA
Commonwealth Land - [50617]	WA
Commonwealth Land - [50526]	WA
Commonwealth Land - [50465]	WA
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Commonwealth Land - [51117]	WA
Commonwealth Land - [50524]	WA
Commonwealth Land - [52242]	WA
Commonwealth Land - [51895]	WA
Commonwealth Land - [50565]	WA
Commonwealth Land - [50404]	WA
Commonwealth Land - [50619]	WA
Commonwealth Land - [50618]	WA
Commonwealth Land - [50611]	WA
Commonwealth Land - [50610]	WA
Commonwealth Land - [50614]	WA
Commonwealth Land - [50612]	WA
Commonwealth Land - [50616]	WA

Commonwealth Land Name	State
Commonwealth Land - [50615]	WA
Commonwealth Land - [50453]	WA
Commonwealth Land - [50568]	WA
Commonwealth Land - [51891]	WA
Commonwealth Land - [51894]	WA
Commonwealth Land - [51892]	WA
Commonwealth Land - [51893]	WA
Commonwealth Land - [50535]	WA
Commonwealth Land - [50532]	WA
Commonwealth Land - [50537]	WA
Commonwealth Land - [50534]	WA
Commonwealth Land - [50509]	WA
Commonwealth Land - [52279]	WA
Commonwealth Land - [50627]	WA
Commonwealth Land - [50497]	WA
Commonwealth Land - [50637]	WA
Commonwealth Land - [50459]	WA
Commonwealth Land - [50476]	WA
Commonwealth Land - [50474]	WA
Commonwealth Land - [50578]	WA
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Commonwealth Land - [50572]	WA
Commonwealth Land - [50479]	WA
Commonwealth Land - [50591]	WA
Commonwealth Land - [50590]	WA
Commonwealth Land - [50604]	WA

Commonwealth Land Name	State
Commonwealth Land - [50599]	WA
Commonwealth Land - [50603]	WA
Commonwealth Land - [50601]	WA
Commonwealth Land - [50472]	WA
Commonwealth Land - [50491]	WA
Commonwealth Land - [50597]	WA
Commonwealth Land - [50595]	WA
Commonwealth Land - [50512]	WA
Commonwealth Land - [50462]	WA
Commonwealth Land - [50516]	WA
Commonwealth Land - [50520]	WA
Commonwealth Land - [50481]	WA
Commonwealth Land - [50480]	WA
Commonwealth Land - [50488]	WA
Commonwealth Land - [50482]	WA
Commonwealth Land - [50423]	WA
Commonwealth Land - [50390]	WA
Commonwealth Land - [50427]	WA
Commonwealth Land - [50521]	WA
Commonwealth Land - [50444]	WA
Commonwealth Land - [50428]	WA
Commonwealth Land - [50641]	WA
Commonwealth Land - [50640]	WA
Commonwealth Land - [52199]	WA
Commonwealth Land - [50421]	WA
Commonwealth Land - [50609]	WA
Commonwealth Land - [50420]	WA

Commonwealth Land Name	State
Commonwealth Land - [50499]	WA
Commonwealth Land - [50514]	WA
Commonwealth Land - [50490]	WA
Commonwealth Land - [50548]	WA
Commonwealth Land - [50549]	WA
Commonwealth Land - [50544]	WA
Commonwealth Land - [50545]	WA
Commonwealth Land - [50546]	WA
Commonwealth Land - [51974]	WA
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Commonwealth Land - [51115]	WA
Commonwealth Land - [50468]	WA
Commonwealth Land - [51436]	WA
Commonwealth Land - [50602]	WA
Commonwealth Land - [51113]	WA
Commonwealth Land - [50552]	WA
Commonwealth Land - [51119]	WA
Commonwealth Land - [50543]	WA
Commonwealth Land - [50542]	WA
Commonwealth Land - [50417]	WA
Commonwealth Land - [50596]	WA
Commonwealth Land - [50555]	WA
Commonwealth Land - [50556]	WA
Commonwealth Land - [50554]	WA
Commonwealth Land - [50547]	WA
Commonwealth Land - [50540]	WA

Commonwealth Land Name	State
Commonwealth Land - [50541]	WA
Commonwealth Land - [50469]	WA
Commonwealth Land - [51488]	WA
Commonwealth Land - [50636]	WA
Commonwealth Land - [50445]	WA
Commonwealth Land - [50460]	WA
Commonwealth Land - [50513]	WA
Commonwealth Land - [50515]	WA
Commonwealth Land - [50519]	WA
Commonwealth Land - [50461]	WA

Commonwealth Heritage Places [Resource Information]

Name	State	Status
Historic		
Artillery Barracks	WA	Listed place
Cliff Point Historic Site	WA	Listed place
J Gun Battery	WA	Listed place
Natural		
Garden Island	WA	Listed place

Listed Marine Species [Resource Information]

Scientific Name	Threatened Category	Presence Text
Bird		
Actitis hypoleucos		
Common Sandpiper [59309]		Species or species habitat known to occur within area
Anous stolidus		
Common Noddy [825]		Species or species habitat likely to occur within area
Anous tenuirostris melanops		
Australian Lesser Noddy [26000]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area
Ardenna carneipes as Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Breeding known to occur within area
Ardenna grisea as Puffinus griseus Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area
Ardenna pacifica as Puffinus pacificus Wedge-tailed Shearwater [84292]		Breeding known to occur within area
Ardenna tenuirostris as Puffinus tenuirostris Short-tailed Shearwater [82652]		Breeding known to occur within area
Arenaria interpres Ruddy Turnstone [872]	Vulnerable	Roosting known to occur within area
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Roosting known to occur within area
Calidris alba Sanderling [875]		Roosting known to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area overfly marine area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area overfly marine area
Calidris pugnax as Philomachus pugnax Ruff [91256]		Roosting known to occur within area overfly marine area
Calidris ruficollis Red-necked Stint [860]		Roosting known to occur within area overfly marine area
Calidris subminuta Long-toed Stint [861]		Roosting known to occur within area overfly marine area
Calidris tenuirostris Great Knot [862]	Vulnerable	Roosting known to occur within area overfly marine area
Cereopsis novaehollandiae grisea Cape Barren Goose (south-western), Recherche Cape Barren Goose [25978]	Vulnerable	Breeding known to occur within area overfly marine area
Chalcites osculans as Chrysococcyx osculans Black-eared Cuckoo [83425]		Species or species habitat likely to occur within area overfly marine area
Charadrius bicinctus Double-banded Plover [895]		Roosting known to occur within area overfly marine area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area
Charadrius ruficapillus Red-capped Plover [881]		Roosting known to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Chroicocephalus novaehollandiae as Larus novaehollandiae Silver Gull [82326]	Breeding known to occur within area	
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat likely to occur within area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea dabbenena Tristan Albatross [66471]	Endangered	Species or species habitat likely to occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Species or species habitat may occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area
Eudyptula minor Little Penguin [1085]		Breeding known to occur within area
Gallinago megala Swinhoe's Snipe [864]		Roosting likely to occur within area overfly marine area
Gallinago stenura Pin-tailed Snipe [841]		Roosting likely to occur within area overfly marine area
Glareola maldivarum Oriental Pratincole [840]		Species or species habitat known to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text

Haliaeetus leucogaster
White-bellied Sea-Eagle [943] Species or species habitat known to occur within area

Halobaena caerulea
Blue Petrel [1059] Vulnerable Species or species habitat may occur within area

Himantopus himantopus
Pied Stilt, Black-winged Stilt [870] Roosting known to occur within area overfly marine area

Hydroprogne caspia as Sterna caspia
Caspian Tern [808] Breeding known to occur within area

Larus dominicanus
Kelp Gull [809] Breeding known to occur within area

Larus pacificus
Pacific Gull [811] Breeding known to occur within area

Limicola falcinellus
Broad-billed Sandpiper [842] Roosting known to occur within area overfly marine area

Limosa lapponica
Bar-tailed Godwit [844] Species or species habitat known to occur within area

Limosa limosa
Black-tailed Godwit [845] Endangered Roosting known to occur within area overfly marine area

Macronectes giganteus
Southern Giant-Petrel, Southern Giant Petrel [1060] Endangered Species or species habitat may occur within area

Macronectes halli
Northern Giant Petrel [1061] Vulnerable Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat known to occur within area overfly marine area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting likely to occur within area overfly marine area
Numenius phaeopus Whimbrel [849]		Roosting known to occur within area
Onychoprion anaethetus as Sterna anaethetus Bridled Tern [82845]		Breeding known to occur within area
Onychoprion fuscatus as Sterna fuscata Sooty Tern [90682]		Breeding known to occur within area
Pachyptila turtur Fairy Prion [1066]		Species or species habitat known to occur within area
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Pelagodroma marina White-faced Storm-Petrel [1016]		Breeding known to occur within area
Phaethon rubricauda Red-tailed Tropicbird [994]		Breeding known to occur within area
Phalacrocorax fuscescens Black-faced Cormorant [59660]		Breeding known to occur within area

Scientific Name	Threatened Category	Presence Text
Phalaropus lobatus Red-necked Phalarope [838]		Roosting known to occur within area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat likely to occur within area
Pluvialis fulva Pacific Golden Plover [25545]		Roosting known to occur within area
Pluvialis squatarola Grey Plover [865]	Vulnerable	Roosting known to occur within area overfly marine area
Pterodroma macroptera Great-winged Petrel [1035]		Breeding known to occur within area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Puffinus assimilis Little Shearwater [59363]		Breeding known to occur within area
Recurvirostra novaehollandiae Red-necked Avocet [871]		Roosting known to occur within area overfly marine area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat known to occur within area overfly marine area
Stercorarius antarcticus as Catharacta skua Brown Skua [85039]		Species or species habitat may occur within area
Sterna dougallii Roseate Tern [817]		Breeding known to occur within area
Sternula albifrons as Sterna albifrons Little Tern [82849]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Sternula nereis as Sterna nereis Fairy Tern [82949]		Breeding known to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Thalassarche chrysostoma Grey-headed Albatross [66491]	Endangered	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area
Thalasseus bergii as Sterna bergii Greater Crested Tern [83000]		Breeding known to occur within area
Thinornis cucullatus as Thinornis rubricollis Hooded Plover, Hooded Dotterel [87735]		Species or species habitat known to occur within area overfly marine area
Tringa brevipes as Heteroscelus brevipes Grey-tailed Tattler [851]		Roosting known to occur within area
Tringa glareola Wood Sandpiper [829]		Roosting known to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
[Tringa nebularia](#) Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area overfly marine area
[Tringa stagnatilis](#) Marsh Sandpiper, Little Greenshank [833]		Roosting known to occur within area overfly marine area
[Tringa totanus](#) Common Redshank, Redshank [835]		Roosting known to occur within area overfly marine area
[Xenus cinereus](#) Terek Sandpiper [59300]	Vulnerable	Roosting known to occur within area overfly marine area
Fish [Acentronura australe](#) Southern Pygmy Pipehorse [66185]		Species or species habitat may occur within area
[Campichthys galei](#) Gale's Pipefish [66191]		Species or species habitat may occur within area
[Choeroichthys suillus](#) Pig-snouted Pipefish [66198]		Species or species habitat may occur within area
[Halicampus brocki](#) Brock's Pipefish [66219]		Species or species habitat may occur within area
[Heraldia nocturna](#) Upside-down Pipefish, Eastern Upside-down Pipefish, Eastern Upside-down Pipefish [66227]		Species or species habitat may occur within area
[Hippocampus angustus](#) Western Spiny Seahorse, Narrow-bellied Seahorse [66234]		Species or species habitat may occur within area
[Hippocampus breviceps](#) Short-head Seahorse, Short-snouted Seahorse [66235]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Hippocampus subelongatus West Australian Seahorse [66722]	Species or species habitat may occur within area	
Histiogamphelus cristatus Rhino Pipefish, Macleay's Crested Pipefish, Ring-back Pipefish [66243]		Species or species habitat may occur within area
Leptoichthys fistularius Brushtail Pipefish [66248]	Species or species habitat may occur within area	
Lissocampus caudalis Australian Smooth Pipefish, Smooth Pipefish [66249]		Species or species habitat may occur within area
Lissocampus fatiloquus Prophet's Pipefish [66250]	Species or species habitat may occur within area	
Lissocampus runa Javelin Pipefish [66251]	Species or species habitat may occur within area	
Maroubra perserrata Sawtooth Pipefish [66252]	Species or species habitat may occur within area	
Mitotichthys meraculus Western Crested Pipefish [66259]	Species or species habitat may occur within area	
Nannocampus subosseus Bonyhead Pipefish, Bony-headed Pipefish [66264]		Species or species habitat may occur within area
Notiocampus ruber Red Pipefish [66265]	Species or species habitat may occur within area	
Phycodurus eques Leafy Seadragon [66267]	Species or species habitat may occur within area	

Scientific Name	Threatened Category	Presence Text
Phyllopteryx taeniolatus Common Seadragon, Weedy Seadragon [66268]		Species or species habitat may occur within area
Pugnaso curtirostris Pugnose Pipefish, Pug-nosed Pipefish [66269]		Species or species habitat may occur within area
Solegnathus lettiensis Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area
Stigmatopora argus Spotted Pipefish, Gulf Pipefish, Peacock Pipefish [66276]		Species or species habitat may occur within area
Stigmatopora nigra Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish [66277]		Species or species habitat may occur within area
Syngnathoides biaculeatus Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area
Urocampus carinirostris Hairy Pipefish [66282]		Species or species habitat may occur within area
Vanacampus margaritifer Mother-of-pearl Pipefish [66283]		Species or species habitat may occur within area
Vanacampus phillipi Port Phillip Pipefish [66284]		Species or species habitat may occur within area
Vanacampus poecilolaemus Longsnout Pipefish, Australian Long- snout Pipefish, Long-snouted Pipefish [66285]		Species or species habitat may occur within area
Mammal Arctocephalus forsteri Long-nosed Fur-seal, New Zealand Fur-seal [20]		Breeding known to occur within area

Scientific Name	Threatened Category	Presence Text
Neophoca cinerea Australian Sea-lion, Australian Sea Lion [22]	Endangered	Breeding known to occur within area
Reptile Aipysurus pooleorum Shark Bay Sea Snake [66061]		Species or species habitat may occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area
Hydrophis kingii as Disteira kingii Spectacled Sea Snake [93511]		Species or species habitat may occur within area
Hydrophis platura as Pelamis platurus Yellow-bellied Sea Snake [93746]		Species or species habitat may occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area

Whales and Other Cetaceans		[Resource Information]
Current Scientific Name	Status	Type of Presence
Mammal Balaenoptera acutorostrata Minke Whale [33]		Species or species habitat may occur within area
Balaenoptera bonaerensis Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur

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	Completed Action
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	Completed Action
Limestone quarry expansion	2005/2268	Not Controlled	Completed Action
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	Not Controlled Action	Completed
Oman Australia Cable - Marine Route Survey	2020/8731	Not Controlled Action	Completed
Palm Beach Caravan Park Redevelopment, Rockingham, WA	2013/6853	Not Controlled Action	Completed
Redevelopment of Lots 3 & 4, Kent Street	2007/3243	Not Controlled Action	Completed
Residential & Light Industrial Development, Vasse WA	2013/6932	Not Controlled Action	Completed
Residential development, Lot 42, Farmhouse Court, Bovell, WA	2014/7195	Not Controlled Action	Completed
Re-zoning of Land for Future Residential Development Purposes	2009/4908	Not Controlled Action	Completed
Rottnest Lodge Redevelopment	2019/8565	Not Controlled Action	Completed
Seismic Survey, Bremer Basin, Mentelle Basin and Zeewyck Sub-basin	2004/1700	Not Controlled Action	Completed
Sepia Depression Ocean Outlet Landline Duplication	2012/6248	Not Controlled Action	Completed
Vasse Hotel and Supermarket Redevelopment	2001/288	Not Controlled Action	Completed
Warders' Cottages Block 2 'W2'	2022/9148	Not Controlled Action	Completed
Warders' Cottages W2 minor works, Fremantle, WA	2018/8185	Not Controlled Action	Completed
Wind Farm development	2005/2105	Not Controlled Action	Completed
Not controlled action (particular manner)			
2D seismic survey	2007/3273	Not Controlled Action (Particular Manner)	Post-Approval
2D seismic survey	2008/4493	Not Controlled Action (Particular Manner)	Post-Approval
3D Marine Seismic Survey Within WA-382-P	2007/3799	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Aerial Mosquito Spraying Vasse-Wonnerup System	2005/1952	Not Controlled Action (Particular Manner)	Post-Approval
Ambergate North Residential Development	2009/4802	Not Controlled Action (Particular Manner)	Post-Approval
Arcadia Petroleum - BR12 3D Marine Seismic Survey	2012/6476	Not Controlled Action (Particular Manner)	Post-Approval
Australian Underwater Discovery Centre	2021/9019	Not Controlled Action (Particular Manner)	Post-Approval
Australia to Singapore Fibre Optic Submarine Cable System	2011/6127	Not Controlled Action (Particular Manner)	Post-Approval
Bremer Basin 2D Marine Seismic Survey, WA	2009/5013	Not Controlled Action (Particular Manner)	Post-Approval
CETO 6 Garden Island Project, offshore WA	2016/7635	Not Controlled Action (Particular Manner)	Post-Approval
CETO 6 Geophysical and Geotechnical Surveys	2014/7408	Not Controlled Action (Particular Manner)	Post-Approval
City of Cockburn Sporting Facilties	2005/2139	Not Controlled Action (Particular Manner)	Post-Approval
Construction of urea production plant and supporting infrastructure	2009/5067	Not Controlled Action (Particular Manner)	Post-Approval
Coodanup residential development	2006/3073	Not Controlled Action (Particular Manner)	Post-Approval
Extension of existing mains water supply pipeline	2009/4686	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Manner)			
Grand Southern Margin 2D Marine Seismic Survey	2008/4599	Not Controlled Action (Particular Manner)	Post-Approval
INDIGO Marine Cable Route Survey (INDIGO)	2017/7996	Not Controlled Action (Particular Manner)	Post-Approval
Lake Richmond Boardwalk installation, Rockingham, WA	2013/6977	Not Controlled Action (Particular Manner)	Post-Approval
Laying a submarine optical fibre telecommunications cable, Perth to Singapore and Jakarta	2014/7332	Not Controlled Action (Particular Manner)	Post-Approval
Marine Environmental Survey	2012/6275	Not Controlled	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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Department of Climate Change, Energy, the Environment and Water GPO Box 3090
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APPENDIX B. SUPPORTING FIGURES FOR SECTION 2.3 METEOROLOGY AND OCEANOGRAPHY

Browse

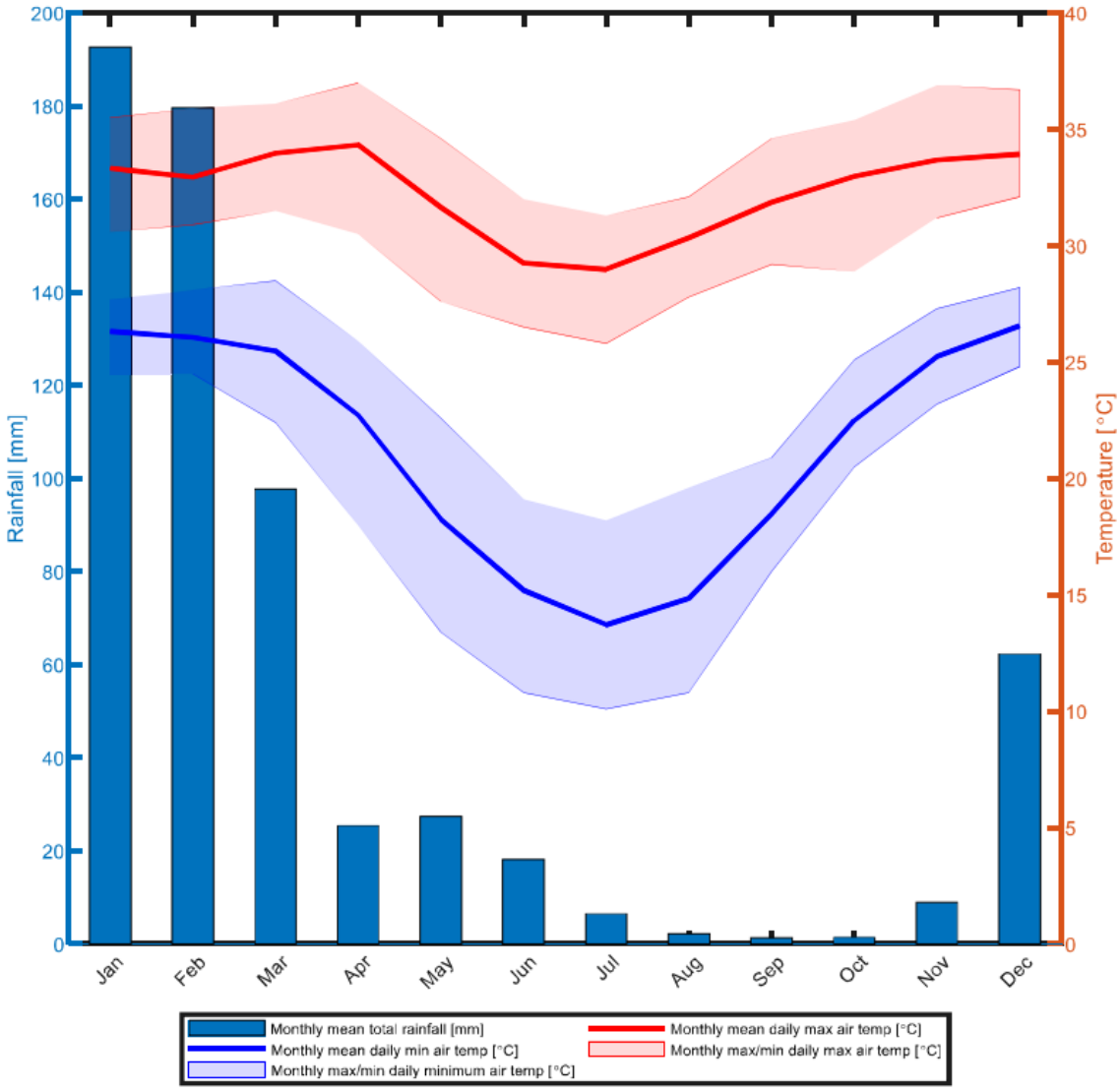

Figure 1. Monthly average total rainfall [mm] and air temperature [°C], calculated based on observations at the Broome Airport weather station from 1939-2020 (Bureau of Meteorology 2020). Bars show the monthly average total rainfall values, and thick blue and red lines denote monthly average daily minimum 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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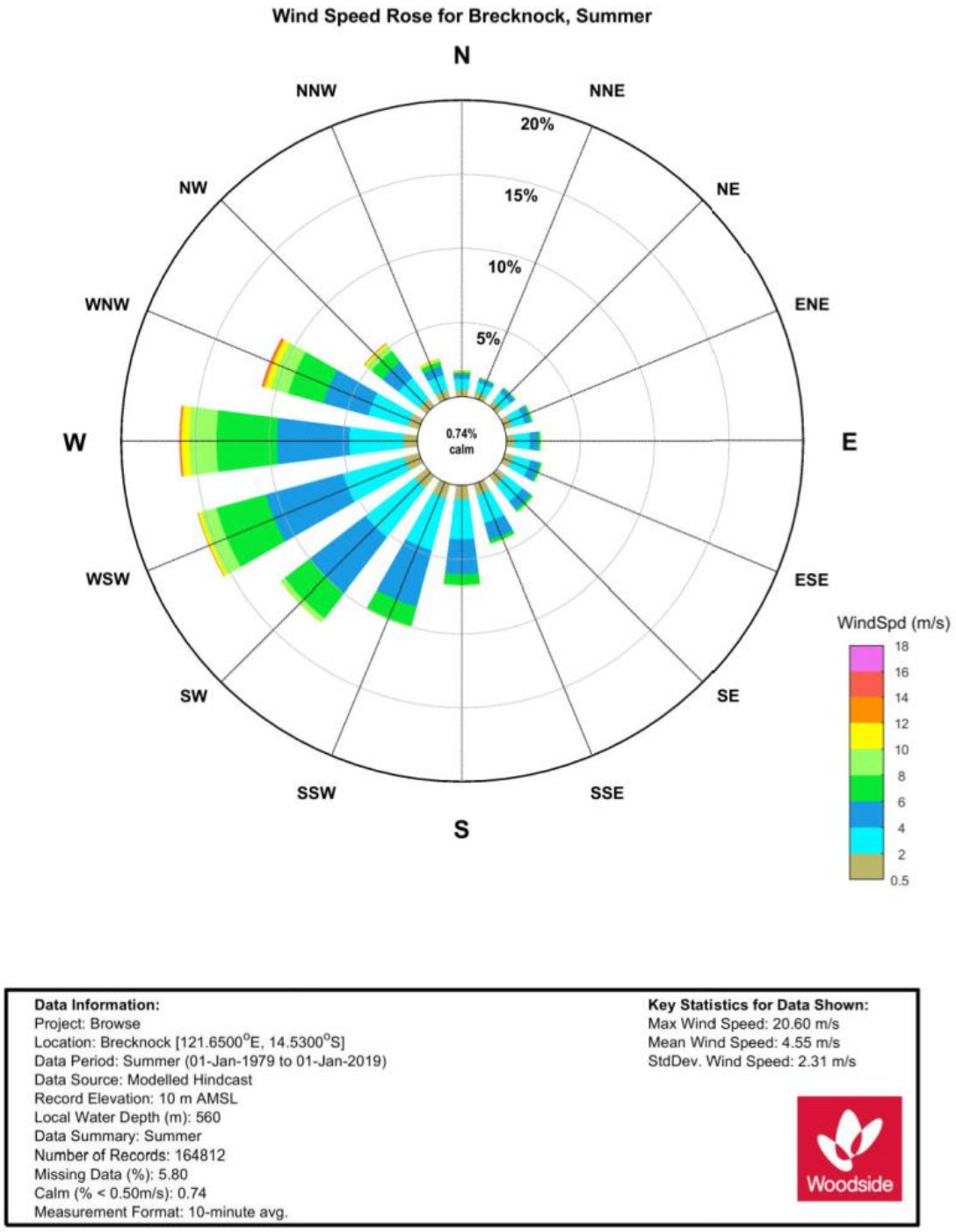

Figure 2. Summer distributions of 10-minute average wind speeds by 22.5° directional sectors at the Brecknock site (Metocean Solutions Ltd, 2019). Note tropical cyclone events were not included in this distribution. Winds at Brecknock in summer are predominantly from the WNW to SW due to the North West Monsoon (WEL, 2019).

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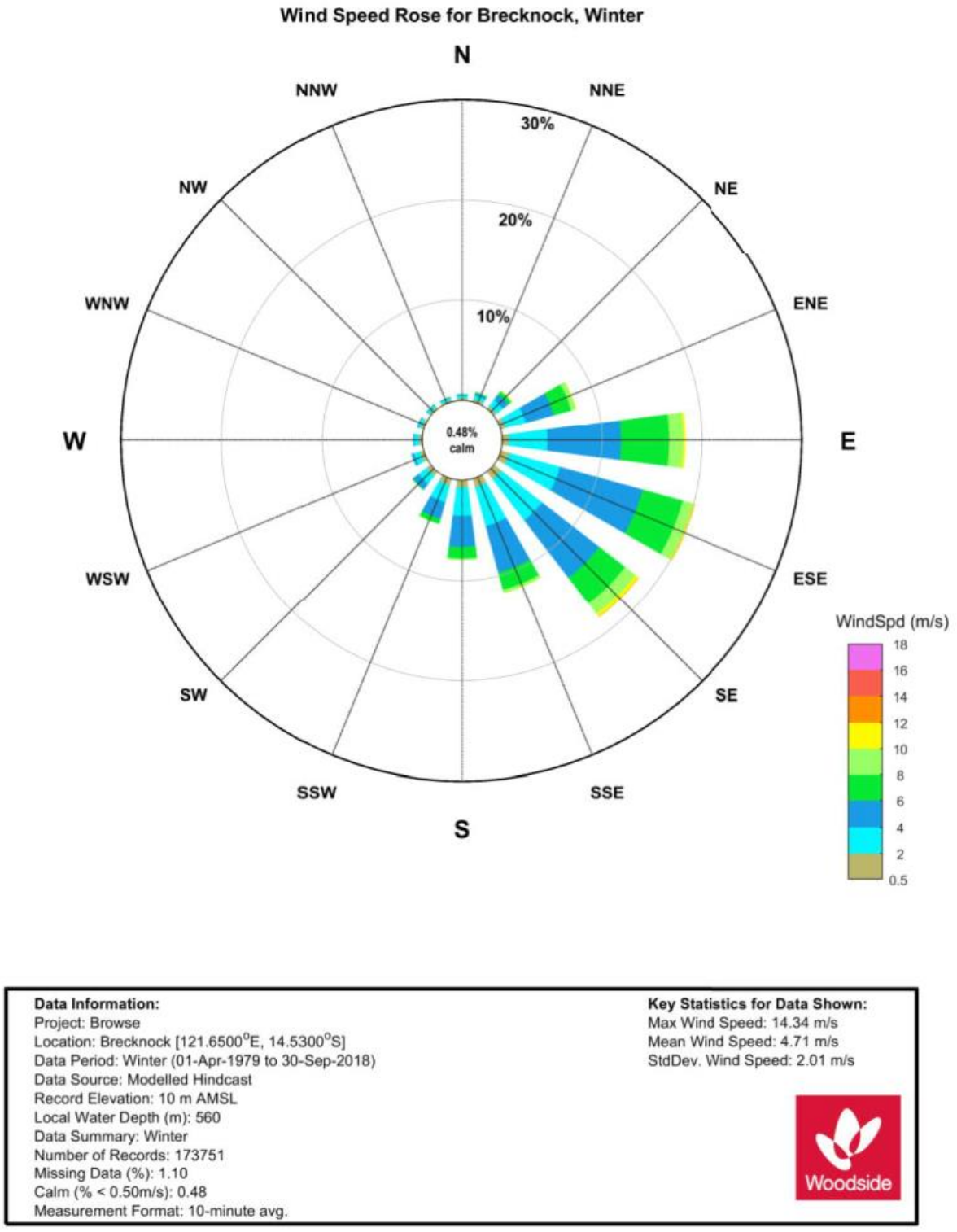

Figure 3. Winter distributions of 10-minute average wind speeds by 22.5° directional sectors at the Brecknock site (Metocean Solutions Ltd, 2019). Note tropical cyclone events were not included in this distribution. Winds at Brecknock in winter are predominantly from the E to SE due to the South East Trade Winds coming from the Australian mainland (WEL, 2019).

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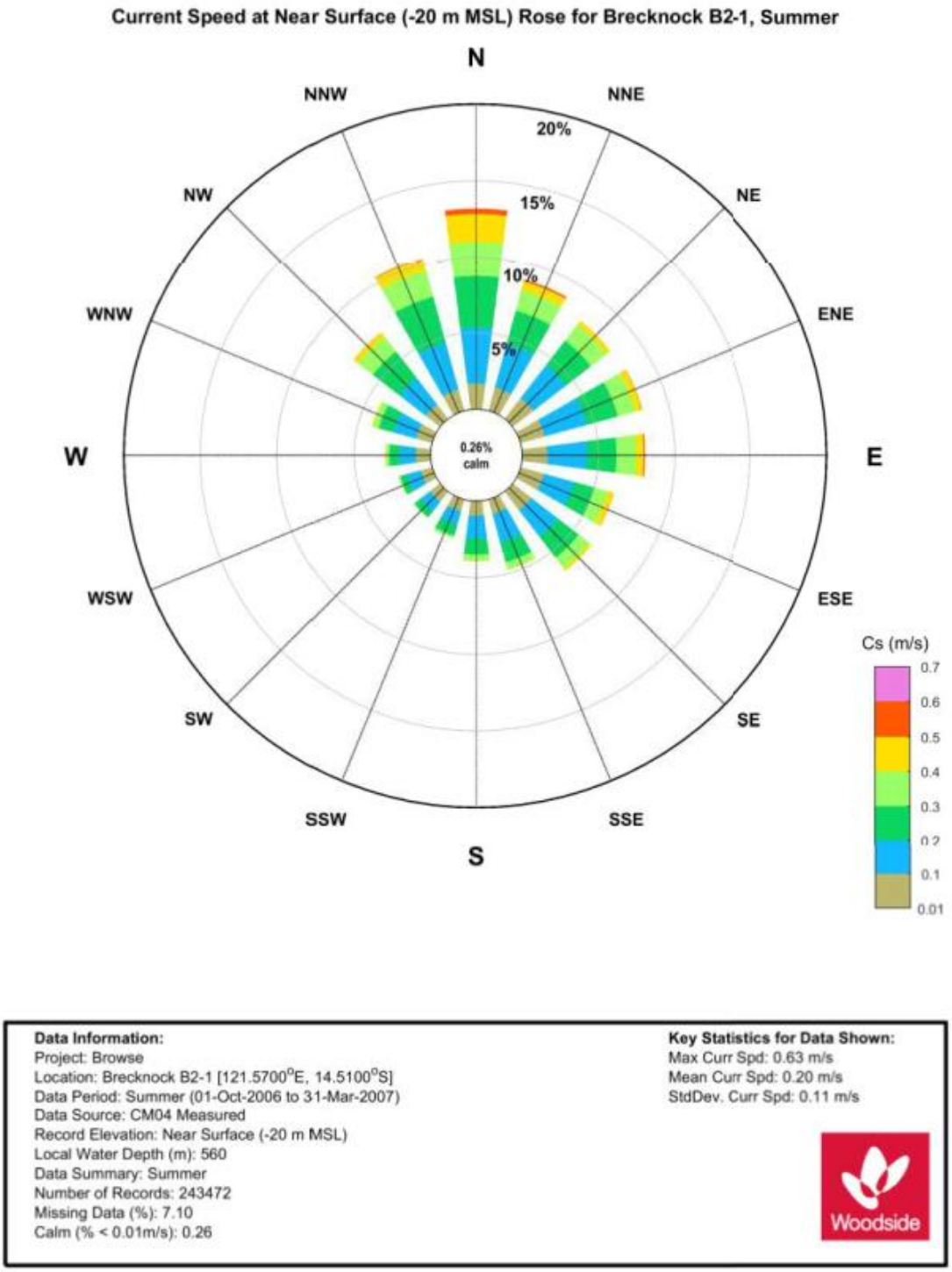

Figure 4. Summer (Nov-Apr) near surface combined frequency of 1-minute mean current speed and direction (towards) measured at Brecknock B2-1 location (cyclones removed) (RPS Metocean Ltd. 2008).

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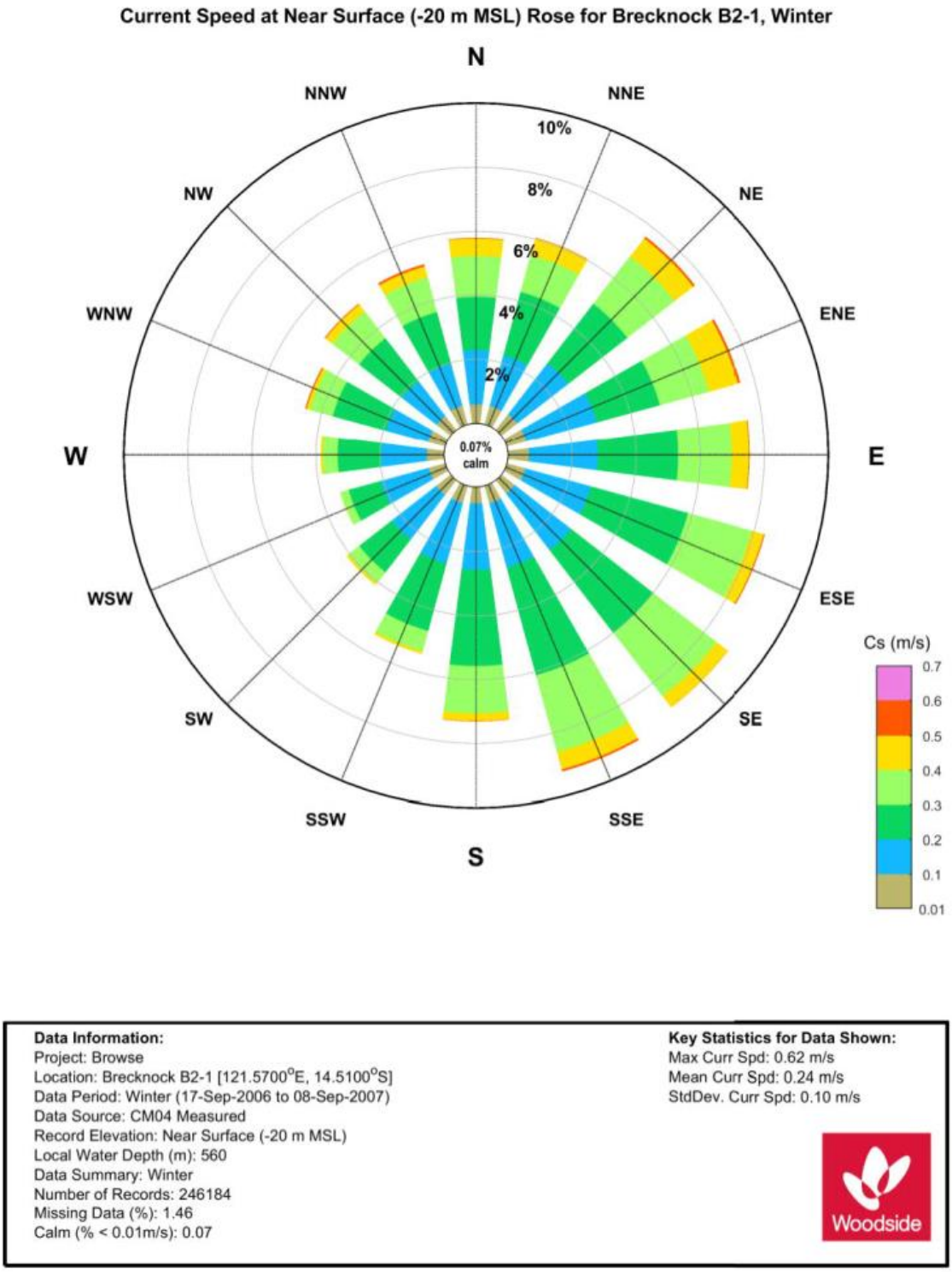

Figure 5. Winter (May-Sep) near surface combined frequency of 1-minute mean current speed and direction (towards) measured at Brecknock B2-1 location (cyclones removed) (RPS Metocean Ltd. 2008).

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North west Shelf/Scarborough

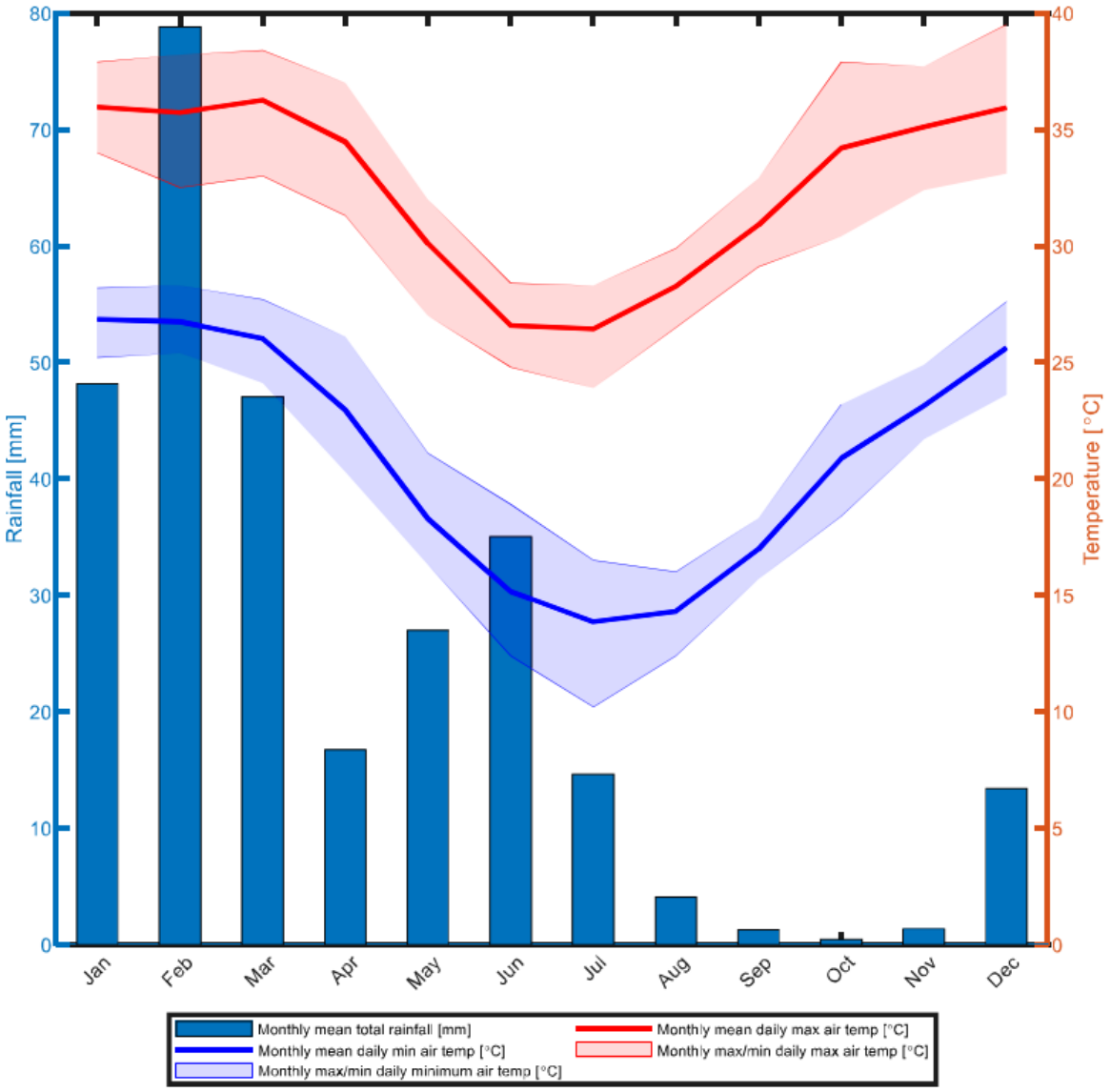

Figure 1. Monthly average total rainfall [mm] and air temperature [°C], calculated based on observations at the Karratha Aero weather station from 1972-2020 and 1993-2020 respectively (Bureau of Meteorology 2020). Bars show the monthly average total rainfall values, and thick blue and red lines denote 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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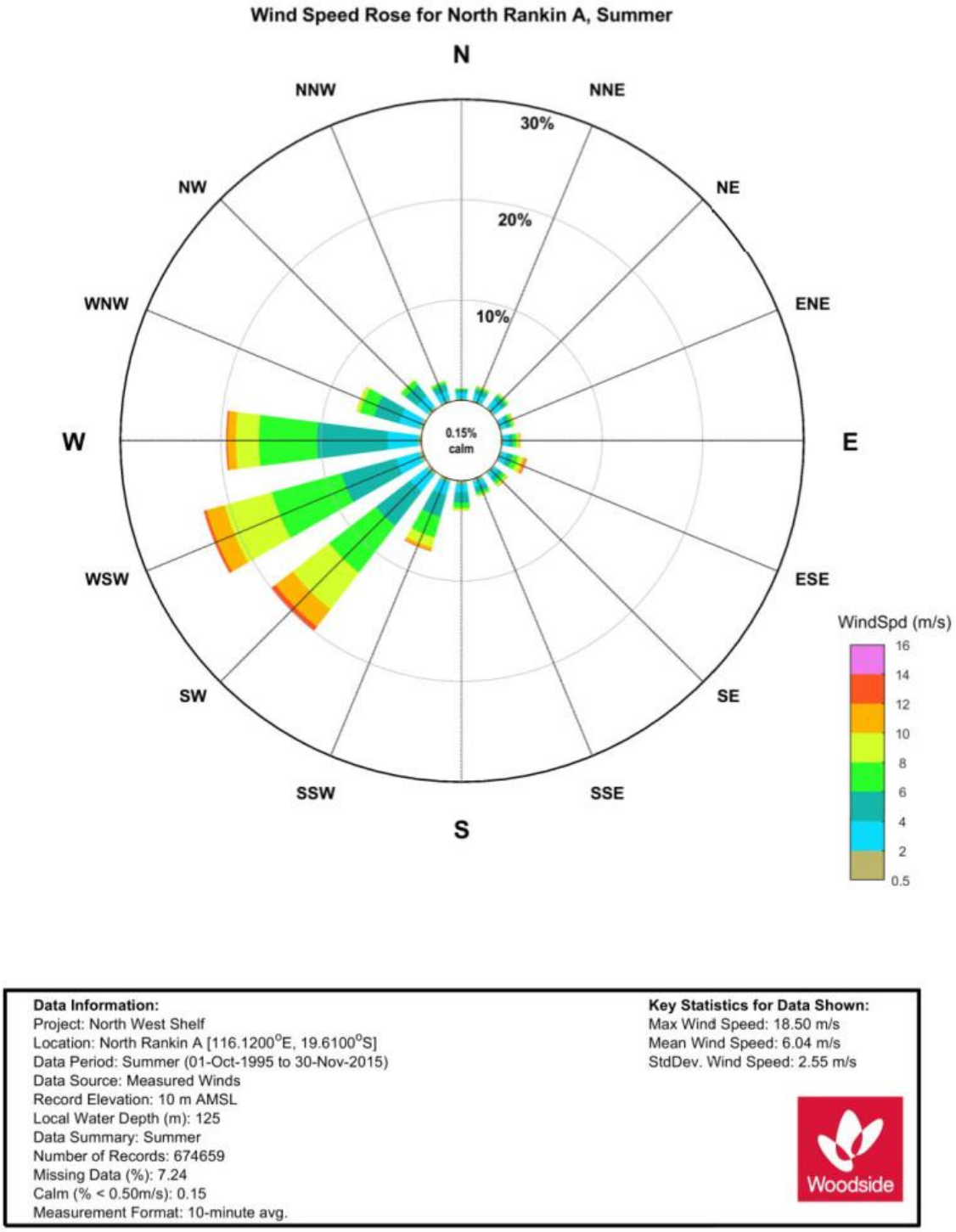

Figure 2. Summer distributions of 10-minute average wind speeds by 22.5° directional sectors at the North Rankin A site (WEL, 2015). Note tropical cyclone events were not included in this distribution. Winds at North Rankin A in summer are characterised by W to SW driven by the North West Monsoon (RPS, 2016).

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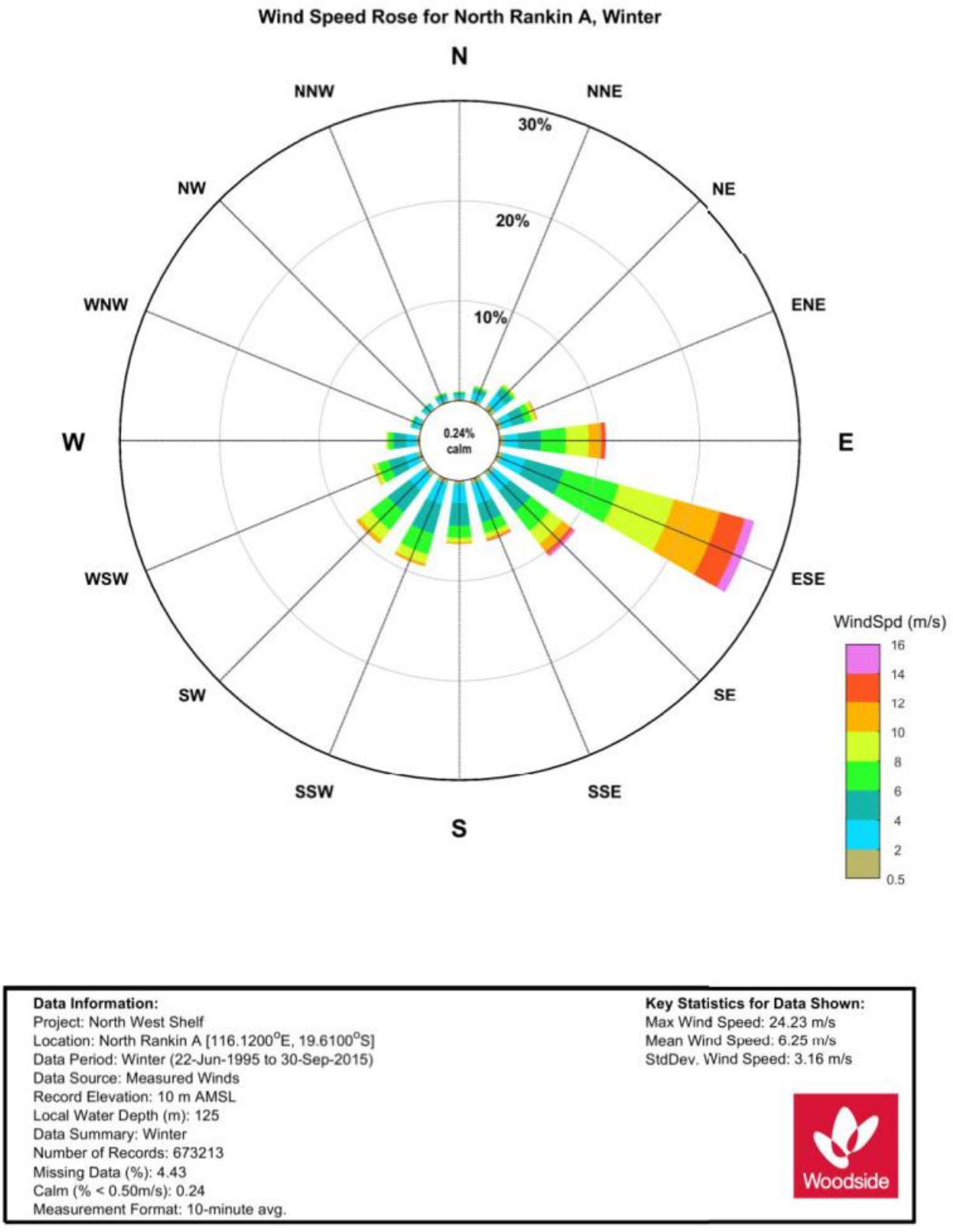

Figure 3. Winter distributions of 10-minute average wind speeds by 22.5° directional sectors at the North Rankin A site (WEL, 2015). Note tropical cyclone events were not included in this distribution. Winds at North Rankin in winter are predominantly influenced by the South East Trade Winds over Australia (RPS, 2016).

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Scarborough

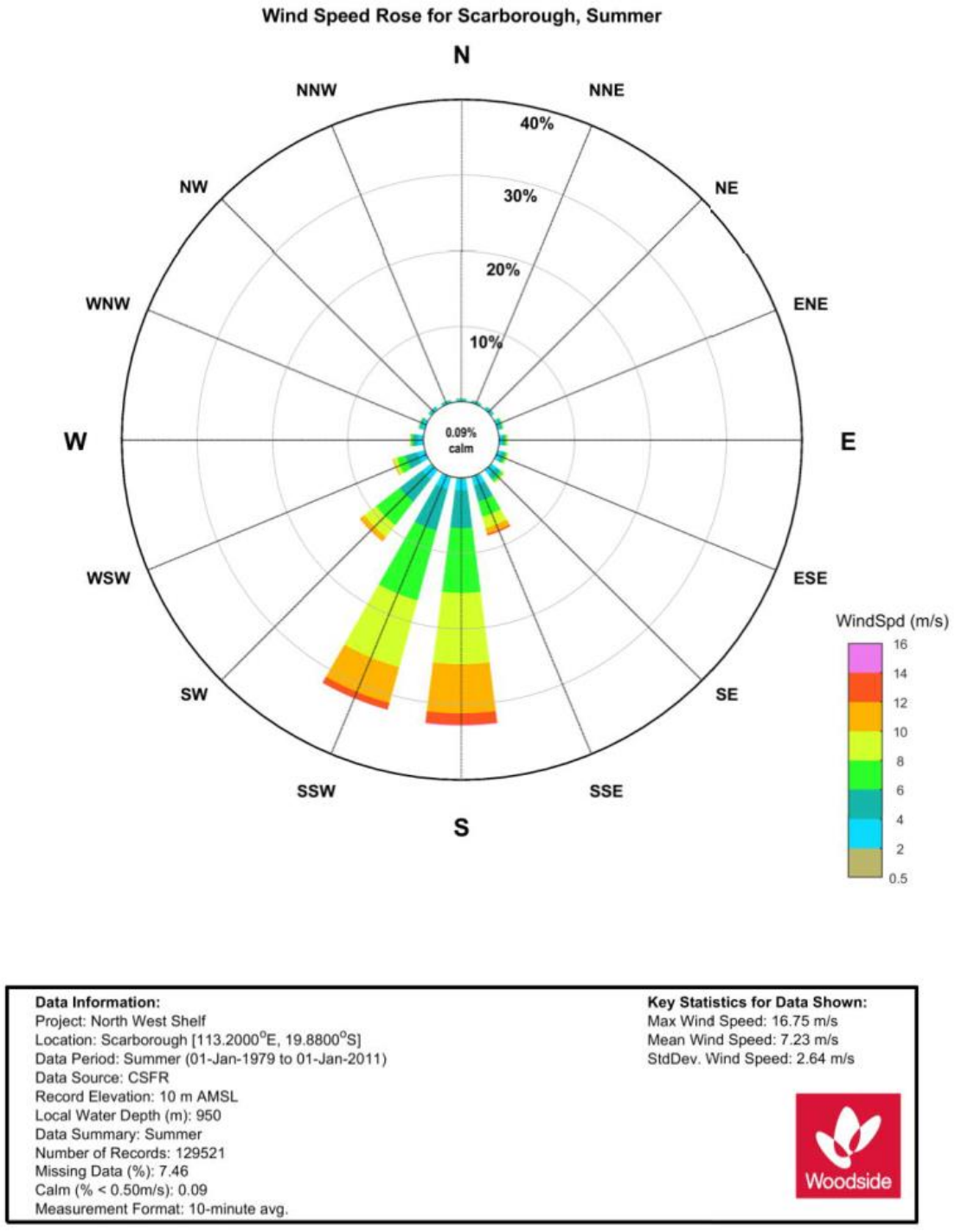

Figure 1. Summer distributions of wind speeds (10-minute at 10m ASL) by 22.5° directional sectors at the Scarborough site (WEL, 2018). Note tropical cyclone events were not included in this distribution. Winds at Scarborough in summer are predominantly from the S to SSW due to a Pilbara Heat Low forming 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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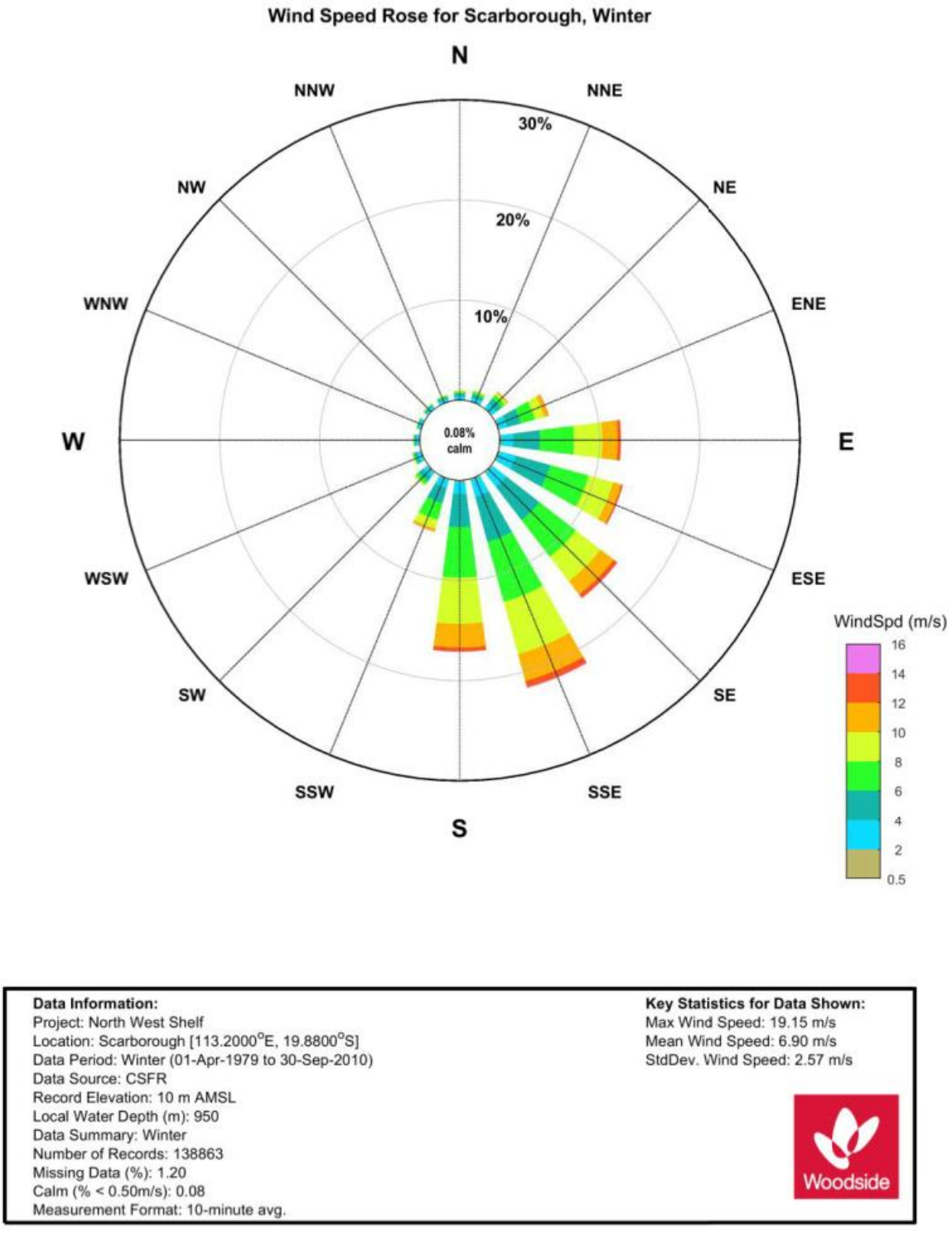

Figure 2. Winter distributions of wind speeds (10-minute at 10 m ASL) by 22.5° directional sectors at the Scarborough site (WEL, 2018). Note tropical cyclone events were not included in this distribution. Winds at Scarborough in winter are predominantly from the S to E driven by the South East Trade Winds over Australia (RPS, 2016)

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North-west Shelf

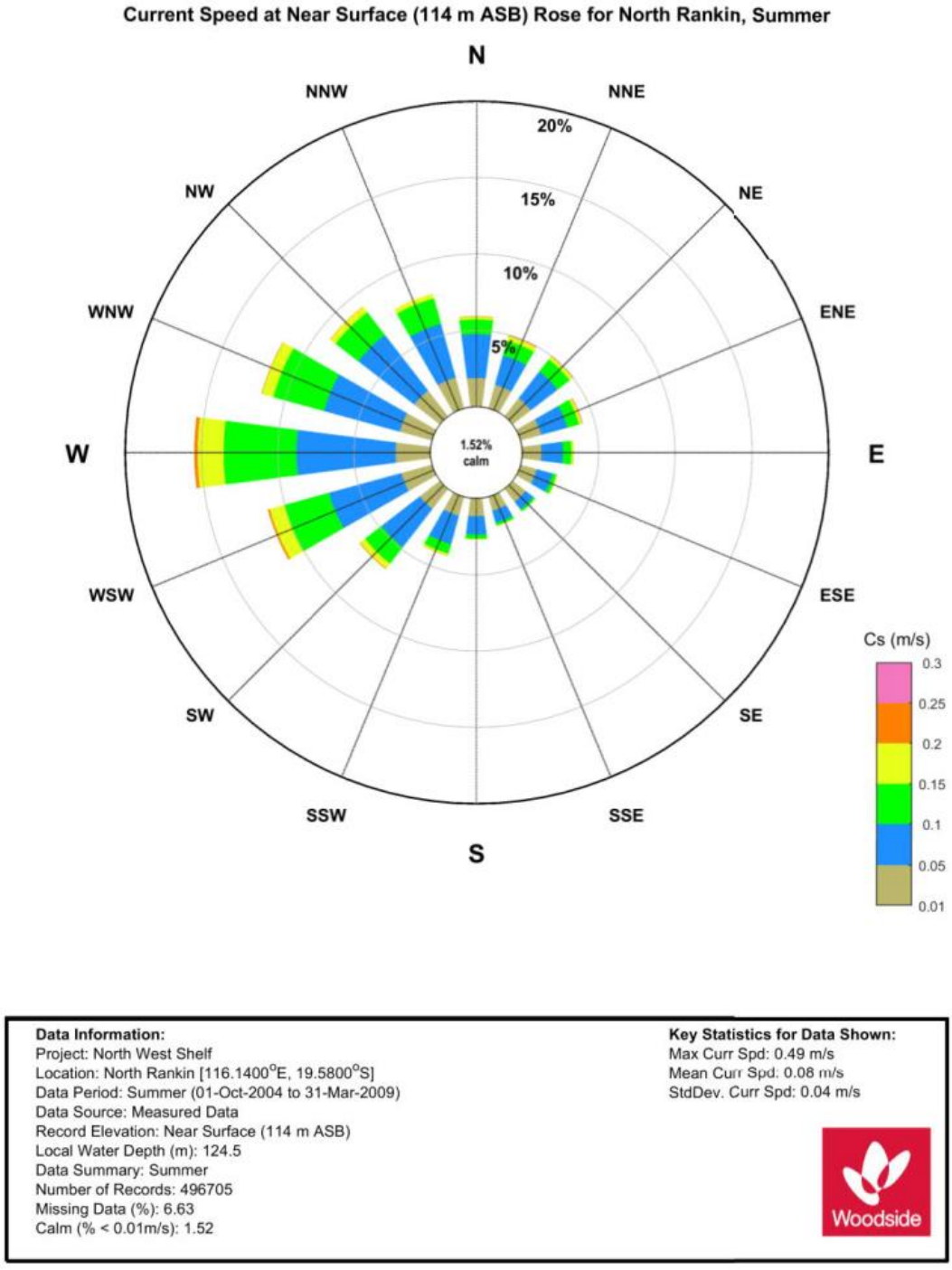

Figure 1. Summer (Nov-Apr) near surface combined frequency of 1-minute mean current speed and direction (towards) measured at the North Rankin location (cyclones removed) (WEL, 2011).

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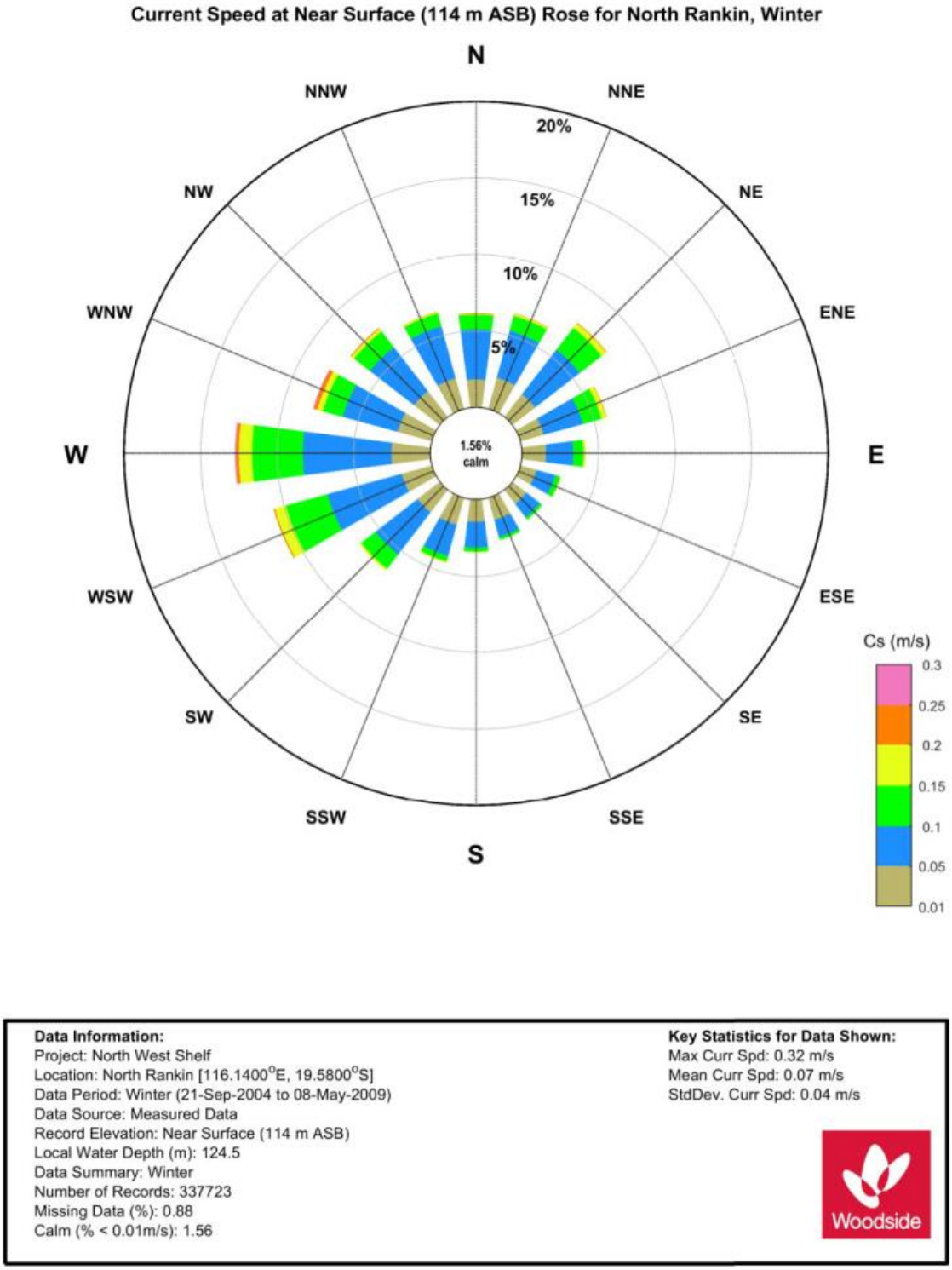

Figure 2. Winter (May-Sep) near surface combined frequency of 1-minute mean current speed and direction (towards) measured at the North Rankin location (cyclones removed) (WEL, 2011).

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Scarborough

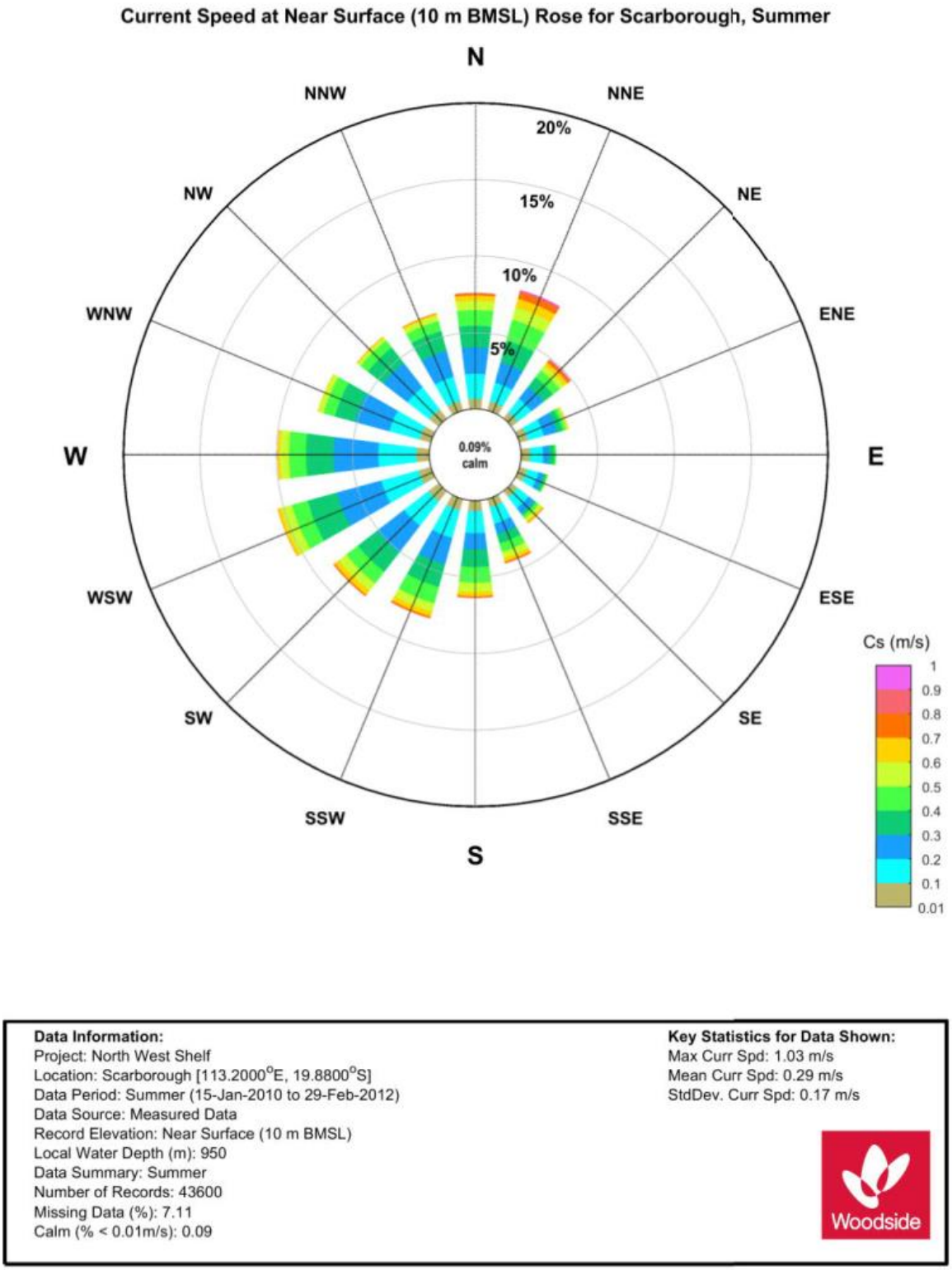

Figure 1. Summer (Nov - April) near surface combined frequency of 1-minute mean current speed and direction (towards) measured at the Scarborough location (cyclones removed) (WEL, 2018).

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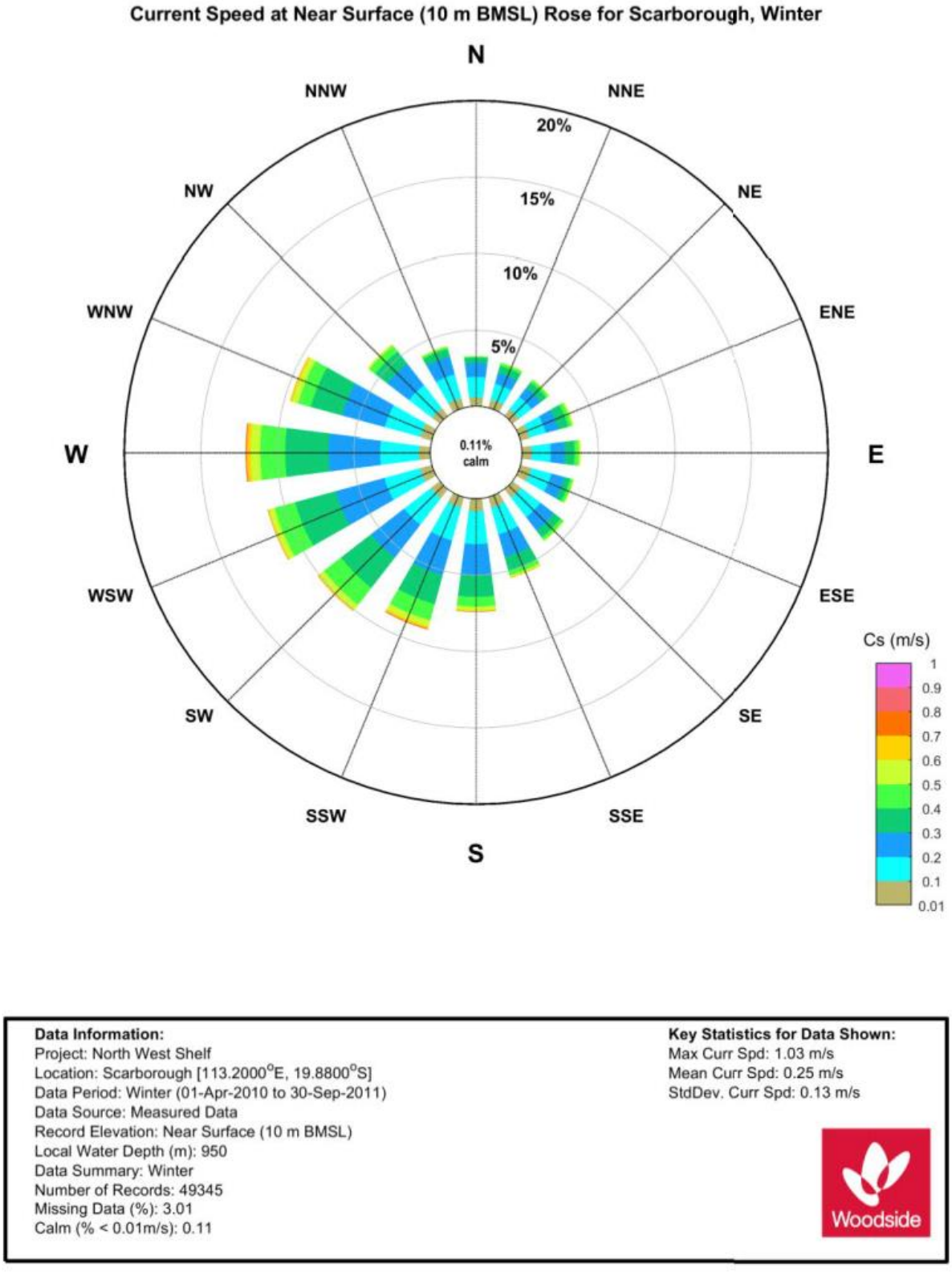

Figure 2. Winter (May-Sep) near surface combined frequency of 1-min mean current speed and direction (towards) measured at the Scarborough location (cyclones removed) (WEL, 2018).

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North-west Cape

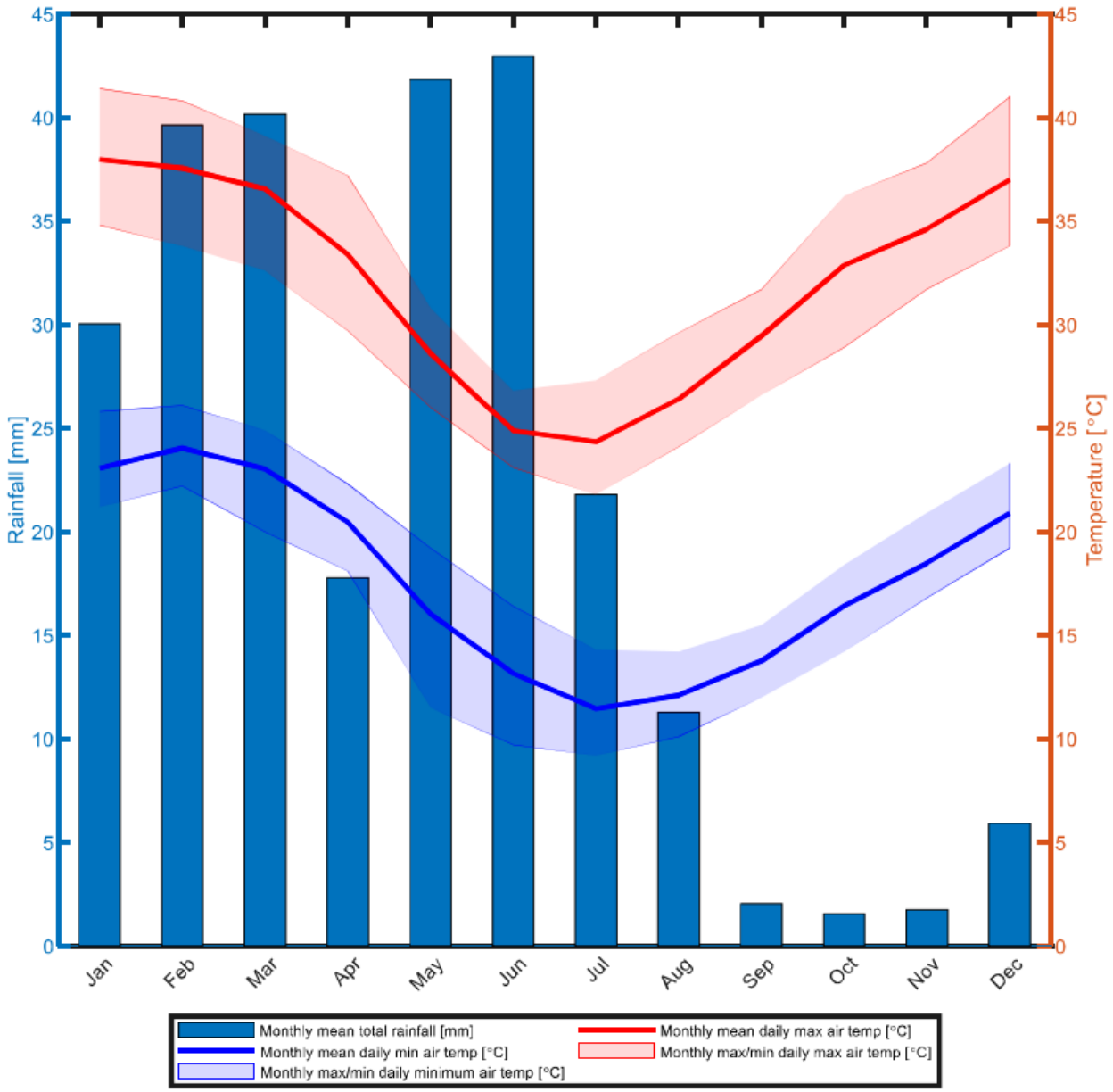

Figure 1. Monthly average total rainfall [mm] and air temperature [°C], calculated based on observations at the Learmonth Airport weather station from 1945-2020 and 1975-2020 respectively (Bureau of Meteorology 2020). Bars show the monthly average total rainfall values, and thick blue and red lines denote 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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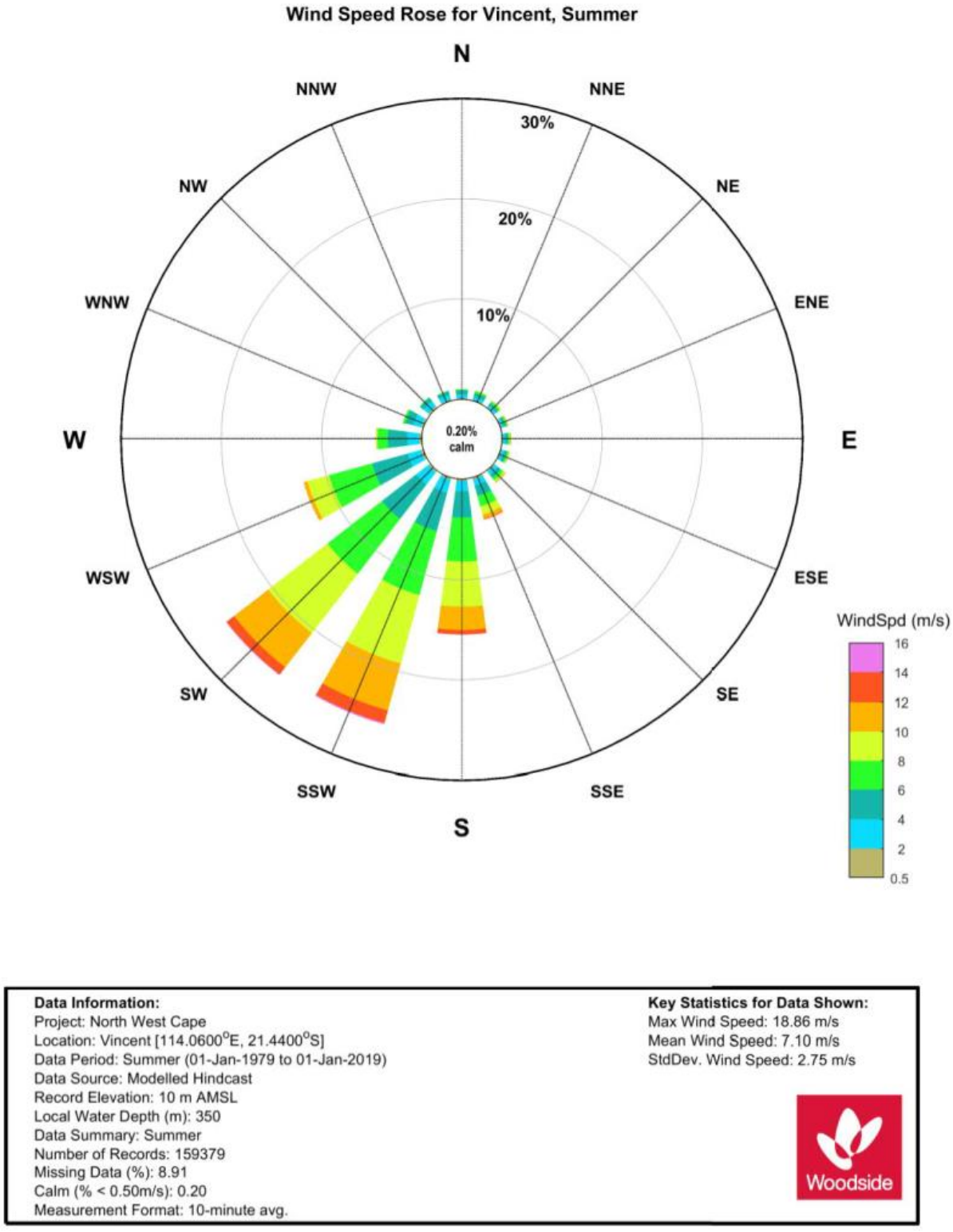

Figure 2. Summer distributions of wind speeds (10-minute at 10 m ASL) by 22.5° directional sectors at the Vincent site (Vincent Metocean). Note tropical cyclone events were not included in this distribution. Winds at Vincent in summer are predominantly from the SW to SSW in summer due to the presence of the Pilbara Heat Low (MetOcean Engineers, 2005).

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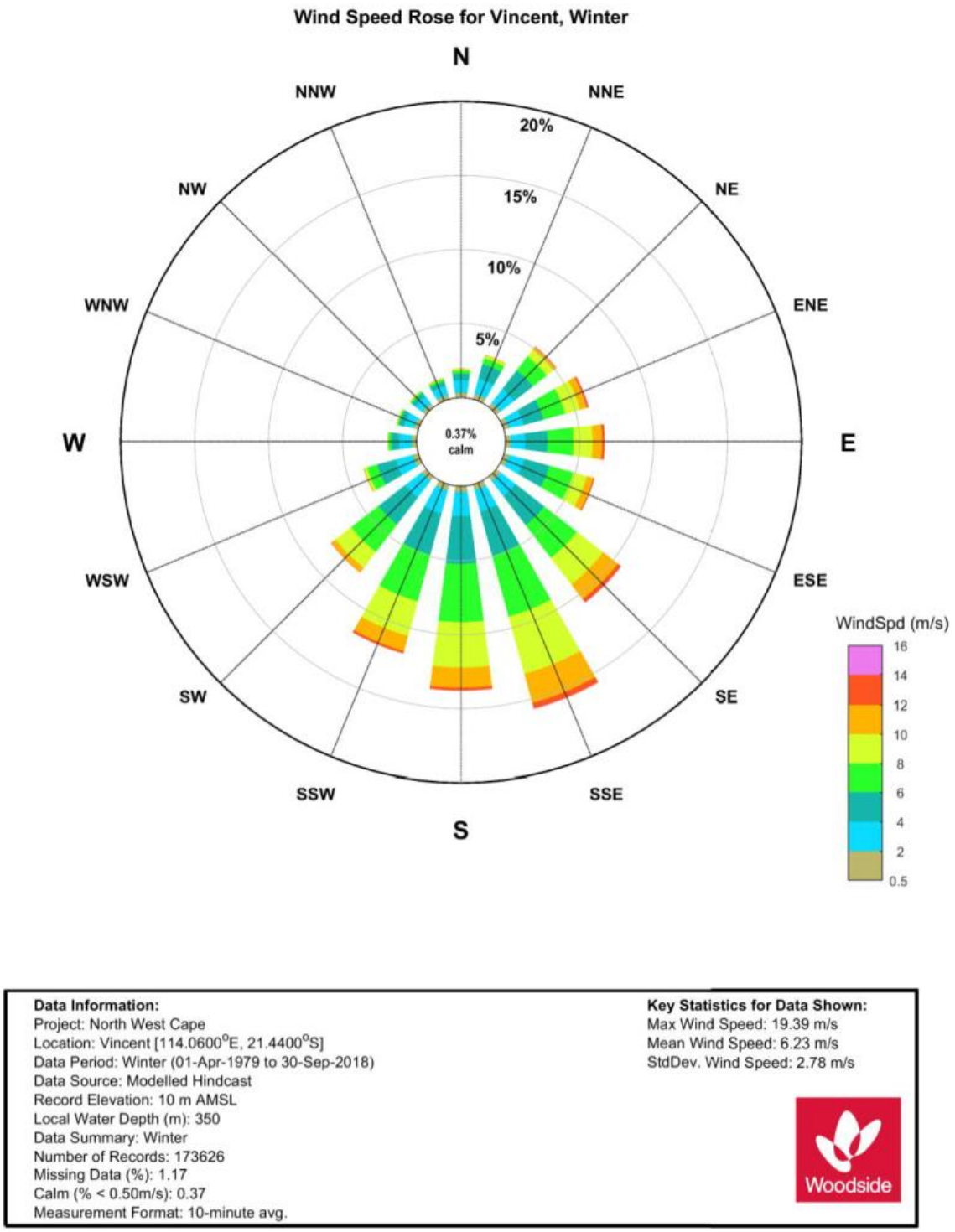

Figure 3. Winter distributions of wind speeds (10-minute at 10 m ASL) 22.5° directional sectors at the Vincent site (Vincent Metocean). Note tropical cyclone events were not included in this distribution. In winter, winds at are predominantly from the S to SE, associated with the South East Trades. Easterly 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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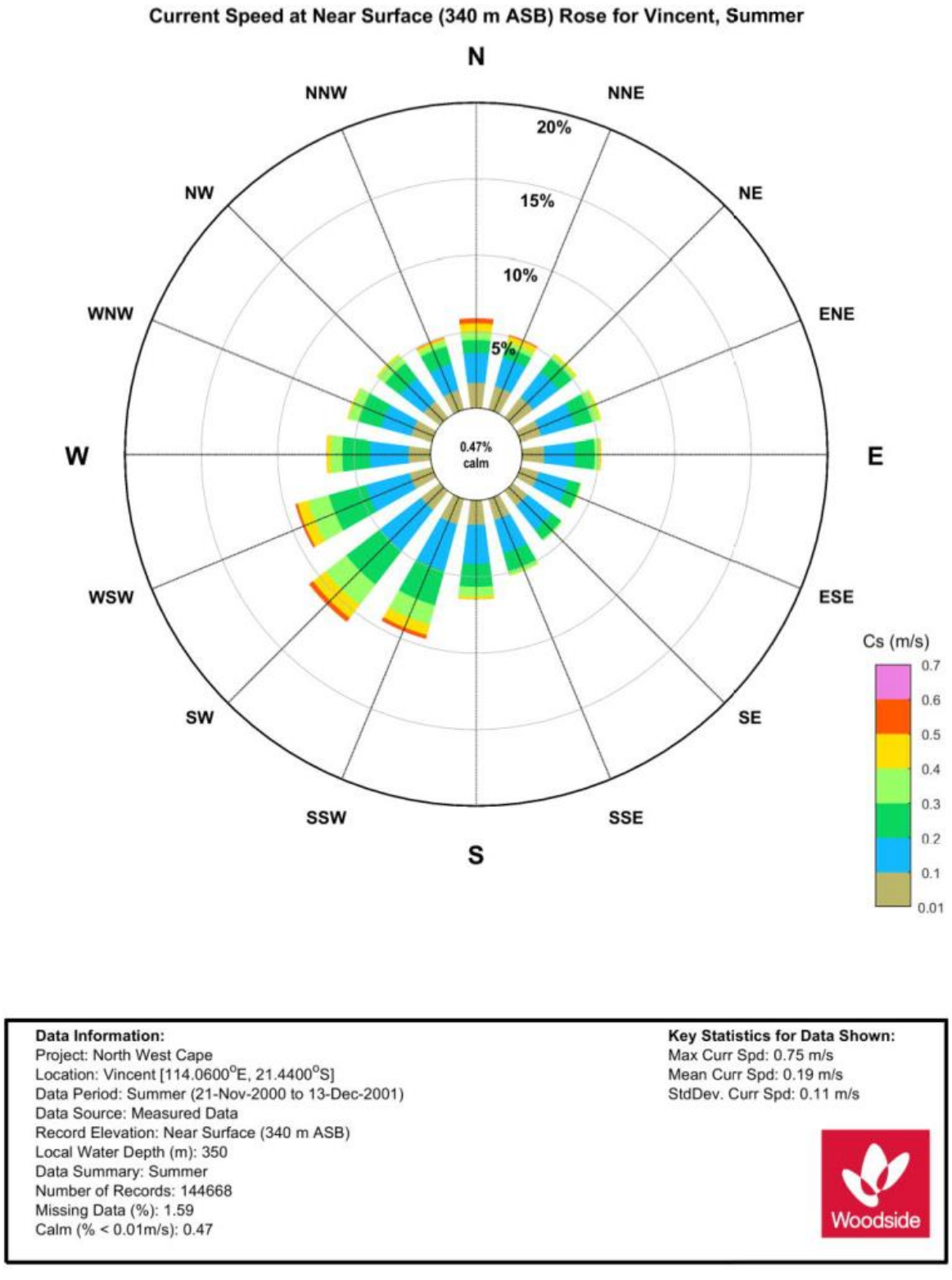

Figure 4. Summer (May - Sep) near surface combined frequency of 1-minute mean current speed and direction (towards) measured at the Vincent location (cyclones removed) (WEL, 2016).

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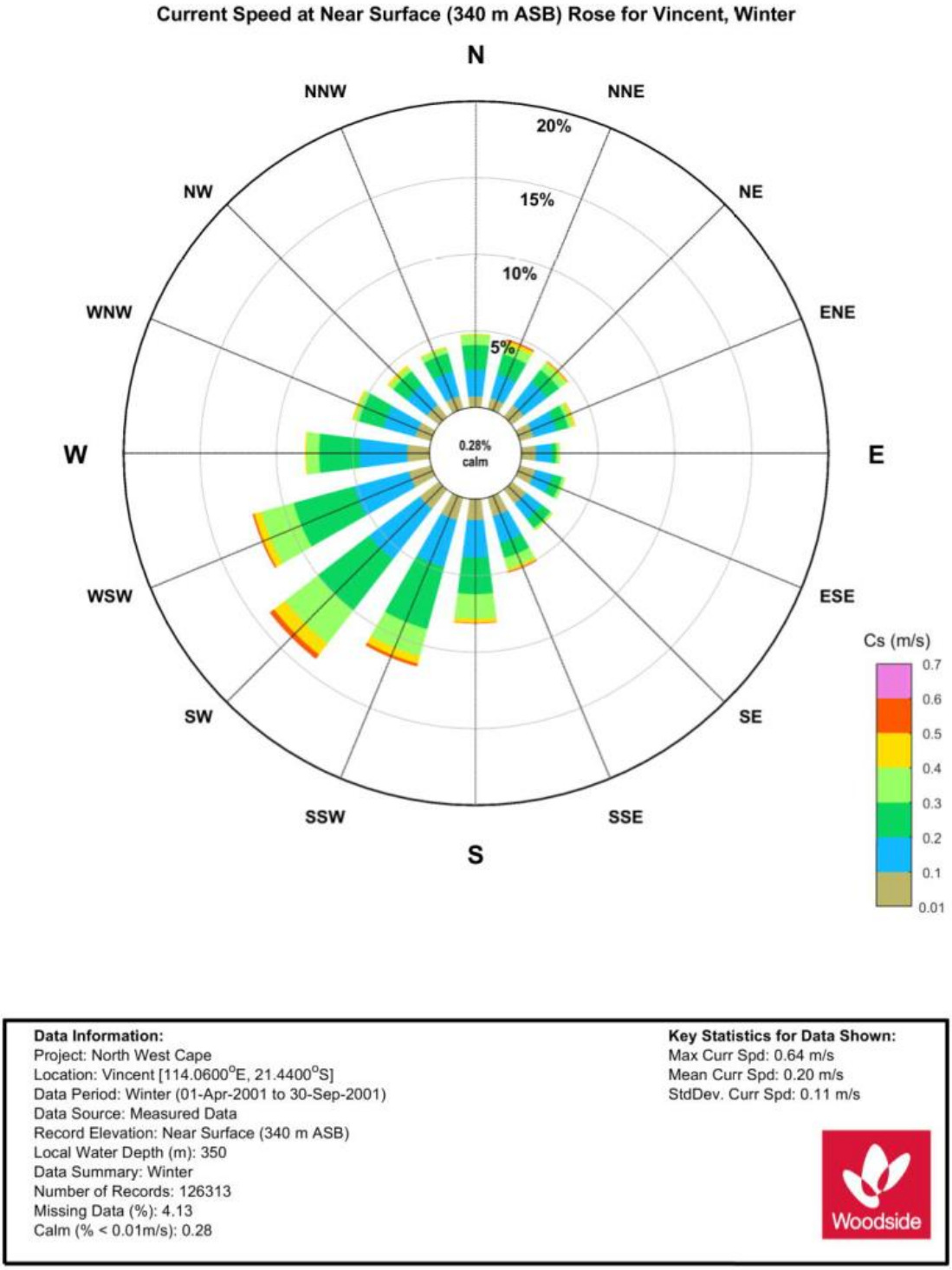

Figure 5. Winter (Nov - Apr) near surface combined frequency of 1-minute mean current speed and direction (towards) measured at the Vincent location (cyclones removed) (WEL, 2016).

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APPENDIX D EPBC ACT PROTECTED MATTERS SEARCH TOOL RESULTS – EMBA

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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: 24-Jul-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:	54
Listed Migratory Species:	65

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:	2
Commonwealth Heritage Places:	1
Listed Marine Species:	104
Whales and Other Cetaceans:	31
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	4
Habitat Critical to the Survival of Marine Turtles:	4

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	21
Regional Forest Agreements:	None
Nationally Important Wetlands:	1
EPBC Act Referrals:	180
Key Ecological Features (Marine):	6
Biologically Important Areas:	34
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

World Heritage Properties [Resource Information]

Name	State	Legal Status
The Ningaloo Coast	WA	Declared property

National Heritage Places [Resource Information]

Name	State	Legal Status
Natural		
The Ningaloo Coast	WA	Listed place

Commonwealth Marine Area [Resource Information]

Approval is required for a proposed activity that is located within the Commonwealth Marine Area which has, will have, or is likely to have a significant impact on the environment. Approval may be required for a proposed action taken outside a Commonwealth Marine Area but which has, may have or is likely to have a significant impact on the environment in the Commonwealth Marine Area.

Feature Name
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)

Listed Threatened Species [Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text
BIRD		
Calidris acuminata		
Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area
Calidris canutus		
Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area
Calidris ferruginea		
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
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
Erythrotriorchis radiatus Red Goshawk [942]	Endangered	Species or species habitat may occur within area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat known to occur within area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat known to occur within area
Limosa lapponica menzbieri Northern Siberian Bar-tailed Godwit, Russkoye Bar-tailed Godwit [86432]	Endangered	Species or species habitat known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Malurus leucopterus edouardi White-winged Fairy-wren (Barrow Island), Barrow Island Black-and-white Fairy-wren [26194]	Vulnerable	Species or species habitat likely to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
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	Species or species habitat likely to occur within area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
Sternula albifrons Little Tern [82849]	Vulnerable	Breeding known to occur within area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Breeding known to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area
FISH		
Milyeringa justitia Barrow Cave Gudgeon [86867]	Endangered	Species or species habitat known to occur within area
Milyeringa veritas Cape Range Cave Gudgeon, Blind Gudgeon [66676]	Vulnerable	Species or species habitat known to occur within area
Ophisternon candidum Blind Cave Eel [66678]	Vulnerable	Species or species habitat known to occur within area
MAMMAL		
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
Bettongia lesueur Barrow and Boodie Islands subspecies		
Boodie, Burrowing Bettong (Barrow and Boodie Islands) [88021]	Vulnerable	Species or species habitat known to occur within area
Dasyurus hallucatus		
Northern Quoll, Digul [Gogo-Yimidir], Wijingadda [Dambimangari], Wiminji [Martu] [331]	Endangered	Species or species habitat may occur within area
Eubalaena australis		
Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area
Isoodon auratus barrowensis		
Golden Bandicoot (Barrow Island) [66666]	Vulnerable	Species or species habitat known to occur within area
Lagorchestes conspicillatus conspicillatus		
Spectacled Hare-wallaby (Barrow Island) [66661]	Vulnerable	Species or species habitat known to occur within area
Lagorchestes hirsutus Central Australian subspecies		
Mala, Rufous Hare-Wallaby (Central Australia) [88019]	Endangered	Translocated population known to occur within area
Macroderma gigas		
Ghost Bat [174]	Vulnerable	Species or species habitat likely to occur within area
Orcaella heinsohni		
Australian Snubfin Dolphin [81322]	Vulnerable	Species or species habitat known to occur within area
Osphranter robustus isabellinus		
Barrow Island Wallaroo, Barrow Island Euro [89262]	Vulnerable	Species or species habitat likely to occur within area
Petrogale lateralis lateralis		
Black-flanked Rock-wallaby, Moororong, Black-footed Rock Wallaby [66647]	Endangered	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Rhinonicteris aurantia (Pilbara form)		
Pilbara Leaf-nosed Bat [82790]	Vulnerable	Species or species habitat known to occur within area
Sousa sahulensis		
Australian Humpback Dolphin [87942]	Vulnerable	Species or species habitat known to occur within area
REPTILE		
Aipysurus apraefrontalis		
Short-nosed Sea Snake, Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat known to occur within area
Aipysurus foliosquama		
Leaf-scaled Sea Snake, Leaf-scaled Seasnake [1118]	Critically Endangered	Species or species habitat known to occur within area
Caretta caretta		
Loggerhead Turtle [1763]	Endangered	Breeding known to occur within area
Chelonia mydas		
Green Turtle [1765]	Vulnerable	Breeding known to occur within area
Ctenotus zastictus		
Hamelin Ctenotus [25570]	Vulnerable	Species or species habitat known to occur within area
Dermochelys coriacea		
Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area
Eretmochelys imbricata		
Hawksbill Turtle [1766]	Vulnerable	Breeding known to occur within area
Natator depressus		
Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area
SHARK		
Carcharias taurus (west coast population)		
Grey Nurse Shark (west coast population) [68752]	Vulnerable	Congregation or aggregation known to occur within area
Carcharodon carcharias		
White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to 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
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
null		
Balaenoptera omurai		
Omura's Whale [87136]		Species or species habitat likely to occur within area
Migratory Marine Birds		
Anous stolidus		
Common Noddy [825]		Species or species habitat likely to occur within area
Apus pacificus		
Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardenna carneipes		
Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Species or species habitat likely to occur within area
Ardenna pacifica		
Wedge-tailed Shearwater [84292]		Breeding known to occur within area

Scientific Name	Threatened Category	Presence Text
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat likely to occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat may occur within area
Hydroprogne caspia Caspian Tern [808]		Breeding 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 known 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 known to occur within area
Sternula albifrons Little Tern [82849]	Vulnerable	Breeding known to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area

Migratory Marine Species

Scientific Name	Threatened Category	Presence Text
Anoxypristis cuspidata Narrow Sawfish, Knifetooth Sawfish [68448]		Species or species habitat known to occur within area
Balaenoptera bonaerensis Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat likely to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Migration route known to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Carcharhinus longimanus Oceanic Whitetip Shark [84108]		Species or species habitat likely to occur within area
Carcharias taurus Grey Nurse Shark [64469]		Congregation or aggregation known to occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding known to occur within area

Scientific Name	Threatened Category	Presence Text
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat may occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area
Dugong dugon Dugong [28]		Breeding known to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding known to occur within area
Eubalaena australis as Balaena glacialis australis Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area
Isurus oxyrinchus Shortfin Mako, Mako Shark [79073]		Species or species habitat likely to occur within area
Isurus paucus Longfin Mako [82947]		Species or species habitat likely to occur within area
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]	Vulnerable	Species or species habitat 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	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]	Vulnerable	Species or species habitat known to occur within area
Tursiops aduncus (Arafura/Timor Sea populations) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat known to occur within area
Migratory Terrestrial Species		
Hirundo rustica Barn Swallow [662]		Species or species habitat may occur within area
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		

Scientific Name	Threatened Category	Presence Text
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
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
Pandion haliaetus		
Osprey [952]		Breeding known to occur within area
Thalasseus bergii		
Greater Crested Tern [83000]		Breeding known to occur within area
Tringa nebularia		
Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area

Other Matters Protected by the EPBC Act

Commonwealth Lands [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Commonwealth Land Name	State
Defence	
Defence - EXMOUTH VLF TRANSMITTER STATION [50123]	WA
Defence - LEARMONTH RADAR SITE - VLAMING HEAD EXMOUTH [50001]	WA

Commonwealth Heritage Places [Resource Information]

Name	State	Status
Natural		
Ningaloo Marine Area - Commonwealth Waters	WA	Listed place

Listed Marine Species [Resource Information]

Scientific Name	Threatened Category	Presence Text
Bird		
Actitis hypoleucos		
Common Sandpiper [59309]		Species or species habitat known to occur within area
Anous stolidus		
Common Noddy [825]		Species or species habitat likely to occur within area
Apus pacificus		
Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Ardenna carneipes as Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Species or species habitat likely to occur within area
Ardenna pacifica as Puffinus pacificus Wedge-tailed Shearwater [84292]		Breeding known to occur within area
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area overfly marine area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area overfly marine area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat likely to occur within area
Chalcites osculans as Chrysococcyx osculans Black-eared Cuckoo [83425]		Species or species habitat known to occur within area overfly marine area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
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]		Species or species habitat likely to occur within area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat may occur within area
Glareola maldivarum Oriental Pratincole [840]		Species or species habitat may occur within area overfly marine area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat 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 known to occur within area overfly marine area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area overfly marine area
Motacilla flava Yellow Wagtail [644]		Species or species habitat 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 known to occur within area
Phaethon lepturus fulvus Christmas Island White-tailed Tropicbird, Golden Bosunbird [26021]	Endangered	Species or species habitat may occur within area
Phaethon rubricauda Red-tailed Tropicbird [994]		Species or species habitat likely to occur within area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text
Rostratula australis as Rostratula benghalensis (sensu lato)		
Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area
Sterna dougallii		
Roseate Tern [817]		Breeding known to occur within area
Sternula albifrons as Sterna albifrons		
Little Tern [82849]	Vulnerable	Breeding known to occur within area
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 may occur within area
Thalassarche impavida		
Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalasseus bengalensis as Sterna bengalensis		
Lesser Crested Tern [66546]		Breeding known to occur within area
Thalasseus bergii as Sterna bergii		
Greater Crested Tern [83000]		Breeding known to occur within area
Tringa nebularia		
Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area overfly marine area
Fish		
Acentronura larsonae		
Helen's Pygmy Pipehorse [66186]		Species or species habitat may occur within area
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

Scientific Name	Threatened Category	Presence Text
Choeroichthys brachysoma Pacific Short-bodied Pipefish, Short-bodied Pipefish [66194]		Species or species habitat may occur within area
Choeroichthys 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
Doryrhamphus negrosensis Flagtail Pipefish, Masthead Island Pipefish [66213]		Species or species habitat may occur within area
Festucalex scalaris Ladder Pipefish [66216]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Filicampus tigris Tiger Pipefish [66217]		Species or species habitat may occur within area
Halicampus brocki Brock's Pipefish [66219]		Species or species habitat may occur within area
Halicampus grayi Mud Pipefish, Gray's Pipefish [66221]		Species or species habitat may occur within area
Halicampus nitidus Glittering Pipefish [66224]		Species or species habitat may occur within area
Halicampus spinirostris Spiny-snout Pipefish [66225]		Species or species habitat may occur within area
Haliichthys taeniophorus Ribboned Pipehorse, Ribboned Seadragon [66226]		Species or species habitat may occur within area
Hippichthys penicillus Beady Pipefish, Steep-nosed Pipefish [66231]		Species or species habitat may occur within area
Hippocampus angustus Western Spiny Seahorse, Narrow-bellied Seahorse [66234]		Species or species habitat may occur within area
Hippocampus histrix Spiny Seahorse, Thorny Seahorse [66236]		Species or species habitat may occur within area
Hippocampus kuda Spotted Seahorse, Yellow Seahorse [66237]		Species or species habitat may occur within area
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
Hippocampus trimaculatus Three-spot Seahorse, Low-crowned Seahorse, Flat-faced Seahorse [66720]		Species or species habitat may occur within area
Micrognathus micronotopterus Tidepool Pipefish [66255]		Species or species habitat may occur within area
Phoxocampus belcheri Black Rock Pipefish [66719]		Species or species habitat may occur within area
Solegnathus hardwickii Pallid Pipehorse, Hardwick's Pipehorse [66272]		Species or species habitat may occur within area
Solegnathus lettiensis Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area
Solenostomus cyanopterus Robust Ghostpipefish, Blue-finned Ghost Pipefish, [66183]		Species or species habitat may occur within area
Syngnathoides biaculeatus Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area
Trachyrhamphus bicoarctatus Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280]		Species or species habitat may occur within area
Trachyrhamphus longirostris Straightstick Pipefish, Long-nosed Pipefish, Straight Stick Pipefish [66281]		Species or species habitat may occur within area
Mammal		
Dugong dugon Dugong [28]		Breeding known to occur within area
Reptile		

Scientific Name	Threatened Category	Presence Text
Aipysurus apraefrontalis Short-nosed Sea Snake, Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat known to occur within area
Aipysurus duboisii Dubois' Sea Snake, Dubois' Seasnake, Reef Shallows Sea Snake [1116]		Species or species habitat may occur within area
Aipysurus foliosquama Leaf-scaled Sea Snake, Leaf-scaled Seasnake [1118]	Critically Endangered	Species or species habitat known to occur within area
Aipysurus laevis Olive Sea Snake, Olive-brown Sea Snake [1120]		Species or species habitat may occur within area
Aipysurus mosaicus as Aipysurus eydouxii Mosaic Sea Snake [87261]		Species or species habitat may occur within area
Aipysurus tenuis Brown-lined Sea Snake, Mjoberg's Sea Snake [1121]		Species or species habitat may occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding known to occur within area
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat may occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area
Emydocephalus annulatus Eastern Turtle-headed Sea Snake [1125]		Species or species habitat may occur within area
Ephalophis greyae as Ephalophis greyi Mangrove Sea Snake [93738]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding known to occur within area
Hydrelaps darwiniensis Port Darwin Sea Snake, Black-ringed Mangrove Sea Snake [1100]		Species or species habitat may occur within area
Hydrophis czeblukovi Fine-spined Sea Snake [59233]		Species or species habitat may occur within area
Hydrophis elegans Elegant Sea Snake, Bar-bellied Sea Snake [1104]		Species or species habitat may occur within area
Hydrophis kingii as Disteira kingii Spectacled Sea Snake [93511]		Species or species habitat may occur within area
Hydrophis macdowelli as Hydrophis mcdowelli MacDowell's Sea Snake, Small-headed Sea Snake, [75601]		Species or species habitat may occur within area
Hydrophis major as Disteira major Olive-headed Sea Snake [93512]		Species or species habitat may occur within area
Hydrophis ornatus Spotted Sea Snake, Ornate Reef Sea Snake [1111]		Species or species habitat may occur within area
Hydrophis peronii as Acalyptophis peronii Horned Sea Snake [93509]		Species or species habitat may occur within area
Hydrophis platura as Pelamis platurus Yellow-bellied Sea Snake [93746]		Species or species habitat may occur within area
Hydrophis stokesii as Astrotia stokesii Stokes' Sea Snake [93510]		Species or species habitat may occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area

Whales and Other Cetaceans		[Resource Information]
Current Scientific Name	Status	Type of Presence
Mammal		
Balaenoptera acutorostrata Minke Whale [33]		Species or species habitat may occur within area
Balaenoptera bonaerensis Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat likely to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Migration route known to occur within area
Balaenoptera omurai Omura's Whale [87136]		Species or species habitat likely to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Delphinus delphis Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
Eubalaena australis Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area
Feresa attenuata Pygmy Killer Whale [61]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
Globicephala macrorhynchus Short-finned Pilot Whale [62]		Species or species habitat may occur within area
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 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]	Vulnerable	Species or species habitat known to occur within area
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area
Stenella coeruleoalba Striped Dolphin, Euphrosyne Dolphin [52]		Species or species habitat may occur within area
Stenella longirostris Long-snouted Spinner Dolphin [29]		Species or species habitat may occur within area
Steno bredanensis Rough-toothed Dolphin [30]		Species or species habitat may occur within area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
Tursiops aduncus (Arafura/Timor Sea populations) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat known to occur within area
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area
Ziphius cavirostris Cuvier's Beaked Whale, Goose-beaked Whale [56]		Species or species habitat may occur within area

Australian Marine Parks	[Resource Information]
Park Name	Zone & IUCN Categories
Gascoyne	Habitat Protection Zone (IUCN IV)

Park Name	Zone & IUCN Categories
Gascoyne	Multiple Use Zone (IUCN VI)
Montebello	Multiple Use Zone (IUCN VI)
Ningaloo	Recreational Use Zone (IUCN IV)

Habitat Critical to the Survival of Marine Turtles		[Resource Information]
Scientific Name	Behaviour	Presence
All year (Jun - Aug)		
Natator depressus		
Flatback Turtle [59257]	Nesting	Known to occur
Nov-Feb		
Caretta caretta		
Loggerhead Turtle [1763]	Nesting	Known to occur
Oct - Feb		
Eretmochelys imbricata		
Hawksbill Turtle [1766]	Nesting	Known to occur
Oct - Mar		
Chelonia mydas		
Green Turtle [1765]	Nesting	Known to occur

Extra Information

State and Territory Reserves		[Resource Information]
Protected Area Name	Reserve Type	State
Airlie Island	Nature Reserve	WA
Barrow Island	Nature Reserve	WA
Barrow Island	Marine Park	WA
Barrow Island	Marine Management Area	WA
Bessieres Island	Nature Reserve	WA
Boodie, Double Middle Islands	Nature Reserve	WA
Cape Range	National Park	WA
Great Sandy Island	Nature Reserve	WA
Great Sandy Island	Nature Reserve	WA

Protected Area Name	Reserve Type	State
Jurabi Coastal Park	5(1)(h) Reserve	WA
Lowendal Islands	Nature Reserve	WA
Montebello Islands	Conservation Park	WA
Montebello Islands	Conservation Park	WA
Montebello Islands	Marine Park	WA
Muiron Islands	Nature Reserve	WA
Muiron Islands	Marine Management Area	WA
Ningaloo	Marine Park	WA
Thevenard Island	Nature Reserve	WA
Thevenard Island	Nature Reserve	WA
Unnamed WA40322	5(1)(h) Reserve	WA
Unnamed WA44665	5(1)(h) Reserve	WA

Nationally Important Wetlands

[Resource Information]

Wetland Name	State
Cape Range Subterranean Waterways	WA

EPBC Act Referrals

[Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status
3D Seismic Survey in the Carnarvon Bsin on the North West Shelf	2002/778		Completed
Babylon 3D Marine Seismic Survey, Commonwealth Waters, nr Exmouth WA	2013/7081		Completed
Browse to North West Shelf Development, Indian Ocean, WA	2018/8319		Approval
DAVROS MC 3D marine seismic survey northwaet of Dampier, WA	2013/7092		Completed
Deep Water Northwest Shelf 2D Seismic Survey	2007/3260		Completed
Development of Mutineer and Exeter petroleum fields for oil production, Permit	2003/1033		Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Gorgon Gas Development	2003/1294		Post-Approval
Ningaloo Lighthouse Development, 17km north west Exmouth, Western Australia	2020/8693		Post-Approval
Project Highclere Cable Lay and Operation	2022/09203		Completed
Action clearly unacceptable			
Highlands 3D Marine Seismic Survey	2012/6680	Action Clearly Unacceptable	Completed
Controlled action			
'Van Gogh' Petroleum Field Development	2007/3213	Controlled Action	Post-Approval
Construct and operate LNG & domestic gas plant including onshore and offshore facilities - Wheatston	2008/4469	Controlled Action	Post-Approval
Develop Jansz-Io deepwater gas field in Permit Areas WA-18-R, WA-25-R and WA-26-	2005/2184	Controlled Action	Post-Approval
Development of Angel gas and condensate field, North West Shelf	2004/1805	Controlled Action	Post-Approval
Development of Browse Basin Gas Fields (Upstream)	2008/4111	Controlled Action	Completed
Development of Coniston/Novara fields within the Exmouth Sub-basin	2011/5995	Controlled Action	Post-Approval
Development of Stybarrow petroleum field incl drilling and facility installation	2004/1469	Controlled Action	Post-Approval
Echo-Yodel Production Wells	2000/11	Controlled Action	Post-Approval
Enfield full field development	2001/257	Controlled Action	Post-Approval
Equus Gas Fields Development Project, Carnarvon Basin	2012/6301	Controlled Action	Completed
Gorgon Gas Development 4th Train Proposal	2011/5942	Controlled Action	Post-Approval
Gorgon Gas Revised Development	2008/4178	Controlled Action	Post-Approval
Greater Enfield (Vincent) Development	2005/2110	Controlled Action	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
Greater Gorgon Development - Optical Fibre Cable, Mainland to Barrow Island	2005/2141	Controlled Action	Completed
Light Crude Oil Production	2001/365	Controlled Action	Post-Approval
Pluto Gas Project	2005/2258	Controlled Action	Completed
Pluto Gas Project Including Site B	2006/2968	Controlled Action	Post-Approval
Pyrenees Oil Fields Development	2005/2034	Controlled Action	Post-Approval
Simpson Development	2000/59	Controlled Action	Completed
Simpson Oil Field Development	2001/227	Controlled Action	Post-Approval
The Scarborough Project - FLNG & assoc subsea infrastructure, Carnarvon Basin	2013/6811	Controlled Action	Post-Approval
Vincent Appraisal Well	2000/22	Controlled Action	Post-Approval
Yardie Creek Road Realignment Project	2021/8967	Controlled Action	Assessment Approach
Not controlled action			
'Goodwyn A' Low Pressure Train Project	2003/914	Not Controlled Action	Completed
'Van Gogh' Oil Appraisal Drilling Program, Exploration Permit Area WA-155-P(1)	2006/3148	Not Controlled Action	Completed
Airlie Island soil and groundwater investigations, Exmouth Gulf, offshore Pilbara coast	2014/7250	Not Controlled Action	Completed
Barrow Island 2D Seismic survey	2006/2667	Not Controlled Action	Completed
Bollinger 2D Seismic Survey 200km North of North West Cape WA	2004/1868	Not Controlled Action	Completed
Bultaco-2, Laverda-2, Laverda-3 and Montesa-2 Appraisal Wells	2000/103	Not Controlled Action	Completed
Carnarvon 3D Marine Seismic Survey	2004/1890	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
Cazadores 2D seismic survey	2004/1720	Not Controlled Action	Completed
Construction and operation of an unmanned sea platform and connecting pipeline to Varanus Island for	2004/1703	Not Controlled Action	Completed
Controlled Source Electromagnetic Survey	2007/3262	Not Controlled Action	Completed
Development of Halyard Field off the west coast of WA	2010/5611	Not Controlled Action	Completed
Drilling of an exploration well Gats-1 in Permit Area WA-261-P	2004/1701	Not Controlled Action	Completed
Eagle-1 Exploration Drilling, North West Shelf, WA	2019/8578	Not Controlled Action	Completed
Echo A Development WA-23-L, WA-24-L	2005/2042	Not Controlled Action	Completed
Exploration drilling well WA-155-P(1)	2003/971	Not Controlled Action	Completed
Exploration of appraisal wells	2006/3065	Not Controlled Action	Completed
Exploration Well (Taunton-2)	2002/731	Not Controlled Action	Completed
Exploration Well in Permit Area WA-155-P(1)	2002/759	Not Controlled Action	Completed
Exploratory drilling in permit area WA-225-P	2001/490	Not Controlled Action	Completed
Extension of Simpson Oil Platforms & Wells	2002/685	Not Controlled Action	Completed
HCA05X Macedon Experimental Survey	2004/1926	Not Controlled Action	Completed
Hess Exploration Drilling Programme	2007/3566	Not Controlled Action	Completed
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed
Infill Production Well (Griffin-9)	2001/417	Not Controlled Action	Completed
Jansz-2 and 3 Appraisal Wells	2002/754	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
Klammer 2D Seismic Survey	2002/868	Not Controlled Action	Completed
Maia-Gaea Exploration wells	2000/17	Not Controlled Action	Completed
Montesa-1 and Bultaco-1 Exploration Wells	2000/102	Not Controlled Action	Completed
North Rankin B gas compression facility	2005/2500	Not Controlled Action	Completed
Pipeline System Modifications Project	2000/3	Not Controlled Action	Completed
Project Highclere Geophysical Survey	2021/9023	Not Controlled Action	Completed
Searipple gas and condensate field development	2000/89	Not Controlled Action	Completed
Spool Base Facility	2001/263	Not Controlled Action	Completed
Subsea Gas Pipeline From Stybarrow Field to Griffin Venture Gas Export Pipeline	2005/2033	Not Controlled Action	Completed
sub-sea tieback of Perseus field wells	2004/1326	Not Controlled Action	Completed
Telstra North Rankin Spur Fibre Optic Cable	2016/7836	Not Controlled Action	Completed
Thevenard Island Retirement Project	2015/7423	Not Controlled Action	Completed
To construct and operate an offshore submarine fibre optic cable, WA	2014/7373	Not Controlled Action	Completed
Wanda Offshore Research Project, 80 km north-east of Exmouth, WA	2018/8293	Not Controlled Action	Completed
Western Flank Gas Development	2005/2464	Not Controlled Action	Completed
Wheatstone 3D seismic survey, 70km north of Barrow Island	2004/1761	Not Controlled Action	Completed
Not controlled action (particular manner)			
'Kate' 3D marine seismic survey, exploration permits WA-320-P and WA-345-P, 60km	2005/2037	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
'Tourmaline' 2D marine seismic survey, permit areas WA-323-P, WA-330-P and WA-32	2005/2282	Not Controlled Action (Particular Manner)	Post-Approval
"Leanne" offshore 3D seismic exploration, WA-356-P	2005/1938	Not Controlled Action (Particular Manner)	Post-Approval
2D and 3D seismic surveys	2005/2151	Not Controlled Action (Particular Manner)	Post-Approval
2D Seismic Survey	2005/2146	Not Controlled Action (Particular Manner)	Post-Approval
2D Seismic Survey Permit Area WA-352-P	2008/4628	Not Controlled Action (Particular Manner)	Post-Approval
2D seismic survey within permit WA-291	2007/3265	Not Controlled Action (Particular Manner)	Post-Approval
3D marine seismic survey	2008/4281	Not Controlled Action (Particular Manner)	Post-Approval
3D Marine Seismic Survey in Permit Areas WA-15-R, WA-18-R, WA-205-P, WA-253-P, WA-267-P and WA-268-P	2003/1271	Not Controlled Action (Particular Manner)	Post-Approval
3D Marine Seismic Survey in WA 457-P & WA 458-P, North West Shelf, offshore WA	2013/6862	Not Controlled Action (Particular Manner)	Post-Approval
3D marine seismic survey over petroleum title WA-268-P	2007/3458	Not Controlled Action (Particular Manner)	Post-Approval
3D Marine Seismic Surveys - Contos CT-13 & Supertubes CT-13, offshore WA	2013/6901	Not Controlled Action (Particular Manner)	Post-Approval
3D seismic survey	2006/2715	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
3D Seismic Survey, WA	2008/4428	Not Controlled Action (Particular Manner)	Post-Approval
3D sesmic survey	2006/2781	Not Controlled Action (Particular Manner)	Post-Approval
Apache Northwest Shelf Van Gogh Field Appraisal Drilling Program	2007/3495	Not Controlled Action (Particular Manner)	Post-Approval
Aperio 3D Marine Seismic Survey, WA	2012/6648	Not Controlled Action (Particular Manner)	Post-Approval
Artemis-1 Drilling Program (WA-360-P)	2010/5432	Not Controlled Action (Particular Manner)	Post-Approval
Balnaves Condensate Field Development	2011/6188	Not Controlled Action (Particular Manner)	Post-Approval
Cable Seismic Exploration Permit areas WA-323-P and WA-330-P	2008/4227	Not Controlled Action (Particular Manner)	Post-Approval
CGGVERITAS 2010 2D Seismic Survey	2010/5714	Not Controlled Action (Particular Manner)	Post-Approval
Charon 3D Marine Seismic Survey	2007/3477	Not Controlled Action (Particular Manner)	Post-Approval
Consturction & operation of the Varanus Island kitchen & mess cyclone refuge building, compression p	2013/6952	Not Controlled Action (Particular Manner)	Post-Approval
Coverack Marine Seismic Survey	2001/399	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Cue Seismic Survey within WA-359-P, WA-361-P and WA-360-P	2007/3647	Not Controlled Action (Particular Manner)	Post-Approval
CVG 3D Marine Seismic Survey	2012/6654	Not Controlled Action (Particular Manner)	Post-Approval
Decommissioning of the Legendre facilities	2010/5681	Not Controlled Action (Particular Manner)	Post-Approval
Deep Water Drilling Program	2010/5532	Not Controlled Action (Particular Manner)	Post-Approval
Demeter 3D Seismic Survey, off Dampier, WA	2002/900	Not Controlled Action (Particular Manner)	Post-Approval
Draeck 3D Marine Seismic Survey, WA-205-P	2006/3067	Not Controlled Action (Particular Manner)	Post-Approval
Drilling 35-40 offshore exploration wells in deep water	2008/4461	Not Controlled Action (Particular Manner)	Post-Approval
Earthworks for kitchen/mess, cyclone refuge building & Compression Plant, Varanus Island	2013/6900	Not Controlled Action (Particular Manner)	Post-Approval
Eendracht Multi-Client 3D Marine Seismic Survey	2009/4749	Not Controlled Action (Particular Manner)	Post-Approval
Enfield M3 & Vincent 4D Marine Seismic Surveys	2008/3981	Not Controlled Action (Particular Manner)	Completed
Enfield M3 4D, Vincent 4D & 4D Line Test Marine Seismic Surveys	2008/4122	Not Controlled Action (Particular Manner)	Post-Approval
Enfield M4 4D Marine Seismic Survey	2008/4558	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Enfield oilfield 3D Seismic Survey	2006/3132	Not Controlled Action (Particular Manner)	Post-Approval
Exploration drilling of Zeus-1 well	2008/4351	Not Controlled Action (Particular Manner)	Post-Approval
Fletcher-Finucane Development, WA26-L and WA191-P	2011/6123	Not Controlled Action (Particular Manner)	Post-Approval
Foxhound 3D Non-Exclusive Marine Seismic Survey	2009/4703	Not Controlled Action (Particular Manner)	Post-Approval
Gazelle 3D Marine Seismic Survey in WA-399-P and WA-42-L	2010/5570	Not Controlled Action (Particular Manner)	Post-Approval
Geco Eagle 3D Marine Seismic Survey	2008/3958	Not Controlled Action (Particular Manner)	Post-Approval
Glencoe 3D Marine Seismic Survey WA-390-P	2007/3684	Not Controlled Action (Particular Manner)	Post-Approval
Greater Western Flank Phase 1 gas Development	2011/5980	Not Controlled Action (Particular Manner)	Post-Approval
Grimalkin 3D Seismic Survey	2008/4523	Not Controlled Action (Particular Manner)	Post-Approval
Guacamole 2D Marine Seismic Survey	2008/4381	Not Controlled Action (Particular Manner)	Post-Approval
Harmony 3D Marine Seismic Survey	2012/6699	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Harpy 1 exploration well	2001/183	Not Controlled Action (Particular Manner)	Post-Approval
Honeycombs MC3D Marine Seismic Survey	2012/6368	Not Controlled Action (Particular Manner)	Post-Approval
Huzzas MC3D Marine Seismic Survey (HZ-13) Carnarvon Basin, offshore WA	2013/7003	Not Controlled Action (Particular Manner)	Post-Approval
Huzzas phase 2 marine seismic survey, Exmouth Plateau, Northern Carnarvon Basin, WA	2013/7093	Not Controlled Action (Particular Manner)	Post-Approval
John Ross & Rosella Off Bottom Cable Seismic Exploration Program	2008/3966	Not Controlled Action (Particular Manner)	Post-Approval
Judo Marine 3D Seismic Survey within and adjacent to WA-412-P	2008/4630	Not Controlled Action (Particular Manner)	Post-Approval
Judo Marine 3D Seismic Survey within and adjacent to WA-412-P	2009/4801	Not Controlled Action (Particular Manner)	Post-Approval
Julimar Brunello Gas Development Project	2011/5936	Not Controlled Action (Particular Manner)	Post-Approval
Klimt 2D Marine Seismic Survey	2007/3856	Not Controlled Action (Particular Manner)	Post-Approval
Laverda 3D Marine Seismic Survey and Vincent M1 4D Marine Seismic Survey	2010/5415	Not Controlled Action (Particular Manner)	Post-Approval
Lion 2D Marine Seismic Survey	2007/3777	Not Controlled Action (Particular Manner)	Post-Approval
Macedon Gas Field Development	2008/4605	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Marine reconnaissance survey	2008/4466	Not Controlled Action (Particular Manner)	Post-Approval
Moosehead 2D seismic survey within permit WA-192-P	2005/2167	Not Controlled Action (Particular Manner)	Post-Approval
Munmorah 2D seismic survey within permits WA-308/9-P	2003/970	Not Controlled Action (Particular Manner)	Post-Approval
Ocean Bottom Cable Seismic Program, WA-264-P	2007/3844	Not Controlled Action (Particular Manner)	Post-Approval
Ocean Bottom Cable Seismic Survey	2005/2017	Not Controlled Action (Particular Manner)	Post-Approval
Offshore Drilling Campaign	2011/5830	Not Controlled Action (Particular Manner)	Post-Approval
Orcus 3D Marine Seismic Survey in WA-450-P	2010/5723	Not Controlled Action (Particular Manner)	Post-Approval
Osprey and Dionysus Marine Seismic Survey	2011/6215	Not Controlled Action (Particular Manner)	Post-Approval
Palta-1 exploration well in Petroleum Permit Area WA-384-P	2011/5871	Not Controlled Action (Particular Manner)	Post-Approval
Pomodoro 3D Marine Seismic Survey in WA-426-P and WA-427-P	2010/5472	Not Controlled Action (Particular Manner)	Post-Approval
Pyrenees 4D Marine Seismic Monitor Survey, HCA12A	2012/6579	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Pyrenees-Macedon 3D marine seismic survey	2005/2325	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
Rydal-1 Petroleum Exploration Well, WA	2012/6522	Not Controlled Action (Particular Manner)	Post-Approval
Salsa 3D Marine Seismic Survey	2010/5629	Not Controlled Action (Particular Manner)	Post-Approval
Santos Winchester three dimensional seismic survey - WA-323-P & WA-330-P	2011/6107	Not Controlled Action (Particular Manner)	Post-Approval
Skorpion Marine Seismic Survey WA	2001/416	Not Controlled Action (Particular Manner)	Post-Approval
Sovereign 3D Marine Seismic Survey	2011/5861	Not Controlled Action (Particular Manner)	Post-Approval
Stag 4D & Reindeer MAZ Marine Seismic Surveys, WA	2013/7080	Not Controlled Action (Particular Manner)	Post-Approval
Stag Off-bottom Cable Seismic Survey	2007/3696	Not Controlled Action (Particular Manner)	Post-Approval
Stybarrow 4D Marine Seismic Survey	2011/5810	Not Controlled Action (Particular Manner)	Post-Approval
Stybarrow Baseline 4D marine seismic survey	2008/4530	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Tantabiddi Boat Ramp Sand Bypassing	2015/7411	Not Controlled Action (Particular Manner)	Post-Approval
Tidepole Maz 3D Seismic Survey Campaign	2007/3706	Not Controlled Action (Particular Manner)	Post-Approval
Tortilla 2D Seismic Survey, WA	2011/6110	Not Controlled Action (Particular Manner)	Post-Approval
Triton 3D Marine Seismic Survey, WA-2-R and WA-3-R	2006/2609	Not Controlled Action (Particular Manner)	Post-Approval
Undertake a 3D marine seismic survey	2010/5695	Not Controlled Action (Particular Manner)	Post-Approval
Undertake a three dimensional marine seismic survey	2010/5715	Not Controlled Action (Particular Manner)	Post-Approval
Undertake a three dimensional marine seismic survey	2010/5679	Not Controlled Action (Particular Manner)	Post-Approval
Vincent M1 and Enfield M5 4D Marine Seismic Survey	2010/5720	Not Controlled Action (Particular Manner)	Post-Approval
Warramunga Non-Inclusive 3D Seismic Survey	2008/4553	Not Controlled Action (Particular Manner)	Post-Approval
West Anchor 3D Marine Seismic Survey	2008/4507	Not Controlled Action (Particular Manner)	Post-Approval
West Panaeus 3D seismic survey	2006/3141	Not Controlled Action (Particular Manner)	Post-Approval

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
Wheatstone 3D MAZ Marine Seismic Survey	2011/6058	Not Controlled Action (Particular Manner)	Post-Approval
Wheatstone Iago Appraisal Well Drilling	2007/3941	Not Controlled Action (Particular Manner)	Post-Approval
Wheatstone Iago Appraisal Well Drilling	2008/4134	Not Controlled Action (Particular Manner)	Post-Approval
Referral decision			
3D Marine Seismic Survey in the offshore northwest Carnarvon Basin	2011/6175	Referral Decision	Completed
3D Seismic Survey	2008/4219	Referral Decision	Completed
Bianchi 3D Marine Seismic Survey, Carnavon Basin, WA	2013/7078	Referral Decision	Completed
CVG 3D Marine Seismic Survey	2012/6270	Referral Decision	Completed
Enfield 4D Marine Seismic Surveys, Production Permit WA-28-L	2005/2370	Referral Decision	Completed
Rose 3D Seismic acquisition survey	2008/4220	Referral Decision	Completed
Stybarrow Baseline 4D Marine Seismic Survey (Permit Areas WA-255-P, WA-32-L, WA-	2008/4165	Referral Decision	Completed
Two Dimensional Transition Zone Seismic Survey - TP/7 (R1)	2010/5507	Referral Decision	Completed
Varanus Island Compression Project	2012/6698	Referral Decision	Completed

Key Ecological Features [Resource Information]

Key Ecological Features are the parts of the marine ecosystem that are considered to be important for the biodiversity or ecosystem functioning and integrity of the Commonwealth Marine Area.

Name	Region

Name	Region
Ancient coastline at 125 m depth contour	North-west
Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula	North-west
Commonwealth waters adjacent to Ningaloo Reef	North-west
Continental Slope Demersal Fish Communities	North-west
Exmouth Plateau	North-west
Glomar Shoals	North-west

Biologically Important Areas		[Resource Information]
Scientific Name	Behaviour	Presence
Dugong		
Dugong dugon Dugong [28]	Breeding	Known to occur
Dugong dugon Dugong [28]	Calving	Known to occur
Dugong dugon Dugong [28]	Foraging (high density seagrass beds)	Known to occur
Dugong dugon Dugong [28]	Nursing	Known to occur
Marine Turtles		
Caretta caretta Loggerhead Turtle [1763]	Internesting buffer	Known to occur
Caretta caretta Loggerhead Turtle [1763]	Nesting	Known to occur
Chelonia mydas Green Turtle [1765]	Aggregation	Known to occur
Chelonia mydas Green Turtle [1765]	Basking	Known to occur
Chelonia mydas Green Turtle [1765]	Foraging	Known to occur

Scientific Name	Behaviour	Presence
Chelonia mydas Green Turtle [1765]	Internesting	Known to occur
Chelonia mydas Green Turtle [1765]	Internesting buffer	Known to occur
Chelonia mydas Green Turtle [1765]	Mating	Known to occur
Chelonia mydas Green Turtle [1765]	Nesting	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Foraging	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Internesting	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Internesting buffer	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Mating	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Nesting	Known to occur
Natator depressus Flatback Turtle [59257]	Aggregation	Known to occur
Natator depressus Flatback Turtle [59257]	Foraging	Known to occur
Natator depressus Flatback Turtle [59257]	Internesting	Known to occur
Natator depressus Flatback Turtle [59257]	Internesting buffer	Known to occur
Natator depressus Flatback Turtle [59257]	Mating	Known to occur

Scientific Name	Behaviour	Presence
Natator depressus Flatback Turtle [59257]	Nesting	Known to occur
Seabirds		
Ardenna tenuirostris Short-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
Rhincodon typus Whale Shark [66680]	Foraging (high density prey)	Known to occur
Whales		
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Foraging	Known to occur
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Migration	Known to occur
Megaptera novaeangliae Humpback Whale [38]	Migration (north and south)	Known to occur
Megaptera novaeangliae Humpback Whale [38]	Resting	Known to occur

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data is available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance on the contents of this report.

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions when time permits.

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded breeding sites; and
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact us page.

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Department of Climate Change, Energy, the Environment and Water
GPO Box 3090
Canberra ACT 2601 Australia
+61 2 6274 1111

APPENDIX E EPBC ACT PROTECTED MATTERS SEARCH TOOL RESULTS – OPERATIONAL AREA

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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: 24-Jul-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:	26
Listed Migratory Species:	42

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:	68
Whales and Other Cetaceans:	29
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	1
Habitat Critical to the Survival of Marine Turtles:	1

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	None
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	31
Key Ecological Features (Marine):	2
Biologically Important Areas:	7
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Commonwealth Marine Area [Resource Information]

Approval is required for a proposed activity that is located within the Commonwealth Marine Area which has, will have, or is likely to have a significant impact on the environment. Approval may be required for a proposed action taken outside a Commonwealth Marine Area but which has, may have or is likely to have a significant impact on the environment in the Commonwealth Marine Area.

Feature Name
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)

Listed Threatened Species [Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text
BIRD		
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Phaethon lepturus fulvus Christmas Island White-tailed Tropicbird, Golden Bosunbird [26021]	Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Phaethon rubricauda westralis Red-tailed Tropicbird (Indian Ocean), Indian Ocean Red-tailed Tropicbird [91824]	Endangered	Species or species habitat likely to occur within area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
MAMMAL		
Balaenoptera borealis Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Migration route known to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Vulnerable	Species or species habitat may occur within area
Sousa sahulensis Australian Humpback Dolphin [87942]	Vulnerable	Species or species habitat may occur within area
REPTILE		
Aipysurus apraefrontalis Short-nosed Sea Snake, Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat may occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat known to 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
Eretmochelys imbricata		
Hawksbill Turtle [1766]	Vulnerable	Species or species habitat 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		
Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat may occur within area
Pristis zijsron		
Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Species or species habitat known to occur within area
Rhincodon typus		
Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Sphyrna lewini		
Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat known to occur within area

Listed Migratory Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
null		
Balaenoptera omurai		
Omura's Whale [87136]		Species or species habitat likely to occur within area
Migratory Marine Birds		

Scientific Name	Threatened Category	Presence Text
Anous stolidus Common Noddy [825]		Species or species habitat may occur within area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat likely to occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area
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 may occur within area
Phaethon rubricauda Red-tailed Tropicbird [994]		Species or species habitat likely to occur within area
Migratory Marine Species		
Anoxypristis cuspidata Narrow Sawfish, Knifetooth Sawfish [68448]		Species or species habitat may occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat likely to occur within area
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

Scientific Name	Threatened Category	Presence Text
Carcharhinus longimanus Oceanic Whitetip Shark [84108]		Species or species habitat likely to occur within area
Carcharias taurus Grey Nurse Shark [64469]		Species or species habitat likely to occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat 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
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Species or species habitat 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

Scientific Name	Threatened Category	Presence Text
Mobula alfredi as Manta alfredi Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat likely to occur within area
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat likely to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	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
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 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

Scientific Name	Threatened Category	Presence Text
Tursiops aduncus (Arafura/Timor Sea populations)		
Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat likely to occur within area
Migratory Wetlands Species		
Actitis hypoleucos		
Common Sandpiper [59309]		Species or species habitat may occur within area
Calidris acuminata		
Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area
Calidris canutus		
Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area
Calidris ferruginea		
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos		
Pectoral Sandpiper [858]		Species or species habitat may occur within area
Numenius madagascariensis		
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pandion haliaetus		
Osprey [952]		Species or species habitat may occur within area

Other Matters Protected by the EPBC Act

Listed Marine Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
Bird		
Actitis hypoleucos		
Common Sandpiper [59309]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Anous stolidus Common Noddy [825]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area overfly marine area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area overfly marine area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat likely to occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area
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 may occur within area

Scientific Name	Threatened Category	Presence Text
[Phaethon lepturus fulvus](#) Christmas Island White-tailed Tropicbird, Golden Bosunbird [26021]	Endangered	Species or species habitat may occur within area
[Phaethon rubricauda](#) Red-tailed Tropicbird [994]		Species or species habitat likely 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
Reptile		
Aipysurus apraefrontalis Short-nosed Sea Snake, Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat may 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	Species or species habitat known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat 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
Ephalophis greyae as Ephalophis greyi Mangrove Sea Snake [93738]		Species or species habitat may occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area
Hydrophis czeblukovi Fine-spined Sea Snake [59233]		Species or species habitat may occur within area
Hydrophis elegans Elegant Sea Snake, Bar-bellied Sea Snake [1104]		Species or species habitat may occur within area
Hydrophis kingii as Disteira kingii Spectacled Sea Snake [93511]		Species or species habitat may occur within area
Hydrophis 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

Scientific Name	Threatened Category	Presence Text
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	Migration route known to occur within area
Balaenoptera omurai		
Omura's Whale [87136]		Species or species habitat likely to occur within area
Balaenoptera physalus		
Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area
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
Lagenodelphis hosei Fraser's Dolphin, Sarawak Dolphin [41]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]		Breeding known to occur within area
Mesoplodon densirostris Blainville's Beaked Whale, Dense-beaked Whale [74]		Species or species habitat may occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Vulnerable	Species or species habitat may occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
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

Current Scientific Name	Status	Type of Presence
Sousa sahulensis Australian Humpback Dolphin [87942]	Vulnerable	Species or species habitat may occur within area
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area
Stenella coeruleoalba Striped Dolphin, Euphrosyne Dolphin [52]		Species or species habitat may occur within area
Stenella longirostris Long-snouted Spinner Dolphin [29]		Species or species habitat may occur within area
Steno bredanensis Rough-toothed Dolphin [30]		Species or species habitat may occur within area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat may occur within area
Tursiops aduncus (Arafura/Timor Sea populations) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat likely to occur within area
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area
Ziphius cavirostris Cuvier's Beaked Whale, Goose-beaked Whale [56]		Species or species habitat may occur within area

Australian Marine Parks	[Resource Information]
Park Name	Zone & IUCN Categories
Montebello	Multiple Use Zone (IUCN VI)

Habitat Critical to the Survival of Marine Turtles		[Resource Information]
Scientific Name	Behaviour	Presence
All year (Jun - Aug)		

Scientific Name	Behaviour	Presence
Natator depressus Flatback Turtle [59257]	Nesting	Known to occur

Extra Information

EPBC Act Referrals			[Resource Information]
Title of referral	Reference	Referral Outcome	Assessment Status
DAVROS MC 3D marine seismic survey northwaet of Dampier, WA	2013/7092		Completed
Deep Water Northwest Shelf 2D Seismic Survey	2007/3260		Completed
Gorgon Gas Development	2003/1294		Post-Approval
Controlled action			
Construct and operate LNG & domestic gas plant including onshore and offshore facilities - Wheatston	2008/4469	Controlled Action	Post-Approval
Equus Gas Fields Development Project, Carnarvon Basin	2012/6301	Controlled Action	Completed
Gorgon Gas Development 4th Train Proposal	2011/5942	Controlled Action	Post-Approval
Pluto Gas Project	2005/2258	Controlled Action	Completed
Pluto Gas Project Including Site B	2006/2968	Controlled Action	Post-Approval
Not controlled action			
Exploration of appraisal wells	2006/3065	Not Controlled Action	Completed
Project Highclere Geophysical Survey	2021/9023	Not Controlled Action	Completed
To construct and operate an offshore submarine fibre optic cable, WA	2014/7373	Not Controlled Action	Completed
Wheatstone 3D seismic survey, 70km north of Barrow Island	2004/1761	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action Not controlled action (particular manner)			
'Tourmaline' 2D marine seismic survey, permit areas WA-323-P, WA-330-P and WA-32	2005/2282	Not Controlled Action (Particular Manner)	Post-Approval
"Leanne" offshore 3D seismic exploration, WA-356-P	2005/1938	Not Controlled Action (Particular Manner)	Post-Approval
3D Marine Seismic Survey in 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 seismic survey	2006/2715	Not Controlled Action (Particular Manner)	Post-Approval
Aperio 3D Marine Seismic Survey, WA	2012/6648	Not Controlled Action (Particular Manner)	Post-Approval
Balnaves Condensate Field Development	2011/6188	Not Controlled Action (Particular Manner)	Post-Approval
Cable Seismic Exploration Permit areas WA-323-P and WA-330-P	2008/4227	Not Controlled Action (Particular Manner)	Post-Approval
CGGVERITAS 2010 2D Seismic Survey	2010/5714	Not Controlled Action (Particular Manner)	Post-Approval
Drilling 35-40 offshore exploration wells in deep water	2008/4461	Not Controlled Action (Particular Manner)	Post-Approval
Harmony 3D Marine Seismic Survey	2012/6699	Not Controlled Action (Particular Manner)	Post-Approval
Julimar Brunello Gas Development Project	2011/5936	Not Controlled Action (Particular Manner)	Post-Approval
Moosehead 2D seismic survey within permit WA-192-P	2005/2167	Not Controlled Action	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		(Particular Manner)	
Osprey and Dionysus Marine Seismic Survey	2011/6215	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
West Panaeus 3D seismic survey	2006/3141	Not Controlled Action (Particular Manner)	Post-Approval
Westralia SPAN Marine Seismic Survey, WA & NT	2012/6463	Not Controlled Action (Particular Manner)	Post-Approval
Wheatstone 3D MAZ Marine Seismic Survey	2011/6058	Not Controlled Action (Particular Manner)	Post-Approval
Wheatstone Iago Appraisal Well Drilling	2007/3941	Not Controlled Action (Particular Manner)	Post-Approval
Wheatstone Iago Appraisal Well Drilling	2008/4134	Not Controlled Action (Particular Manner)	Post-Approval

Key Ecological Features [Resource Information]

Key Ecological Features are the parts of the marine ecosystem that are considered to be important for the biodiversity or ecosystem functioning and integrity of the Commonwealth Marine Area.

Name	Region
Ancient coastline at 125 m depth contour	North-west
Continental Slope Demersal Fish Communities	North-west

Biologically Important Areas [Resource Information]

Scientific Name	Behaviour	Presence
Marine Turtles		
Chelonia mydas		
Green Turtle [1765]	Internesting buffer	Known to occur

Scientific Name	Behaviour	Presence
[Eretmochelys imbricata](#) Hawksbill Turtle [1766]	Internesting buffer	Known to occur
[Natator depressus](#) Flatback Turtle [59257]	Internesting buffer	Known to occur
Seabirds		
[Ardenna tenuirostris](#) Short-tailed Shearwater [84292]	Breeding	Known to occur
Sharks		
[Rhincodon typus](#) Whale Shark [66680]	Foraging	Known to occur
Whales		
[Balaenoptera musculus brevicauda](#) Pygmy Blue Whale [81317]	Migration	Known to occur
[Megaptera novaeangliae](#) Humpback Whale [38]	Migration (north and south)	Known to occur

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data is available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance on the contents of this report.

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions when time permits.

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded breeding sites; and
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact us page.

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Department of Climate Change, Energy, the Environment and Water
GPO Box 3090
Canberra ACT 2601 Australia
+61 2 6274 1111

APPENDIX F STAKEHOLDER CONSULTATION

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Appendix F: Julimar-Brunello Plug & Abandonment Environment Plan

November 2025

Revision 0

Document No. JU0006UH0000001

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Commonwealth Fisheries Association (CFA), Commonwealth Scientific and Industrial Research Organisation (CSIRO), Conservation Council of WA (CCWA), Curtin University, Department of Agriculture, Fisheries and Forestry (DAFF) – Biosecurity, marine pests, vessels, aircraft and personnel, Department of Agriculture, Fisheries and Forestry (DAFF)–Fisheries, Department of Climate Change, Energy, the Environment and Water (DCCEEW), Department of Defence (DoD), Department of Industry, Tourism and Trade, Department of Mines, Petroleum and Exploration, Department of Transport (DoT), Edith Cowan University (ECU), Exmouth Chamber of Commerce and Industry (Exmouth CCI), Exmouth Community Liaison Group (Exmouth CLG), Exxon Mobil Development, Friends of the Earth, Gascoyne Recreational Marine Users, Greenpeace Australia Pacific (GAP), InCapture, INPEX (EP), JERA Gorgon, JX Nippon, Karratha Community Liaison Group (Karratha CLG), Karratha & Districts Chamber of Commerce and Industry (KDCCI), KATO Energy (WA), Kuwait Foreign Petroleum Exploration Company (KUFPEC), Kyushu Electric Wheatstone, Marine Tourism WA, Maritime Union of Australia (MUA), Melbana Exploration, MidOcean Gorgon, Murdoch University, Ningaloo Coast World Heritage Advisory Committee (NCWHAC), OMV Australia, Onslow Chamber of Commerce and Industry (Onslow CCI), Osaka Gas Gorgon, Pearl Producers Association (PPA), Pelsart Resources N.L., PE Wheatstone, Pilbara/Kimberley Recreational Marine Users, Protect Ningaloo, Santos, Shell Australia Pty. Ltd., Shire of Ashburton, SK Earthon, Skye Napoleon Pty Ltd, South Coast Recreational Marine Users, Tanami Energy, University of Western Australia (UWA), WA Game Fishing Association, West Coast Recreational Marine Users, Western Australian Marine Science Institution (WAMSI), Western Australian Museum (WAM), Western Gas – 14 October 2025 477

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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)), and must allow a relevant person a reasonable period for consultation (regulation 25(3)).

A titleholder must also give a relevant person a reasonable opportunity to consult – this means that a titleholder will need to demonstrate that what it did constituted consultation appropriate and adapted to the nature of the interests of the relevant person (see Tipakalippa Full Court paragraph 104). The EP must contain a report that contains an assessment of the merits of any objection or claim about the adverse impact of each activity to which the EP relates, and a statement of the titleholder's response, or proposed response, if any, to each objection or claim (regulation 24(b)).

The criteria for acceptance of an EP includes that the EP demonstrates that the measures (if any) that the titleholder has adopted, or proposes to adopt, because of the consultations are appropriate (regulation 34(g)).

For the Julimar-Brunello Plug & Abandonment Environment Plan (EP), Woodside has taken a broad and proactive tiered consultation approach over a period of 3 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 of the EP).
Proactive	To raise awareness of the consultation process, and to enable grass-roots consultation, Woodside undertook advertised regional consultation roadshows and facilitated consultation at regional community events.
Self-Identification	Broad communication activities were undertaken to build awareness of consultation and enable self-identification, supported by targeted education materials.
Broad Understanding	Broad proactive communication activities were undertaken with the public to raise awareness of Woodside's activities.

1.2 Building on the existing consultation approach

For this EP, Woodside has built on its consultation methodology and undertaken additional consultation activities throughout the consultation period to ensure a reasonable period of time and sufficient information has been provided to relevant persons so that they can make an informed assessment of the possible consequences of the activity on their functions, interests or activities.

The approach for this included:

- a consultation period of up to 3 months.
- undertaking proactive consultation activities to provide sufficient information to relevant persons
- raising awareness of the consultation process and opportunity to provide feedback
- driving participation in the consultation process.

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An overview of this approach is shown below:

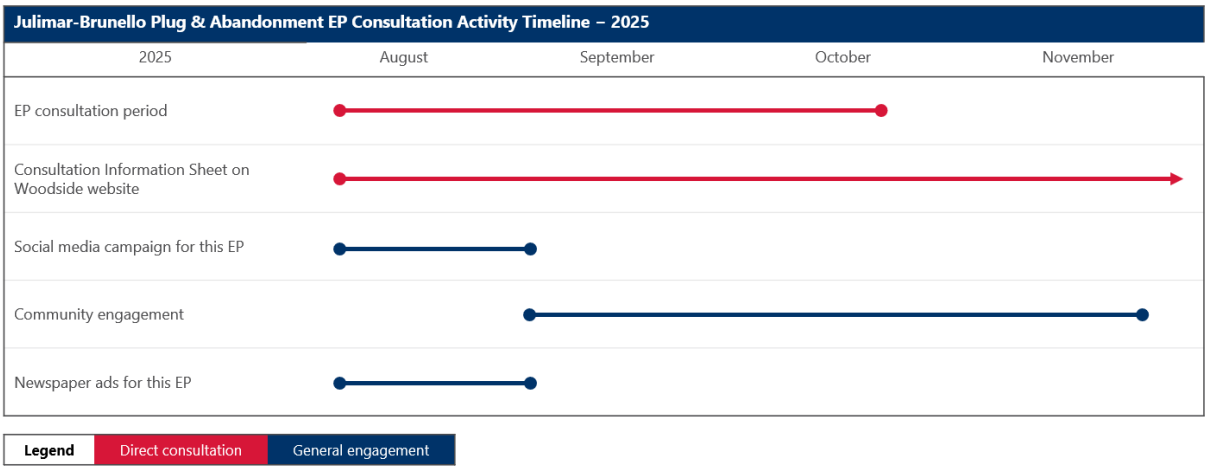

Figure 1-1: Julimar-Brunello Plug & Abandonment EP consultation activity

1.3 Traditional Custodian consultation approach

Woodside has meaningful long-term relationships with relevant Traditional Custodians specifically tailored to provide for effective engagement which is continuous and is not confined to individual EPs, instead covering all EPs and other issues that are relevant at the time of engagement.

To this end, consultation on any particular EP, including the Julimar-Brunello Plug & Abandonment EP, happens before, during and after the designated consultation period in a more holistic manner allowing for an understanding of the bigger picture and accommodating cultural requirements. Ongoing consultation remains an important part of consulting with Traditional Custodians based on availability, cultural protocols and the preferred method of consultation for each relevant person.

1.4 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 of the EP), NGOs are considered “Other non-government groups or organisations” and “Research institutes and local conservation groups or organisations”. Relevant person identification for these categories is based on registered non-government groups or organisations with current targeted public website material specific to the proposed activity at the time of developing the EP and who have demonstrated functions, interests or activities relevant to the potential risks and impacts associated with planned activities in accordance with the intended outcome of consultation.

So that NGOs were given sufficient information and a reasonable period of time to consult, Woodside:

- advertised the consultation period (social and traditional media)
- directly consulted NGOs
- participated in regional community events (which were advertised) in the Pilbara and Gascoyne which could be attended by any NGOs including local groups (if NGOs attended these sessions, they did not identify themselves)

1.5 NGO response

Nine NGOs were consulted, four as relevant persons and five at Woodside’s discretion. Feedback was only received from The Wilderness Society. Their feedback sought further information on the

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timing of the removal of the wellheads and details on the fluids contained in some infrastructure. Further information was provided, and no further feedback was received.

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2. RELEVANCY ASSESSMENT

2.1 Assessment of relevant persons for the proposed activity

The result of Woodside's assessment of relevant persons in accordance with regulation 25(1) of the Environment Regulations is outlined below at Table 1 and Table 2.

Persons or organisations that Woodside assessed as not relevant but nonetheless chose to contact at its discretion in accordance with Section 5.3.7 of the EP or self-identified and Woodside assessed as not relevant are summarised below at Table 1 and Table 3.

As per Woodside's methodology (Section 5 of the EP), assessment of relevant persons is informed by the EMBA, shown in Figure 2-1.

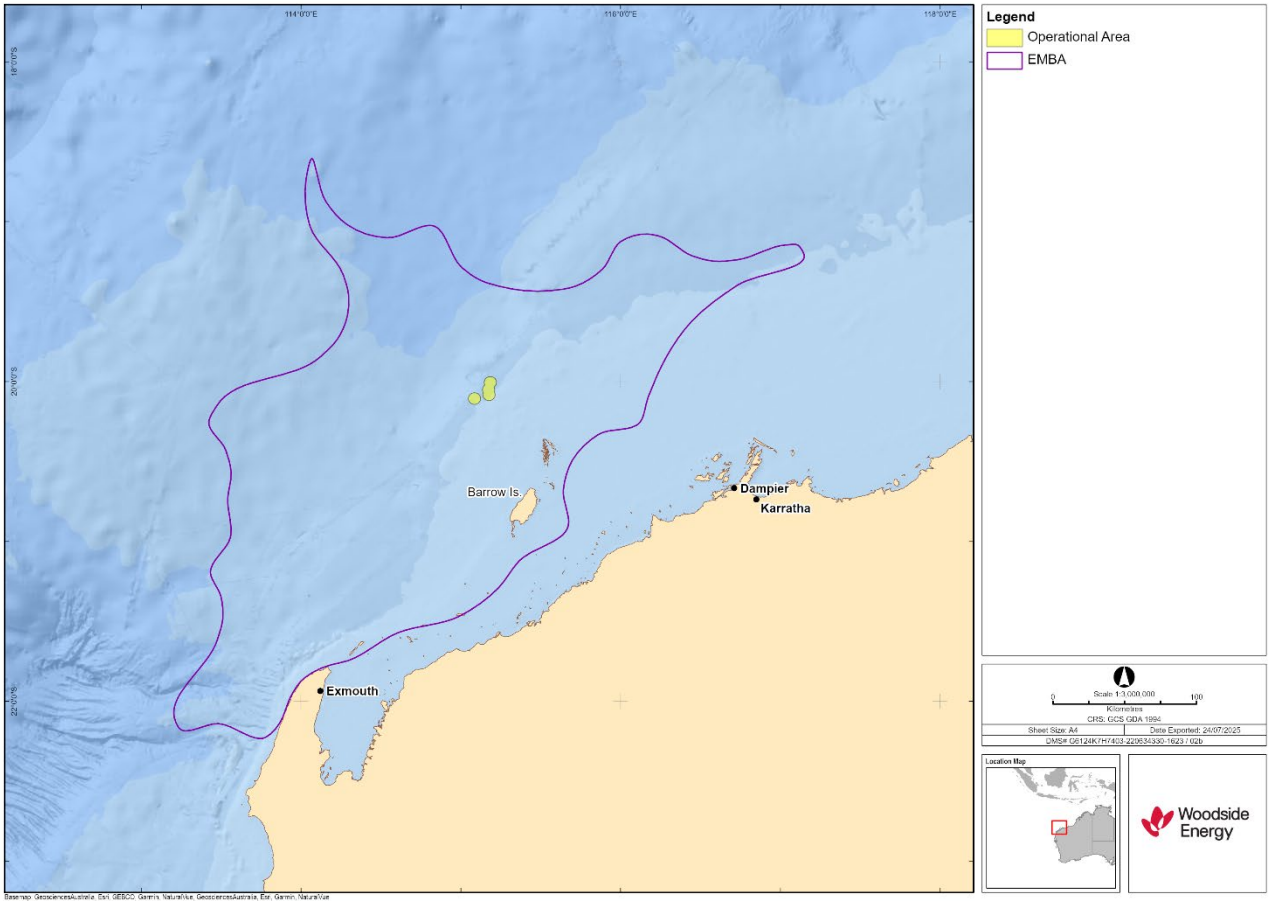

Figure 2-1: Operational Area and EMBA for the Julimar-Brunello Plug & Abandonment EP

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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 are not relevant to the activity as telecommunications lines do not intersect the Operational Area. Woodside chose to contact ACMA at its discretion in line with Section 5.3.7 of the EP.	No
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. AFMA's responsibilities may be relevant to the activity as the North West Slope Trawl Fishery (NWSTF) and Western Deepwater Trawl Fishery (WDWTF) are active in the EMBA. Under regulation 25(1)(e), Woodside at its discretion has chosen to assess AFMA as a relevant person.	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 (AMSA) – Marine Safety	Statutory agency for vessel safety and navigation.	Woodside has applied its methodology for 'Government departments / agencies – marine' under regulation 25(1)(a) of the Environment Regulations. AMSA – Marine Safety's responsibilities may be relevant to the activity as there are proposed	Yes

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Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
		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. DAFF – Fisheries responsibilities may be relevant to the activity as the North West Slope Trawl Fishery (NWSTF) and Western Deepwater Trawl Fishery (WDWTF) are active in the EMBA. Under regulation e), Woodside at its discretion has chosen to assess DAFF - Fisheries as a relevant person.	Yes
Department of Defence (DoD)	Responsible for defending Australia and its national interests.	Woodside has applied its methodology for 'Government departments / agencies – marine' under regulation 25(1)(a) of the Environment Regulations. DoD's responsibilities may be relevant to the activity as defence training areas lie within the EMBA.	Yes
Department of Planning, Lands and Heritage (DPLH)	Responsible for state level land use planning and management, and oversight of Aboriginal cultural heritage and built heritage matters.	Woodside has applied its methodology for 'Government departments / agencies – marine' under regulation 25(1)(b) of the Environment Regulations. DPLH's responsibilities may be relevant to the activity as there is known Maritime Cultural Heritage overlapping the EMBA.	Yes
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, Marine Aquarium Fish Managed Fishery, Onslow Prawn Managed Fishery, Pilbara Trap Managed Fishery, Pilbara Line Fishery, are active in the Operational Area. The West Australian Sea Cucumber Fishery, Exmouth Gulf Prawn Managed Fishery, Mackerel Managed Fishery, 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 West Coast Deep Sea Crustacean Managed Fishery have been active in the EMBA within the past 5 years. DPIRD's responsibilities may be relevant to the activity as the government department responsible for State fisheries.	Yes

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Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
Department of Transport and Major Infrastructure (DTMI)	Legislated responsibility for oil pollution response in State waters.	Woodside has applied its methodology for 'Government departments / agencies – marine' under regulation 25(1)(b) of the Environment Regulations. The proposed activity has a hydrocarbon spill risk, which may require DTMI response in State waters.	Yes
Pilbara Ports	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 (SPA) 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
Commonwealth and WA State Government Departments or Agencies – Environment			
Department of Agriculture, Fisheries and Forestry (DAFF) – Biosecurity (marine pests, vessels, aircraft and personnel)	DAFF administers, implements and enforces the Biosecurity Act 2015. DAFF requests to be consulted where an activity has the potential to transfer marine pests. DAFF also has inspection and reporting requirements to ensure that all conveyances (vessels, installations and aircraft) arriving in Australian territory comply with	Woodside has applied its methodology for 'Government departments / agencies – environment' under regulation 25(1)(a) of the Environment Regulations. DAFF – Biosecurity's responsibilities may be relevant to the proposed activities in the EMBA in the prevention of introduced marine species.	Yes

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Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
	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.		
Department of Biodiversity, Conservation and Attractions (DBCA)	Responsible for managing WA's parks, forests and reserves to achieve wildlife conservation and provide sustainable recreation and tourism opportunities.	Woodside has applied its methodology for 'Government departments / agencies – environment' under regulation 25(1)(b) of the Environment Regulations. The DBCA's responsibilities may be relevant to the activity as the EMBA overlaps WA parks, forests or reserves. Activities have the potential to impact marine tourism in the EMBA.	Yes
Department of Climate Change, Energy, the Environment and Water (DCCEEW)	Responsible for implementing Commonwealth policies and programs to support climate change, sustainable energy use, water resources, the environment and our heritage. Administers the Underwater Cultural Heritage Act 2018 in collaboration with the States, Northern Territory and Norfolk Island, which is responsible for the protection of shipwrecks, sunken aircraft and other types of underwater heritage and their associated artefacts in Commonwealth waters.	Woodside has applied its methodology for 'Government departments / agencies – environment' under regulation 25(1)(a) of the Environment Regulations. DCCEEW's responsibilities may be relevant to the proposed activities in the EMBA as there are potential environmental impacts from the proposed activity. There is known Maritime Cultural Heritage overlapping the EMBA.	Yes

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Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
Department of Water and Environmental Regulations (DWER)	Manages and regulates the state's environment and water resources.	Woodside has applied its methodology for 'Government departments / agencies – environment' under regulation 25(1)(a) of the Environment Regulations. Woodside chose to contact DWER at its discretion in line with Section 5.3.7 of the EP.	No
Director of National Parks (DNP)	Responsible for the management of Commonwealth parks and conservation zones.	Woodside has applied its methodology for 'Government departments / agencies – environment' under regulation 25(1)(a) of the Environment Regulations. 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 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
Ningaloo Coast World Heritage Advisory Committee (NCWHAC)	Supports the DBCA to manage the Ningaloo Coast World Heritage Area.	Woodside has applied its methodology for 'Government departments / agencies – environment' under regulation 25(1)(a) of the Environment Regulations. The NCWHAC's responsibilities may be relevant to the activity as the EMBA overlaps the Ningaloo Marine Park.	Yes
Commonwealth and State Government Departments or Agencies – Industry			
Department of Mines, Petroleum and Exploration (DMPE)	Department of relevant State Minister.	Required to be consulted under regulation 25(1)(c) of the Environment Regulations.	Yes
Department of Industry, Science and Resources (DISR)	Department of relevant Commonwealth Minister.	Required to be consulted under regulation 25(1)(a) of the Environment Regulations.	Yes
Commonwealth commercial fisheries and peak representative bodies			
Australian Southern Bluefin Tuna Industry Association (ASBTIA)	Represents the interests of the Southern Bluefin Tuna Fishery 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 of the EP.	No

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Commonwealth Fisheries Association (CFA)	Represents the interests of commercial fishers with licences in Commonwealth waters.	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. No Commonwealth fisheries are active in the Operational Area. CFA's functions may be relevant to the activity as the North West Slope Trawl Fishery (NWSTF) and Western Deepwater Trawl Fishery (WDWTF) are 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. The fishery does not overlap the Operational Area. The fishery overlaps the EMBA and has been active in the EMBA within the past 5 years.	Yes
Southern Bluefin Tuna Fishery	Commonwealth commercial fishery.	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. Although the Southern Bluefin Tuna Fishery overlaps the Operational Area and EMBA, it has not been active in the Operational Area or EMBA within the past 5 years. Woodside does not consider that the proposed activity will present a risk to licence holders, given since 1992, the majority of Australian catch has concentrated in south-eastern Australia. (Patterson et al., 2022). In addition, given fishing methods by licence holders for species fished in this fishery (Australia has a 35% share of total global allowable catch of Southern Bluefin Tuna, which is value-added through tuna ranching near Port Lincoln (South Australia), or fishing effort in New South Wales (Australian Southern Bluefin Tuna Industry Association). Woodside chose to contact Southern Bluefin Tuna Fishery at its discretion in line with Section 5.3.7 of the EP.	No
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 of the EP.	No
Western Deepwater Trawl Fishery	Commonwealth commercial fishery.	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. The fishery does not overlap the Operational Area. The fishery overlaps EMBA and has been active in the EMBA within the past 5 years.	Yes
Western Skipjack Fishery	Commonwealth commercial fishery.	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations.	No

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		Although the fishery overlaps the Operational Area and EMBA, it has not been active in the Operational Area or EMBA within the past 5 years. Woodside does not consider that the activity will present a risk to licence holders, given the fishery spans the Australian Fishing Zone west of Victoria and the Torres Strait. The Fishery is not currently active and no fishing has occurred since 2009 (Patterson et al., 2022). In addition, interactions are not expected given the species' pelagic distribution fishing methods for species fished by licence holders. Woodside chose to contact Western Skipjack Fishery at its discretion in line with Section 5.3.7 of the EP.	
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 past 5 years. Woodside chose to contact Western Tuna and Billfish Fishery at its discretion in line with Section 5.3.7 of the EP.	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 regulation 25(1)(d) of the Environment Regulations. ACWA's members are active within the EMBA. As the peak body for WA's aquaculture industry, ACWA's functions may be relevant to the activity as ACWA members are active in the EMBA.	Yes
Western Australian Fishing Industry Council (WAFIC)	Represents the interests of commercial fishers with licences in State waters.	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. The Mackerel Managed Fishery, Marine Aquarium Fish Managed Fishery, Onslow Prawn Managed Fishery, Pilbara Trap Managed Fishery, Pilbara Line Fishery have been active in the Operational Area within the past 5 years. The West Australian Sea Cucumber Fishery, Exmouth Gulf Prawn Managed Fishery, Mackerel Managed Fishery, 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 West Coast Deep Sea Crustacean Managed Fishery have been active in the EMBA within the past 5 years. WAFIC's functions may be relevant to the activity as the peak representative body for State fisheries.	Yes

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		Under an agreement WAFIC issued consultation materials to relevant commercial fisheries licence holders. Woodside acknowledges WAFIC's consultation guidance and has applied this by consulting, via WAFIC, fisheries that are assessed as having a potential for interaction in the Operational Area. As per WAFIC's Commercial Fishing Consultation Framework for the Offshore Oil and Gas Sector and Consultation Approach for Unplanned Events, consultation with State fisheries relevant to the EMBA of the proposed activity would be undertaken only in the event of an unplanned emergency scenario.	
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 but overlaps the EMBA and has been active in the EMBA within the past 5 years, however, based on WAFIC's advice, Woodside does not need to consult fisheries in the EMBA. As per WAFIC's Commercial Fishing Consultation Framework for the Offshore Oil and Gas Sector and Consultation Approach for Unplanned Events, consultation with State fisheries relevant to the EMBA of the proposed activity would however be undertaken only in the event of an unplanned emergency scenario.	No
Mackerel Managed Fishery (Area 2)	State commercial fishery.	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. Mackerel Managed Fishery Area 2 overlaps the Operational Area and EMBA and has been active in the Operational Area and EMBA within the past 5 years. Woodside acknowledges WAFIC's consultation guidance and has applied this by consulting fisheries that are assessed as having a potential for interaction in the Operational Area via WAFIC.	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 the EMBA. The fishery has not been active in the Operational Area within the past 5 years. The fishery has been active in the EMBA within the past 5 years, however, based on WAFIC's advice, Woodside does not need to consult fisheries in the EMBA. Woodside acknowledges WAFIC's consultation guidance and has applied this by consulting fisheries that are assessed as having a potential for interaction in the Operational Area via WAFIC however Woodside chose to contact Marine Aquarium Managed Fishery at its discretion in line with Section 5.3.7 of the EP..	No

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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 EMBA and the fishery has been active in the EMBA within the past 5 years, however, based on WAFIC's advice, Woodside does not need to consult fisheries in the EMBA. As per WAFIC's Commercial Fishing Consultation Framework for the Offshore Oil and Gas Sector and Consultation Approach for Unplanned Events, consultation with State fisheries relevant to the EMBA of the proposed activity would however be undertaken only in the event of an unplanned emergency scenario.	No
Onslow Prawn Managed Fishery (Area 1and 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 past 5 years. Woodside acknowledges WAFIC's consultation guidance and has applied this by consulting fisheries that are assessed as having a potential for interaction in the Operational Area via WAFIC.	Yes
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 the EMBA. The fishery has not been active in the Operational Area within the past 5 years. The fishery has been active in the EMBA within the past 5 years, however, based on WAFIC's advice, Woodside does not need to consult fisheries in the EMBA As per WAFIC's Commercial Fishing Consultation Framework for the Offshore Oil and Gas Sector and Consultation Approach for Unplanned Events, consultation with State fisheries relevant to the EMBA of the proposed activity would however be undertaken only in the event of an unplanned emergency scenario.	No
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 the EMBA. The fishery has not been active in the Operational Area within the last 5 years. The fishery has been active in the EMBA within the last 5 years, however, based on WAFIC's advice, Woodside does not need to consult fisheries in the EMBA. As per WAFIC's Commercial Fishing Consultation Framework for the Offshore Oil and Gas Sector and Consultation Approach for Unplanned Events, consultation with State fisheries relevant to the EMBA of the proposed activity would however be undertaken only in the event of an unplanned emergency scenario.	No

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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 the EMBA and has been active in the Operational Area and EMBA within the last 5 years. Woodside acknowledges WAFIC's consultation guidance and has applied this by consulting fisheries that are assessed as having a potential for interaction in the Operational Area via WAFIC.	Yes
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 the EMBA and has been active in the Operational Area and EMBA within the last 5 years. Woodside acknowledges WAFIC's consultation guidance and has applied this by consulting fisheries that are assessed as having a potential for interaction in the Operational Area via WAFIC.	Yes
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 the EMBA. The fishery has not been active in the Operational Area within the past 5 years. The fishery has been active in the EMBA within the past 5 years, however, based on WAFIC's advice, Woodside does not need to consult fisheries in the EMBA. As per WAFIC's Commercial Fishing Consultation Framework for the Offshore Oil and Gas Sector and Consultation Approach for Unplanned Events, consultation with State fisheries relevant to the EMBA of the proposed activity would however be undertaken only in the event of an unplanned emergency scenario.	No
Western Australian Sea cucumber (WASCF)	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. The fisher has not been active in the Operational Area within the past 5 years. The fishery has been active in the EMBA within the past 5 years, however, based on WAFIC's advice, Woodside does not need to consult fisheries in the EMBA. As per WAFIC's Commercial Fishing Consultation Framework for the Offshore Oil and Gas Sector and Consultation Approach for Unplanned Events, consultation with State fisheries relevant to the EMBA of the proposed activity would however be undertaken only in the event of an unplanned emergency scenario.	No

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West Coast Deep Sea Crustacean Managed Fishery	State commercial fishery.	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. Although the fishery overlaps the Operational Area, it has not been active in the Operational Area within the past 5 years.	No
Abalone Managed Fishery	State commercial fishery.	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under Regulations 15(11) and 17(1)(b) – Interested persons or organisations. Although the fishery overlaps the Operational Area, it has not been active in the Operational Area within the past 5 years.	No
South West Coast Salmon Managed Fishery (SWCSMF)	State commercial fishery.	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under Regulations 15(11) and 17(1)(b) – Interested persons or organisations. Although the fishery overlaps the Operational Area, it has not been active in the Operational Area within the past 5 years.	No
Western Australian North Coast Shark Fishery (WANCSF)	State commercial fishery.	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under Regulations 15(11) and 17(1)(b) – Interested persons or organisations. Although the fishery overlaps the Operational Area, it has not been active in the Operational Area within the past 5 years.	No
West Coast Rock Lobster Managed Fishery (WCRLMF)	State commercial fishery.	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under Regulations 15(11) and 17(1)(b) – Interested persons or organisations. Although the fishery overlaps the Operational Area, it has not been active in the Operational Area within the past 5 years.	No
Pearl Oyster Managed Fishery (POMF)	State commercial fishery.	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under Regulations 15(11) and 17(1)(b) – Interested persons or organisations. Although the fishery overlaps the Operational Area, it has not been active in the Operational Area within the past 5 years.	No
Recreational marine users and peak representative bodies			
Gascoyne Recreational Marine Users	Gascoyne-based dive, tourism and charter operators.	Woodside has applied its methodology for 'Recreational marine users and representative bodies' under regulation 25(1)(d) of the Environment Regulations.	Yes

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		List below from July 2025: Andro Maritime Services Australia, AOA International Pty. Ltd, Aquatic Adventure Exmouth, ATGNI Super Pty Ltd, Austanley Pty Ltd, Birds Eye View, Bluecity Enterprises Pty Ltd & Alltric Pty Ltd, Blue Horizon Charters, Blue Juice Tours Pty Ltd, Blue Lightning Charters, Bondall Pty Ltd, Brefjen Nominees Pty Ltd, Cape Immersion Tours, Chapel Nominees Pty Ltd, Coastal Adventure Tours, Coral Bay Ecotours, Dive Ningaloo, D & N Nominees Pty Ltd, Eco-Abrolhos Pty Ltd, Evolution Fishing Charters, Exmouth Adventure Co., Exmouth Dive Centre, Fawesome Expeditions Pty Ltd, Fire Tiger Pty Ltd, Innkeeper Sport Fishing, Kings Ningaloo Reef Tours, KM Charters Pty Ltd, KW Marine Pty Ltd, Live Ningaloo, Lulamanzi Investments Pty Ltd, Makalee Pty Ltd, Maritime Engineering Services Pty Ltd, Melkit Pty Ltd, Millennial Charters Pty Ltd, Monkey Mia Yacht Charters Pty Ltd, Monster Sportfishing Adventures Pty Ltd, Montebello Island Safaris, Ningaloo Aviation, Ningaloo Blue, Ningaloo Coral Bay Boats, Ningaloo Discovery, Ningaloo Fly Fishing, Ningaloo Marine Interaction, Ningaloo Reef Dive, Ningaloo Reef to Range Tours, Ningaloo Safari Tours, Ningaloo Sportfishing Charters, Ningaloo Whaleshark n Dive, Ningaloo Whaleshark Swim, North Star Cruises Australia Pty Ltd, Ocean Eco Adventures, On Strike Charters (WA) Pty Ltd, Peak Sportfishing Charters, Pelican Charters, Reel Force Charters Pty Ltd, Seaforce Charters, Seafresh Holdings Pty Ltd, Set the Hook, Sharkbay Charters Pty Ltd, The Great Escape Charter Company Pty Ltd, Three Islands, Top Gun Charters, Ultimate WaterSports, View Ningaloo, W.A Maritime Investments Pty Ltd, Yardi Creek Boat Tours. Activities have the potential to impact Gascoyne-based dive, tourism and charter operator's functions, interests or activities due to the location of activities and there has been recorded charter effort in the EMBA in the past 5 years.	
Marine Tourism WA	Represents the interests of marine tourism in WA.	Woodside has applied its methodology for 'Recreational marine users and representative bodies' under regulation 25(1)(d) of the Environment Regulations. Activities have the potential to impact recreational fishers' functions, interests or activities due to the location offshore and there has been recorded charter effort in the EMBA in the past 5 years.	Yes
Pilbara/Kimberley Recreational Marine Users	Pilbara/Kimberley-based dive, tourism and charter operators.	Woodside has applied its methodology for 'Recreational marine users and representative bodies' under regulation 25(1)(d) of the Environment Regulations. List below from July 2025: AOA International Pty Ltd, Archipelago Adventures, 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, Capricorn Mist Pty Ltd, Chapel Nominees Pty Ltd, Charter Express Pty Ltd, CM Marine Pty Ltd, Coastway Investments Pty Ltd, Compagnie Du Ponant Pty Ltd, Coral Princess Cruises (NQ) Pty Ltd, Discovery Holiday Parks Pty Limited, Diversity Charter Company WA Pty Ltd, Eco-Abrolhos Pty Ltd, Fawesome Expeditions Pty Ltd, Hampton	Yes

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		Harbour Boat & Sailing Club, 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, Kimberly Pearl Tours Pty Ltd, Kingfisher Island Resort Pty Ltd, King Sound Resort Hotel Pty Ltd, KW Marine 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, Marine Rescue Dampier, Maritime Engineering Services Pty Ltd, Melkit Pty Ltd, Millennial Charters Pty Ltd, Monster Sportfishing Adventures Pty Ltd, Nickol Bay Sport Fishing Club, North Star Cruises Australia Pty Ltd, Ocean Charters Pty Ltd, Port Walcott Volunteer Marine Rescue, Port Walcott Yacht Club, Reef Seeker Charters, 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, West Pilbara Volunteer Sea Search and Rescue Group, 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
South Coast Recreational Marine Users	South Coast-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. Eco-Abrolhos Pty Ltd, Redgate Agricultural Pty Ltd. Activities have the potential to impact South Coast-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.	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
West Coast Recreational Marine Users	West Coast-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. Abbey Bay Pty Ltd, Allegretta Holdings Pty Ltd, AOA International Pty Ltd, Aquatic Adventures (WA) Pty Ltd, Avanova Pty Ltd, Biwal Pty Ltd trading as Wallabi Carting, Bluecity Enterprises Pty Ltd & Alltric Pty Ltd, Blue Juice Tours Pty Ltd, Boarbarrell Pty Ltd, Bondall Pty Ltd, Discovery III Pty Ltd,	Yes

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		Eco-Abrolhos Pty Ltd, EL Alauron Pty Ltd, Fortitude Investments Australia Pty Ltd, Image Dive Pty Ltd, Indian Ocean Lobster Family Group Pty Ltd, Indi Blue Pty Ltd, Jayson Fishing Company (WA) Pty Ltd, Jostan Holdings Pty Ltd, Kempton Fisheries Pty Ltd, KW Marine Pty Ltd, Kybret Pty Ltd, Latitude Fisheries Pty Ltd, Lugger Enterprises Pty Ltd, Lulamanzi Investments Pty Ltd, Makalee Pty Ltd, Maritime Engineering Services Pty Ltd, Meridian Venture Group Pty Ltd, Millennial Charters Pty Ltd, No Limitts Pty Ltd, North Star Cruises Australia Pty Ltd, Perth Diving Academy Hillarys Pty Ltd, Petara Pty Ltd, Punchline Pty Ltd, LTD Trading as Karma Charters & Dorre Island Fishing Company, Redgate Agricultural Pty Ltd, Reefwalker Pty Ltd, Reel Force Charters Pty Ltd, Riverblitz Pty Ltd, Rogue Seas Pty Ltd, Sea West WA Pty Ltd Sharkbay Charters Pty Ltd, The Great Escape Charter Company Pty Ltd, Third Reef Pty Ltd, Viency Pty Ltd, W.A Maritime Investments Pty Ltd, Western Blue Dive Pty Ltd. Activities have the potential to impact West Coast-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.	
Titleholders and Operators			
Beagle No. 1	Titleholder or Operator.	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit area/s overlap/s the EMBA.	Yes
Carbon CQ	Titleholder or Operator.	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit area/s overlap/s the EMBA.	Yes
Chevron Australia	Titleholder or Operator.	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit area/s overlap/s the EMBA. (Chevron Australia, Chevron Australia New Energies, Chevron Australia New Ventures)	Yes
InCapture	Titleholder or Operator.	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit area/s overlap/s the EMBA.	Yes
INPEX Alpha	Titleholder or Operator.	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit area/s overlap/s the EMBA.	Yes
JERA Gorgon (part of Chevron)	Titleholder or Operator.	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations.	Yes

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		Titleholder or Operator's permit area/s overlap/s the EMBA.	
JX Nippon O&G Exploration (Australia)	Titleholder or Operator.	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit area/s overlap/s the EMBA.	Yes
KATO Energy	Titleholder or Operator.	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit area/s overlap/s the EMBA. (KATO Corowa, KATO Energy, KATO Energy (WA))	Yes
KUFPEC	Titleholder or Operator.	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit area/s overlap/s the EMBA. (KUFPEC (Perth), KUFPEC Australia, KUFPEC Australia (Julimar), KUFPEC Australia (Wheatstone lago))	Yes
Kyushu Electric Wheatstone	Titleholder or Operator.	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit area/s overlap/s the EMBA.	Yes
Melbana Exploration	Titleholder or Operator.	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit area/s overlap/s the EMBA.	Yes
MidOcean Gorgon (part of Chevron, replaces Tokyo Gas Gorgon)	Titleholder or Operator.	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit area/s overlap/s the EMBA.	Yes
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 area/s overlap/s the EMBA.	Yes
OMV Australia	Titleholder or Operator.	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit area/s overlap/s the EMBA.	Yes
Osaka Gas Gorgon (part of Chevron)	Titleholder or Operator.	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit area/s overlap/s the EMBA.	Yes

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Pelsart Resources NL	Titleholder or Operator.	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit area/s overlap/s the EMBA.	Yes
PE Wheatstone	Titleholder or Operator.	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit area/s overlap/s the EMBA.	Yes
Santos WA Northwest / Santos WA Southwest	Titleholder or Operator.	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit area/s overlap/s the EMBA. (Santos (BOL), Santos Ltd, Santos NA Energy Holdings, Santos Offshore, Santos WA Northwest, Santos WA PVG, Santos WA Southwest)	Yes
Shell Australia	Titleholder or Operator.	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit area/s overlap/s the EMBA.	Yes
SK Earthon Australia	Titleholder or Operator.	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit area/s overlap/s the EMBA.	Yes
Skye Resources	Titleholder or Operator.	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit area/s overlap/s the EMBA.	Yes
Tanami Energy	Titleholder or Operator.	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit area/s overlap/s the EMBA.	Yes
Western Gas	Titleholder or Operator.	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit area/s overlap/s the EMBA.	Yes
Peak Industry Representative Bodies			
Australian Energy Producers (AEP)	Represents the interests of oil and gas explorers and producers in Australia.	Woodside has applied its methodology for 'Peak Industry Representative bodies' under regulation 25(1)(d) of the Environment Regulations. AEP's responsibilities are identified as having an intersect with Woodside's planned activities in the EMBA.	Yes

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Historical heritage groups or organisations			
Western Australian Museum (WAM)	Manages 200 shipwreck sites of the 1,500 known to be located off the Western Australian coast.	Woodside has applied its methodology for 'Historical cultural heritage groups or organisations' under regulation 25(1)(d) of the Environment Regulations. There is known shipwrecks overlapping the EMBA which the Western Australian Museum may be responsible for.	Yes
Local government and elected Parliamentary representatives, community groups or organisations			
Exmouth Chamber of Commerce and Industry (CCI)	Independent not-for-profit organisation responsible for promoting the interests of its members in the business community in the town of Exmouth and surrounding areas.	Woodside has applied its methodology for 'Local government and elected Parliamentary representatives, community groups or organisations' under regulation 25(1)(d) of the Environment Regulations. The Exmouth Chamber of Commerce and Industry's interests have the potential to be impacted by the proposed activities.	Yes
Karratha & Districts Chamber of Commerce and Industry (KDCCI)	Independent not-for-profit organisation responsible for promoting the interests of its members in the business community in the City of Karratha and surrounding areas.	Woodside has applied its methodology for 'Local government and elected Parliamentary representatives, community representative groups or organisations' under regulation 25(1)(d) of the Environment Regulations. The Karratha and Districts Chamber of Commerce and Industry's interests have the potential to be impacted by the proposed activities.	Yes
Exmouth Community Liaison Group (CLG)	The Exmouth CLG represents the interests of a range of local government, industry and community organisations in relation to oil and gas matters in the Exmouth region.	Woodside has applied its methodology for 'Local government and elected Parliamentary representatives, community groups or organisations' under regulation 25(1)(d) of the Environment Regulations. Base Marine, Bhagwan Marine, Cape Conservation Group Inc, Cape Range Riders, DBCA, Department of Defence, Department of Transport and Major Infrastructure, Exmouth Bus Charter, Exmouth Chamber of Commerce and Industry, Exmouth District High School, Exmouth Escape Resort, Exmouth Freight and Logistics, Exmouth Game Fishing Club, Exmouth Tackle and Camping Supplies, Exmouth Visitors Centre, Exmouth Volunteer Marine Rescue, Fat Marine, Gascoyne Development Commission, Gun Marine Services, Ningaloo Centre, Ningaloo Lodge, Ningaloo Coast World Heritage Advisory Council, PHI Aviation, Offshore Unlimited, Shire of Exmouth, Santos, Terrafirma Offshore, WA Country Health Service. The Exmouth CLG's area of responsibility under its terms of reference overlaps the EMBA.	Yes

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Karratha Community Liaison Group (CLG)	The Karratha CLG is the recognised community group that represents the interests of a range of local government, industry and community organisations in relation to oil and gas matters in the Pilbara region.	Woodside has applied its methodology for 'Local government and elected Parliamentary representatives, community groups or organisations' under regulation 25(1)(d) of the Environment Regulations. The Karratha CLG's area of responsibility under its terms of reference does not overlap the EMBA. WA Police, Karratha Health Care, Development WA, Ngarluma Yindjibarndi Foundation Ltd (NYFL)*, Department of Education, Pilbara Ports Authority, Regional Development Australia, Pilbara Development Commission, Dampier Community Association, City of Karratha, Karratha & Districts Chamber of Commerce and Industry, Horizon Power, Murujuga Aboriginal Corporation (MAC)*. *NFYL and MAC were consulted directly as described below. Under regulation 25(1)(e), Woodside, at its discretion, chose to assess the CLG as a relevant person.	Yes
City of Karratha	Local government governed by the Local Government Act 1995 representing the suburbs and localities of Baynton, Baynton West, Bulgarra, Cossack, Dampier, Gap Ridge, Karratha, Karratha Industrial Estate, Jingarri, Madigan, Millars Well, Nickol, Pegs Creek, Point Samson, Roebourne, Whim Creek and Wickham.	Woodside has applied its methodology for 'Local government and elected Parliamentary representatives, community groups or organisations' under regulation 25(1)(d) of the Environment Regulations. The City of Karratha's area of responsibility overlaps the EMBA.	Yes
Shire of Ashburton	Local government governed by the Local Government Act 1995 representing the suburbs and localities of Onslow, Pannawonica, Paraburdoo and Tom Price.	Woodside has applied its methodology for 'Local government and elected Parliamentary representatives, community groups or organisations' under regulation 25(1)(d) of the Environment Regulations. The Shire of Ashburton's area of responsibility overlaps the EMBA.	Yes
Other non-government groups or organisations (NGOs) or individuals			
Australian Conservation Foundation (ACF)	Non-government organisation.	Woodside has applied its methodology for 'Other non-government groups or organisations' under regulation 25(1)(d) of the Environment Regulations to determine ACF's relevance for the proposed activity. Woodside chose to contact ACF at its discretion in line with Section 5.3.7 of the EP.	No

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Australian Marine Conservation Society (AMCS)	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 AMCS's relevance for the proposed activity. Woodside chose to contact AMCS at its discretion in line with Section 5.3.7 of the EP.	No
Conservation Council of Western Australia (CCWA)	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 CCWA's relevance for the proposed activity. Woodside chose to contact CCWA at its discretion in line with Section 5.3.7 of the EP.	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 to determine GAP's relevance for the proposed activity. Woodside chose to contact GAP at its discretion in line with Section 5.3.7 of the EP.	No
Australasian Centre for Corporate Responsibility (ACCR)	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 ACCR's relevance for the proposed activity. Woodside chose to contact ACCR at its discretion in line with Section 5.3.7 of the EP.	No
Ningaloo Coast World Heritage Advisory Committee (NCWHAC)	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 NCWHAC's relevance for the proposed activity. Woodside has assessed that NCWHAC's functions, interests or activities may be relevant to the potential risks and impacts associated with planned activities in accordance with the intended outcome of consultation (as set out in Section 5.3.4 of the EP).	Yes
Friends of the Earth Australia	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 FOEA's relevance for the proposed activity. Woodside has assessed that FOEA has provided previous feedback and/or has a publicly available statement (or purpose), website or social media material that demonstrates that it's functions, interests or activities may be relevant to the potential risks and impacts associated with planned activities in accordance with the intended outcome of consultation (as set out in Section 5.3.4 of the EP).	Yes
The Wilderness Society (TWS)	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 TWS's relevance for the proposed activity.	Yes

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		Woodside has assessed that TWS has provided previous feedback and/or has a publicly available statement (or purpose), website or social media material that demonstrates that it's functions, interests or activities may be relevant to the potential risks and impacts associated with planned activities in accordance with the intended outcome of consultation (as set out in Section 5.3.4 of the EP).	
Maritime Union of Australia (MUA)	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 MUA's relevance for the proposed activity. Woodside chose to contact MUA at its discretion in line with Section 5.3.7 of the EP.	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 no known communication cables that intersect within the Operational Area. Woodside chose to contact Telstra at its discretion in line with Section 5.3.7 of the EP.	No
Vocus	Non-government organisation.	Woodside has applied its methodology for 'Other non-government groups or organisations' under regulation 25(1)(d) of the Environment Regulations to determine Vocus' relevance for the proposed activity. There are no known communication cables that intersect within the Operational Area. Woodside chose to contact Vocus at its discretion in line with Section 5.3.7 of the EP.	No
Research institutes and local conservation groups or organisations			
Australian Institute of Marine Science (AIMS)	Research institute.	Woodside has applied its methodology for 'Research institutes and local conservation groups or organisations' under regulation 25(1)(d) of the Environment Regulations. There may be research being undertaken by AIMS that intersects within the EMBA. Woodside chose to contact AIMS at its discretion in line with Section 5.3.7 of the EP.	No
Commonwealth Scientific and Industrial Research Organisation (CSIRO)	Research institute.	Woodside has applied its methodology for 'Research institutes and local conservation groups or organisations' under regulation 25(1)(d) of the Environment Regulations. There is no known research being undertaken by the insert name CSIRO that intersects within the EMBA. Woodside chose to contact CSIRO at its discretion in line with Section 5.3.7 of the EP.	No
Western Australian Marine Science Institution (WAMSI)	Research institute.	Woodside has applied its methodology for 'Research institutes and local conservation groups or organisations' under regulation 25(1)(d) of the Environment Regulations. There is no known research being undertaken by the WAMSI that intersects within the EMBA.	No

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		Woodside chose to contact WAMSI at its discretion in line with Section 5.3.7 of the EP	
Curtin University	Research institute.	Woodside has applied its methodology for 'Research institutes and local conservation groups or organisations' under regulation 25(1)(d) of the Environment Regulations. There is no known research being undertaken by the Curtin University that intersects within the EMBA. Woodside chose to contact Curtin University at its discretion in line with Section 5.3.7 of the EP.	No
Edith Cowan University (ECU)	Research institute.	Woodside has applied its methodology for 'Research institutes and local conservation groups or organisations' under regulation 25(1)(d) of the Environment Regulations. There is no known research being undertaken by the ECU that intersects within the EMBA. Woodside chose to contact ECU at its discretion in line with Section 5.3.7 of the EP.	No
Murdoch University	Research institute.	Woodside has applied its methodology for 'Research institutes and local conservation groups or organisations' under regulation 25(1)(d) of the Environment Regulations. There is no known research being undertaken by the Murdoch University that intersects within the EMBA. Woodside chose to contact Murdoch University at its discretion in line with 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 in line with Section 5.3.7 of the EP.	No
Cape Conservation Group (CCG)	Local conservation group focused on protecting the terrestrial and marine environment of the North West Cape.	Woodside has applied its methodology for 'Research institutes and local conservation groups or organisations' under regulation 25(1)(d) of the Environment Regulations. CCG's conservation activities have the potential to intersect with the EMBA as the EMBA overlaps the North West Cape.	Yes
Protect Ningaloo	Local conservation group focused on protecting the Exmouth Gulf and Ningaloo Reef and Cape Range.	Woodside has applied its methodology for 'Research institutes and local conservation groups or organisations' under regulation 25(1)(d) of the Environment Regulations. Protect Ningaloo's conservation activities have the potential to intersect with the EMBA as the EMBA overlaps the North West Cape and Ningaloo Reef.	Yes
Traditional Custodians and nominated representative corporations			

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Buurabalayji Thalanyji Aboriginal Corporation (BTAC)	Representative Aboriginal Corporation	Woodside has applied its methodology for 'Traditional Custodians and Nominated Representative Corporations' under regulation 25(1)(d) of the Environment Regulations. The Thalanyji Native Title claim, which BTAC is the Registered Native Title Body Corporate for, does not overlap the EMBA. The claim is coastally adjacent to the EMBA. BTAC is also party to the Macedon ILUA, which is coastally adjacent to the EMBA.	Yes
Kariyarra Aboriginal Corporation (KAC)	Representative Aboriginal Corporation.	Woodside has applied its methodology for 'Traditional Custodians and Nominated Representative Corporations' under regulation 25(1)(d) of the Environment Regulations. The Kariyarra Native Title claim, for which KAC is the Registered Native Title Body Corporate does not overlap the EMBA. The claim is coastally adjacent to the EMBA. KAC is also party to the Kariyarra and State ILUA, which is adjacent to the EMBA.	Yes
Murujuga Aboriginal Corporation (MAC)	Representative Aboriginal Corporation.	Woodside has applied its methodology for 'Traditional Custodians and Nominated Representative Corporations' under regulation 25(1)(d) of the Environment Regulations. MAC is the Nominated Representative Corporation under the Burrup and Maitland Industrial Estates Agreement (BMIEA), which is coastally adjacent to the EMBA. The EMBA does not overlap the Murujuga National Park. MAC was established to represent the members of competing Native Title claims over Murujuga, collectively known as the Ngarda Ngarli and comprising Mardudhunera, Ngarluma, Yaburara, Yindjibarndi and Wong-Goo-Tt-Oo people. The determination of the competing Native Title claims resulted in no native title being found over the lands subject to the BMIEA or below the low water mark. MAC also owns and co-manages the Murujuga National Park, is responsible for the Dampier Archipelago National Heritage Place and the World Heritage listed Murujuga Cultural Landscape.	
Nganhurra Thanardi Garrbu Aboriginal Corporation (NTGAC)	Representative Aboriginal Corporation	Woodside has applied its methodology for 'Traditional Custodians and Nominated Representative Corporations' under regulation 25(1)(d) of the Environment Regulations. The Gnulli, Gnulli #2 and Gnulli #3 - Yinggarda, Baiyungu and Thalanyji People native title claim, which the Baiyungu, Thalanyji and Yinggarda people are party to, overlaps and is adjacent to the EMBA. NTGAC and Yinggarda Aboriginal Corporation (YAC) are the Registered Native Title Body Corporates holding Native Title on behalf of the Baiyungu, Thalanyji and Yinggarda people. NTGAC is also party, with the WA State Government, to the Ningaloo Conservation Estate Indigenous Land Use Agreement (the ILUA), which is coastally adjacent to the EMBA. NTGAC is responsible for the joint management of the inner Ningaloo Marine Park (State Waters), the Cape Range National Park and new conservation areas extending along the Ningaloo Coast, which runs in parallel to the outer Ningaloo Marine Park in Commonwealth Waters.	Yes

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		NTGAC's nominated representative is the Yamatji Marlpa Aboriginal Corporation (YMAC) and NTGAC's executive officer and contact officer pursuant to the *Corporations (Aboriginal and Torres Strait Islander) Act 2006* is employed by YMAC. Woodside has therefore consulted NTGAC, via YMAC.	
Ngarluma Aboriginal Corporation (NAC)	Representative Aboriginal Corporation	Woodside has applied its methodology for 'Traditional Custodians and Nominated Representative Corporations' under regulation 25(1)(d) of the Environment Regulations. The Ngarluma People Native Title claim, for which NAC is the Registered Native Title Body Corporate does not overlap the EMBA. The claim is coastally adjacent to the EMBA. The Ngarluma/ Yindjibarndi People Native Title claim, for which NAC and the Yindjibarndi Aboriginal Corporation are the Registered Native Title Body Corporates, does not overlap the EMBA. The claim is coastally adjacent to the EMBA. NAC is also party to the Anketell Port, Infrastructure Corridor and Industrial Estates Agreement and RTIO Ngarluma Indigenous Land Use Agreement (Body Corporate Agreement) ILUAs, which are coastally adjacent to the EMBA.	Yes
Nhuwala Claim Group	Native Title Claim Group	Woodside has applied its methodology for 'Traditional Custodians and Nominated Representative Corporations' under regulation 25(1)(d) of the Environment Regulations. The Nhuwala Claim Group native title claim overlaps the EMBA. All communication with the group is via YMAC.	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. RRKAC is party to the KM & YM Indigenous Land Use Agreement 2018 and RTIO Kuruma Marthudunera People ILUAs, which are coastally adjacent to the EMBA.	Yes
Thalanyji/Nhuwala People	Native Title Claim Group	Woodside has applied its methodology for 'Traditional Custodians and Nominated Representative Corporations' under regulation 25(1)(d) of the Environment Regulations. The Thalanyji/Nhuwala People native title claim overlaps the EMBA. All communications with the group are via BTAC.	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 does not overlap the EMBA. The claim is coastally adjacent to the EMBA, for which WAC is the Registered Native Title Body Corporate. WAC is party to the KM & YM Indigenous Land Use Agreement 2018, Cape Preston Project Deed (YM Mardie ILUA) and Cape Preston West Export Facility ILUA, which are coastally adjacent to the EMBA.	Yes

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Yindjibarndi Aboriginal Corporation	Representative Aboriginal Corporation	Woodside has applied its methodology for 'Traditional Custodians and Nominated Representative Corporations' under regulation 25(1)(d) of the Environment Regulations. The Ngarluma/ Yindjibarndi People Native Title claim, for which NAC and the Yindjibarndi Aboriginal Corporation are the Registered Native Title Body Corporates, does not overlap the EMBA. The claim is coastally adjacent to the EMBA.	Yes
Yinggarda Aboriginal Corporation (YAC)	Representative Aboriginal Corporation	Woodside has applied its methodology for 'Traditional Custodians and Nominated Representative Corporations' under regulation 25(1)(d). The Gnulli, Gnulli #2 and Gnulli #3 - Yinggarda, Baiyungu and Thalanyji People Native Title claim, which the Baiyungu, Thalanyji and Yinggarda people are party to, overlaps and is adjacent to the EMBA. NTGAC and YAC are the Registered Native Title Body Corporates holding Native Title on behalf of the Baiyungu, Thalanyji and Yinggarda people. The Yinggarda Aboriginal Corporation's nominated representative is Gumala Aboriginal Corporation.	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. KLC is the Native Title Representative Body for the Kimberley region of Western Australia. As such, they are not a Prescribed or Registered Native Title Body Corporate but exist to assist Native Title claimants and holders. KLC's functions may be relevant to the proposed activity in relation to its facilitation and coordination function as a Native Title Representative Body under applicable federal legislation.	Yes
Yamatji Marlpa Aboriginal Corporation (YMAC)	Native Title Representative Body	Woodside has applied its methodology for 'Native Title Representative Bodies' under regulation 25(1)(d) of the Environment Regulations. YMAC is the Native Title Representative Body for the Yamatji and Pilbara regions of Western Australia. As such, they are not a Prescribed or Registered Native Title Body Corporate but exist to assist Native Title claimants and holders. 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.	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).	Yes

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		NYFL was subsequently incorporated under the terms of the Agreement to act as trustee for the trust established to benefit the Ngarluma and Yindjibarndi People and the Roebourne Aboriginal Community. Subsequent to that, the Ngarluma people settled their Native Title claim and established their nominated representative corporation, the Ngarluma Aboriginal Corporation (PBC); and the Yindjibarndi people settled their Native Title claim and established their nominated representative corporation, the Yindjibarndi Aboriginal Corporation (PBC). 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.	
Other First Nations Groups			
Save Our Songlines (SOS) and/ or [Individual 1]	Representatives of Non-Government Organisation Save Our Songlines 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. 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. The scope of the activity under this EP does not fall within their stated interests.	Yes

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3. CONSULTATION ACTIVITIES

3.1 Julimar-Brunello Plug & Abandonment EP consultation activities

Woodside has been conducting extensive consultation with relevant persons and other parties for this EP since August 2025 when consultation commenced with interested and affected stakeholders as part of a planned, integrated and consistent approach to stakeholder engagement for Woodside's proposed opportunities.

A broad consultation process has been undertaken with relevant persons for the Julimar-Brunello Plug & Abandonment 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. All communities within or adjacent to the EMBA had access to this information via this information.

Newspaper	Coverage	Readership	Publication dates
The Australian	National	Weekly – 453,000	11 August 2025
The West Australian	Regional (WA)	Daily – 364,000	11 August 2025
Pilbara News	Local (WA)	Weekly – 17,611	13 August 2025
Midwest Times	Local (WA)	Weekly – 50,534	13 August 2025
North West Times	Local (WA)	Weekly – 8,154	14 August 2025
Koori Mail	Indigenous	Monthly – 80,000	13 August 2025
National Indigenous Times	Indigenous	Monthly – 1,484,340	26/27 August 2025

A Consultation Information Sheet was provided to relevant persons and persons Woodside chose to contact (see Section 5.3.4 of 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). An updated Consultation Information Sheet to support the activity update in October 2025 was provided (Record of Consultation, reference 6.3.1)

Since the commencement of the initial consultation period (August 2025), the stakeholder Consultation Information Sheet has been available on Woodside's website. Consultation Information Sheets include a toll-free 1800 phone number and Woodside's feedback email address consultation@feedback.woodside.com

The Woodside Consultation Activities webpage (accessible on the Consultation Information Sheet, banners at community events and via social media content and advertisements) includes Consultation Information Sheets for the EPs on which Woodside is currently consulting, including this EP. The website page also features a subscribe field for EP-focussed communications from Woodside.

Additional targeted information was provided to select relevant persons based on their roles and responsibilities such as a vessel density map (Record of Consultation, reference 6.1.4), GIS shape files, shipwreck information (Record of Consultation, reference 6.1.5), and a defence zone map (Record of Consultation, reference 6.1.3).

Where appropriate, Woodside conducted phone calls and meetings with relevant persons.

Where appropriate, targeted follow-up emails were sent to relevant persons who had not provided a response prior to the close of the target feedback period.

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Woodside considered relevant person responses and assessed the merits and relevance of objections and claims about the potential adverse impact of the proposed activity set out in the EP, in accordance with the intended outcome of consultation (see Section 5.2 of the EP).

Consultation activities undertaken with relevant persons are summarised at Appendix F, Table 2.

Engagement undertaken with persons or organisations Woodside assessed as not relevant but chose to contact (see Section 5.3.7 of the EP) or self-identified and Woodside assessed as not relevant are summarised at Appendix F, Table 3.

From August 2025, Woodside commenced a geotargeted sponsored social media campaign (Record of Consultation, reference 6.6) covering various local government authorities within, or coastally adjacent to, the EMBA for the proposed activities. The campaign brought the proposed activity to the attention of persons who may be interested and advised persons or organisations on how they can find out about Woodside's proposed activities by visiting Woodside's website.

Platforms	Geotargeted reach	Post dates	Impact
Meta – Facebook and Instagram	Karratha Dampier Onslow Roebourne Exmouth	Campaign start: 15 August 2025 Campaign end: 5 September 2025	Reach: 76,643 Impressions: 135,882 Link Clicks: 439 Click-through Rate: 0.32%

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
Facebook	43 likes 5 haha 0 hearts) 2 shares	Number of comments: 8	Relevant to EP: 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 6.7). To support attendance, Woodside published advertisements ahead of these sessions and events in relevant local newspapers and on social media.

Date (2025)	Location	Event (if applicable)
5 October 2025	Exmouth	Exmouth Community Markets
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 these two CLGs to discuss a range of issues including consultation of specific EPs. For this EP, see 4.9.3 for consultation with Exmouth CLG and 4.9.4 for Karratha CLG.

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3.3.3 Newsletters

Woodside's EP focussed newsletter *Let's Talk* is designed to reach existing and potential stakeholders and encourage self-identification about Woodside's EP-related activities. The newsletter provides quarterly updates about EP consultation activities, case studies on effective consultation with relevant persons and other EP related information such as forthcoming events where Woodside personnel will be consulting with the local community. *Let's Talk* is distributed in a variety of locations as well as across digital platforms including Woodside's website and social media channels. People can also subscribe to receive it on Woodside's website. (Record of Consultation, reference 6.8.1).

Woodside also publishes the *Karratha Community Update* newsletter quarterly which includes a QR code and encourages people to go to the Consultation Activities page on Woodside's website to subscribe and find information on EPs. (Record of Consultation, reference 6.8.2).

3.4 Traditional Custodian specific consultation

In addition to the approaches outlined above including community information sessions, additional activities were undertaken with relevant Traditional Custodians, which were specifically designed to provide for effective engagement with Traditional Custodians and so that information was provided in a form that was readily accessible and appropriate (see Section 5.5.4 of the EP).

Consultation undertaken specifically with Traditional Custodians for this EP includes direct engagement with nominated representative bodies via the contact listed on the Office of the Registrar of Indigenous Corporations (ORIC) website, requesting advice on how they would like to be engaged and asking whether other members and/or individuals should be consulted. This has resulted in:

- the EP's Summary Information Sheet, being provided to relevant Traditional Custodian groups (Record of Consultation, reference 6.3.2). The resource is developed and reviewed by subject matter experts with knowledge and experience in First Nations engagement, in collaboration with technical experts to ensure content is appropriate to the intended recipients.
- meetings with directors, Elders and any nominated representatives, at a time and location nominated by them
- the exchange of written feedback and correspondence
- telephoning relevant persons to provide context, if requested and/or required
- invitations to and/or attendance at community monthly luncheons for Traditional. Custodians

Ongoing efforts were made to engage and develop relationships with these bodies via a variety of means such as email, phone calls, alternative contacts, texts, social media and, in some cases, physical visits.

Consultation meetings with attendees decided by Traditional Custodian groups and supported by senior Woodside representatives, subject matter experts and First Nations advisers with skills and experience in community engagement. Meetings are developed through a two-way consultation process to ensure effective information sharing via:

- mutually agreed agenda avoiding time pressure
- encouraging Traditional Custodian attendees to control the pace of the meeting and pause at any time to ask questions, seek clarification or provide feedback
- visual aids such as posters, presentations, maps, simplified technical videos and real-world pictures and footage
- emphasis on potential planned and unplanned risks and impacts of the activity
- ample opportunity for questions and feedback
- discussion about ongoing relationship development and opportunities

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- distribution of hard-copy Consultation Information Sheets (Record of Consultation, reference 6.1.1) and Summary Consultation Information Sheets (Record of Consultation, reference 6.1.2) are available face-to-face consultation
- meeting reasonable costs for consultation which may include sitting fees, travel, executive support and other support required
- advertising in Indigenous publications such as the Koori Mail (13 August 2025) and the National Indigenous Times (26/27 August 2025) (Record of Consultation, references 6.5.6 and 6.5.7)

Newspaper	Coverage	Publication dates
Koori Mail	Indigenous	13 August 2025
National Indigenous Times	Indigenous	26/27 August 2025

Woodside also ran a geotargeted sponsored social media campaign (Record of Consultation, reference 6.6.1) to various communities that are coastally adjacent to the EMBA for the proposed activities.

Social media is a highly effective means to engage First Nations audiences as outlined in Indigenous Digital Life: The Practice and Politics of Being Indigenous on Social Media (Bronwyn Carlson and Ryan Frazer, 2021).

The campaign brought the proposed activity to the attention of persons who may be interested and advised persons or organisations how they can learn more about Woodside's proposed activities by visiting Woodside's website. The advertisements linked to Woodside's website, which details the intent of consultation with relevant persons under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth).

Woodside uses a diverse range of techniques to reach relevant persons and build awareness of the proposed activity and how it may affect their functions, activities or interests, and to understand how to provide feedback. The combination of Prescribed Bodies Corporate (PBC) engagement meetings, traditional print media, social media and face-to face community interaction provides a wide-ranging opportunity to consult.

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4. TABLE 2: CONSULTATION REPORT WITH RELEVANT PERSONS OR ORGANISATIONS

The black numbering **(N)** in the 'Summary of information provided and record of consultation for this EP' in Table 2 denotes an item raised by a 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 11 August 2025, Woodside emailed the ABF advising of the proposed activity (Record of Consultation, reference 6.1.9) and provided a Consultation Information Sheet and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 22 August 2025, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.1).
- On 7 October 2025, Woodside emailed the ABF advising of an activity update regarding the wellhead cut location (Record of Consultation, reference 6.3.3) and provided an updated Consultation Information Sheet.
- On 14 October 2025, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 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 about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8 of the EP).	No additional measures or controls are required.
Summary Report – Consultation Complete			
Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with the 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:			

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Sufficient Information

Woodside has given the ABF sufficient information to allow the ABF to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since August 2025. Woodside gave this information to the ABF on 11 August 2025, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the PAP, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'.*
  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).
- The updated Consultation Information Sheet for this EP has been publicly available on the Woodside website since October 2025 and sent to the ABF on 7 October 2025. A reminder for feedback was sent on 14 October 2025.

Reasonable Period

Woodside allowed the ABF a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to the 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 allowed an additional 15 days for consultation for the activity update sent 7 October 2025.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed the ABF 45 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed the 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 the ABF is appropriate and adapted to the nature of interests of the 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 also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- From October 2025, Woodside held, or hosted information stalls at, a number of community events and roadshows in regional areas including the Pilbara and Exmouth to raise awareness of the EP and provide another opportunity for feedback. These events were promoted in local newspapers and on social media.
- In the absence of feedback, Woodside sent a follow-up consultation email on 22 August and 14 October 2025, reminding the ABF of the opportunity to provide feedback.

Outcomes of Consultation

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Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- No additional measures were considered as a result of consultation as the 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 the ABF's functions, interests or activities.

4.1.2 Australian Fisheries Management Authority (AFMA)

Summary of information provided and record of consultation for this EP:

- On 11 August 2025, Woodside emailed AFMA advising of the proposed activity (Record of Consultation, reference 6.1.11) and provided a Consultation Information Sheet and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 12 August 20205, AFMA emailed Woodside (SI Report A, reference 1.1.1) and:
  - **(1)** Stated it did not have any direct comments on this EP.
  - **(2)** Requested to be included in future consultation about this EP.
  - **(3)** Confirmed that the Commonwealth commercial fisheries that Woodside had listed for consultation were correct, but advised that the following additional fisheries should be included in the consultation for the EP: Western Tuna and Billfish Fishery, Western Skipjack Fishery, Tuna Australia, Southern Bluefin Tuna Fishery, and Australian Southern Bluefin Tuna Fishery Association.
- On 13 August 2025, Woodside responded to AFMA via email (SI Report A, reference 1.1.2) and:
  - **(1)** Noted that AFMA did not have any direct comments on this EP.
  - **(2)** Confirmed it would include AFMA in future consultation for this EP.
  - **(3)** Confirmed it would share the consultation material with the fisheries and associations that AFMA listed.
- On 7 October 2025, Woodside emailed the AFMA advising of an activity update regarding the wellhead cut location (Record of Consultation, reference 6.3.3) and provided an updated Consultation Information Sheet.
- On 14 October 2025, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.4.1).
- On 14 October 2025, AFMA sent an email to Woodside (SI Report A, reference 1.1.3) and:
  - **(1)** Confirmed that it had no direct comments on the EP.
  - **(2)** Requested to be included in future consultation regarding the EP.
  - **(3)** Encouraged Woodside to engage directly with Commonwealth fishing operators and fishing industry associations, specifically Commonwealth Fisheries Association (CFA), Tuna Australia, the Australian Southern Bluefin Tuna Industry Association, North West Slope Trawl, Western Deepwater Trawl, Western Tuna and Billfish Fishery, Western Skipjack Fishery and Southern Bluefin Tuna Fishery.
- On 29 October 2025, Woodside responded to AFMA via email (SI Report A, reference 1.1.4) and:
  - **(1)** Noted that AFMA did not have any direct comments on this EP.

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– **(2)** Confirmed it would include AFMA in future consultation for this EP.
– **(3)** Confirmed the consultation material ad been shared with the fisheries and associations listed.

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) AFMA did not have direct comments on this EP.	**(1)** Woodside notes that AFMA did not have direct comments on this EP.	**(1)** Woodside acknowledged that AFMA did not have direct comments on this EP.	**(1)** Not required.
(2) AFMA requested to be included in future consultation about this EP.	**(2)** Woodside notes AFMA's request to be included in future consultation about this EP.	**(2)** Woodside confirmed it would include AFMA in future consultation for this EP.	**(2)** Woodside will notify the AFMA before activities are due to begin as referenced in PS 1.2 and in Section 7.10, Table 7-5, of this EP.
(3) AFMA noted that the following Commonwealth commercial fisheries should be included in the consultation for the EP: • Western Tuna and Billfish Fishery • Western Skipjack Fishery • Tuna Australia • Southern Bluefin Tuna Fishery • Australian Southern Bluefin Tuna Fishery Association.	**(3)** Woodside had not initially consulted the additional fisheries listed by AFMA, as Woodside has not assessed that these fisheries had been active within the EMBA or Operational Area in the past five years. Woodside acknowledges AFMA's recommendation to consult with these fisheries.	**(3)** Woodside confirmed it will/had shared the consultation material with the fisheries and associations that AFMA listed.	**(3)** Consultation with the additional Commonwealth commercial fisheries provided by AFMA is summarised and referenced in Appendix F Section 5.1
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 of the EP).	Woodside has assessed the potential for interaction with Commonwealth managed fisheries in Section 4.9.2 of the EP. No additional measures or controls are required.

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Summary Report – Consultation Complete
Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with AFMA for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically: **Sufficient Information** Woodside has given AFMA sufficient information to allow AFMA to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because: • The Consultation Information Sheet for this EP has been publicly available on the Woodside website since August 2025. Woodside gave this information to AFMA on 11 August 2025, marking the commencement of consultation on this EP. The Consultation Information Sheet included: – The purpose of consultation and set out what was being sought through consultation. – A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the PAP, and proposed mitigation and management measures. – A timeframe for consultation and the provision of feedback. – A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'.* – Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations). • On 12 August 2025, AFMA shared its feedback, claims or objections regarding this activity, indicating the information provided was sufficient to enable AFMA to make an informed assessment of the possible consequences of the activity on its functions, interests or activities. • On 13 August 2025, Woodside responded to AFMA's feedback. **Reasonable Period** Woodside allowed AFMA a reasonable period for consultation in the preparation of the EP because: • A consultation period was stated in the initial correspondence to AFMA advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission. • Woodside allowed an additional 15 days for consultation for the activity update sent 7 October 2025. • Woodside's methodology allows a 30-day consultation period and Woodside allowed AFMA 45 days for consultation. • Consultation for this EP commenced 3 months ago. • In this context, Woodside allowed AFMA a reasonable period for consultation in preparation of the EP as evidenced by AFMA's response on 12 August 2025. **Reasonable Opportunity** Woodside allowed AFMA 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 also of consultation.

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- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- In October 2025, Woodside held, or hosted information stalls at, a number of community events and roadshows in regional areas including the Pilbara and Gascoyne to raise awareness of the EP and provide another opportunity for feedback. These events were promoted in local newspapers and on social media.
- Woodside considers a reasonable opportunity was provided to AFMA as evidenced by its response on 12 August 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 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 AFMA.
  - Provided consultation information to additional Commonwealth commercial fisheries as recommended by AFMA, referenced in Appendix F of this EP.
  - Made no further changes or inclusions to the EP as a result of consultation with AFMA because appropriate measures are already included in the EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable
- The measures and controls described in this EP address the potential impact from the proposed activity on the AFMA's functions, interests or activities.

4.1.3 Australian Hydrographic Office (AHO)

Summary of information provided and record of consultation for this EP:

- On 11 August 2025, Woodside emailed the AHO advising of the proposed activity (Record of Consultation, reference 6.1.12) and provided a Consultation Information Sheet, a vessel density map, GIS shape files, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'*.
- On 12 August 2025, the AHO emailed Woodside and (SI Report, reference 1.2.1):
  - **(1)** Acknowledged receipt of Woodside's consultation email. **(1)** No response was required. Woodside notes that the AHO has acknowledged receipt of its consultation email.
  - **(2)** Stated that Woodside's provided data would be registered, assessed, prioritised, and validated in preparation for the AHO to update its navigational charting products. **(2)** No response was required. Woodside notes that the AHO will use the provided data to update its navigational charting products.
  - **(3)** Informed that to align the AHO's navigational charting products with international and Australian standards, Woodside's provided data may undergo some generalisation or filtering. **(3)** No response was required. Woodside notes that the AHO may generalise or filter the provided data in line with the AHO's requirements to align its navigational charting products with international and Australian standards.
- On 13 August 2025, the AHO emailed Woodside and (SI Report, reference 1.2.2):
  - **(4)** Stated that the AHO had no concerns with any of the proposed activities.
  - **(5)** Stated that the AHO requires further updates only when the activity is due to begin and shared with Woodside a supporting fact sheet titled *Reporting Maritime Activities Affecting Safety of Navigation.*

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- On 13 August 2025, Woodside responded to the AHO via email and (SI Report, reference 1.2.3):
  - **(4)** Noted that the AHO had no concerns with the proposed activities.
  - **(5)** Noted that moving forward, the AHO only required activity notifications.
- On 7 October 2025, Woodside emailed the AFMA advising of an activity update regarding the wellhead cut location (Record of Consultation, reference 6.3.3) and provided an updated Consultation Information Sheet.
- On 7 October 2025, AHO emailed Woodside and (SI Report, reference 1.2.4):
  - **(4)** Stated that the AHO had no concerns with any of the proposed activities.
  - **(5)** Stated that the AHO requires further updates only when the activity is due to begin
- On 29 October 2025, Woodside responded to the AHO via email and (SI Report, reference 1.2.5):
  - **(4)** Noted that the AHO had no concerns with the proposed activities.
  - **(5)** Confirmed that moving forward, the AHO only required activity notifications.

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) The AHO acknowledged receipt of Woodside's consultation email.	**(1)** Woodside notes that the AHO has acknowledged receipt of its consultation email.	**(1)** Not required.	**(1)** Not required.
(2) The AHO informed that Woodside's provided data would be registered, assessed, prioritised, and validated in preparation for the AHO to update its navigational charting products.	**(2)** Woodside notes that the AHO will use the provided data to update its navigational charting products.	**(2)** Not required.	**(2)** Not required.
(3) The AHO informed that to align its navigational charting products with international and Australian standards, Woodside's provided data may undergo some generalisation or filtering.	**(3)** Woodside notes that the AHO may generalise or filter the provided data in line with the AHO's requirements to align its navigational charting products with international and Australian standards.	**(3)** Not required.	**(3)** Not required.
(4)	**(4)**	**(4)**	**(4)** Not required.

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The AHO stated that it had no concerns with any of the proposed activities	Woodside notes that the AHO has no concerns with the proposed activities.	Woodside noted that the AHO had no concerns with the proposed activity.	
(5) The AHO stated that it required further updates only when the activity is due to begin.	**(5)** Woodside notes that the AHO requires updates only when the activity is due to begin.	**(5)** Woodside noted that moving forward, the AHO only required activity notifications.	**(5)** Woodside will notify the AHO before activities are due to begin as referenced in PS 1.2 and in Section 7.10, table 7-5, of this EP.
While feedback has been received, there were no objections or claims.	Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24.	Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should further feedback be received, 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 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 the 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 the AHO sufficient information to allow the 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 August 2025. Woodside gave this information to the AHO on 11 August 2025, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the PAP, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'.*
  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).
- The updated Consultation Information Sheet for this EP has been publicly available on the Woodside website since October 2025 and sent to AHO on 7 October 2025.

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- On 12 and 13 August 2025, the AHO shared its feedback, claims or objections regarding this activity, indicating the information provided was sufficient to enable the AHO to make an informed assessment of the possible consequences of the activity on its functions, interests or activities.
- On 13 August 2025, Woodside responded to the AHO's feedback.

Reasonable Period

Woodside allowed the AHO a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to the 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 allowed an additional 15 days for consultation for the activity update sent 7 October 2025.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed 45 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed the AHO a reasonable period for consultation in preparation of the EP as evidenced by the AHO's responses on 12 and 13 August 2025.

Reasonable Opportunity

Woodside allowed the AHO reasonable opportunity for consultation in the preparation of the 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 also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- In October 2025, Woodside held, or hosted information stalls at, a number of community events and roadshows in regional areas including the Pilbara and Gascoyne to raise awareness of the EP and provide another opportunity for feedback. These events were promoted in local newspapers and on social media.
- Woodside considers a reasonable opportunity was provided to the AHO as evidenced by its responses on 12 and 13 August 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:

- The AHO provided feedback but no objections or claims. In line with the intended outcome of consultation as set out in Section 5.2 and Regulations 24 and 34(g), Woodside has:
  - Responded to feedback from the AHO.
  - Aside from including AHO notifications in the EP, made no changes or inclusions to the EP as a result of consultation with the AHO because appropriate measures are already included in the EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable
- The measures and controls described in this EP address the potential impact from the proposed activity on the AHO's functions, interests or activities.

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4.1.4 Australian Maritime Safety Authority (AMSA) – Marine Pollution

Summary of information provided and record of consultation for this EP:

- On 11 August 2025, Woodside emailed AMSA – Marine Pollution advising of the proposed activity (Record of Consultation, reference 6.1.15) and provided a Consultation Information Sheet and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'*.
- On 22 August 2025, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.4).
- On 7 October 2025, Woodside emailed the AMSA advising of an activity update regarding the wellhead cut location (Record of Consultation, reference 6.3.3) and provided an updated Consultation Information Sheet.
- On 14 October 2025, as no response had been received, Woodside proactively sent a follow-up email (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 about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8 of the EP).	Woodside has addressed oil pollution planning and response at Appendix H. No additional measures or controls are required.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with AMSA – Marine Pollution for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:

Sufficient Information

Woodside has given AMSA – Marine Pollution sufficient information to allow AMSA – Marine Pollution to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since August 2025. Woodside gave this information to AMSA – Marine Pollution on 11 August 2025, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the PAP, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'.*

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  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).
- The updated Consultation Information Sheet for this EP has been publicly available on the Woodside website since October 2025 and sent to AMSA on 7 October 2025. A reminder for feedback was sent on 14 October 2025.

Reasonable Period

Woodside allowed AMSA – Marine Pollution a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to AMSA – Marine Pollution advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside allowed an additional 15 days for consultation for the activity update sent 7 October 2025.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed AMSA – Marine Pollution 45 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed AMSA – Marine Pollution a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with AMSA – Marine Pollution is appropriate and adapted to the nature of interests of AMSA – Marine Pollution:

- Woodside published advertisements in 7 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- In October 2025, Woodside held, or hosted information stalls at, a number of community events and roadshows in regional areas including the Pilbara and Gascoyne to raise awareness of the EP and provide another opportunity for feedback. These events were promoted in local newspapers and on social media.
- In the absence of feedback, Woodside sent a follow-up consultation email on 22 August and 14 October 2025, reminding AMSA – Marine Pollution of the opportunity to provide feedback.

Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- No additional measures were considered as a result of consultation as AMSA – Marine Pollution did not provide feedback for this EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.
- The measures and controls described in this EP address the potential impact from the proposed activity on AMSA – Marine Pollution's functions, interests or activities.

4.1.5 Australian Maritime Safety Authority (AMSA) – Marine Safety

Summary of information provided and record of consultation for this EP:

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- On 11 August 2025, Woodside emailed AMSA – Marine Safety advising of the proposed activity (Record of Consultation, reference 6.1.13) and provided a Consultation Information Sheet, a vessel density map, GIS shape files, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 22 August 2025, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.40).
- On 7 October 2025, Woodside emailed AMSA advising of an activity update regarding the wellhead cut location (Record of Consultation, reference 6.3.3) and provided an updated Consultation Information Sheet.
- On 10 October 2025, AMSA – Marine Safety emailed Woodside (SI Report A, reference 1.7.1) and:
  - **(1)** Provided a vessel traffic chartlet noting that heavy vessel traffic may be present in the Julimar Operations Area (Operational Area) and requested to be notified 24-48 hours prior to the start of activity
  - **(2)** Noted that AHO will be contacted no less than four working weeks before operations commence, so it can create notices to mariners.
  - **(3)** Stated that MODU and support vessels are obliged to comply with International Rules for Preventing Collisions at Sea (COLREGs), in particular the appropriate use of lights and shapes, and noted Woodside should implement anti-collision measures.
  - **(4**) Provided direction on how to access shipping data and customised information via AMSA's spatial data gateway and portal.
- On 29 October 2025, Woodside emailed AMSA – Marine Safety (SI Report A, reference 1.7.2) and:
  - **(1)** Acknowledged the provided chart and that heavy traffic may be present in the Operational Area and the EMBA, however Woodside only plans to carry out work in the Operational Area and would notify AMSA's Response Centre (ARC) at least 24-48 hours prior to commencement of activities in the Operational Area.
  - **(2)** Confirmed it would provide notifications to AHO at least four weeks prior to commencement of vessel activities in the Operational Area.
  - **(3)** Confirmed AMSA's advice on COLREGs and mandated compliance aboard Woodside chartered vessels in line with the rules and regulations of the *Navigational Act 2012*, including navigational status is set correctly in the vessel's AIS. Noted while it wouldn't implement further anti-collision measures at this time, collision risk mitigation measures are evaluated across activities as required.
  - **(4)** Noted the availability of digital data sets and maps available through AMSA's spatial data gateway and portal as well as customised information and data through the 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) Requested notifications 24-48 prior to commencement of activities due to heavy traffic in the Operational Area.	**(1)** Woodside vessel density map indicated heavy commercial traffic in the port and near the Operational Area. Woodside will notify ARC (formerly JRCC) as requested by AMSA Nav Safety team.	**(1)** Woodside noted the information and confirmed vessels would notify ARC 24-48 hours before commencement of activities where vessels will be in the Operational Area.	**(1)** Woodside vessels will notify AMSA's Response Centre / ARC as referenced as PS 1.4 and Section 7.10 Table 7-5 of the EP.
(2)	**(2)**	**(2)**	**(2)**

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Requested AHO receive notifications at least four weeks before operations commence.	Woodside will notify AHO as requested by AMSA Nav Safety team to support the generation of Notice to Mariners.	Woodside will provide notifications to AHO at least four weeks before activities commence	Woodside will notify AHO as referenced as PS 1.3 of the EP and Section 7.10 Table 7-5 of the EP.
(3) Requested vessel compliance with COLREGs and anti-collision measures.	**(3)** Woodside mandates COLGREGs compliance aboard any Woodside chartered vessel and compliance with the *Navigational Act 2012.* Woodside does not plan to implement further anti-collision measures at this time.	**(3)** Woodside confirmed its chartered vessels are required to comply with COLREGs and *Navigational Act 2012.* While Woodside won't implement further anti-collision measures at this time, these are evaluated continuously and activated as required.	**(3)** The EP contains a number of controls that address AMSA's feedback on lighting and compliance with the international rule for preventing collisions at sea (see Section 6.9.2 of the EP)
(4) Provided direction on how to access shipping data and customised information.	**(4)** Woodside acknowledges shipping data is available from AMSA's spatial gateway and portal.	**(4)** Woodside confirmed it understands shipping data and customised data is available from AMSA's spatial gateway and portal.	**(4)** Not required.
Woodside has addressed feedback as noted above.	Woodside has assessed each item of feedback relevant to the EP.	Woodside engages in ongoing consultation throughout the implementation 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 7.2.5 of the EP).	No additional measures or controls are required.
Summary Report – Consultation Complete			
Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with AMSA – Marine Safety for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically: **Sufficient Information** Woodside has given AMSA – Marine Safety sufficient information to allow AMSA – Marine Safety to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:			

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- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since August 2025. Woodside gave this information to AMSA – Marine Safety on 11 August 2025, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the PAP, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'.*
  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).
- The updated Consultation Information Sheet for this EP has been publicly available on the Woodside website since October 2025 and sent to AMSA – Marine Safety on 7 October 2025.
- On 10 October 2025, AMSA – Marine Safety shared its feedback, claims or objections regarding this activity, indicating the information provided was sufficient to enable AMSA – Marine Safety to make an informed assessment of the possible consequences of the activity on its functions, interests or activities.
- On 20 October 2025, Woodside responded to the AMSA – Marine Safety feedback.

Reasonable Period

Woodside allowed AMSA – Marine Safety a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to AMSA – Marine Safety advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside allowed an additional 15 days for consultation for the activity update sent 7 October 2025.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed AMSA – Marine Safety 45 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed AMSA – Marine Safety a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with AMSA – Marine Safety is appropriate and adapted to the nature of interests of AMSA – Marine Safety:

- 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 also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- In October 2025, Woodside held, or hosted information stalls at, a number of community events and roadshows in regional areas including the Pilbara and Gascoyne to raise awareness of the EP and provide another opportunity for feedback. These events were promoted in local newspapers and on social media.
- Woodside considers a reasonable opportunity was provided to the AMSA – Marine Safety as evidenced by its response on 10 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 Woodside has:

- Responded to feedback from AMSA – Marine Safety.
- Aside from including notifications, made no changes or inclusions to the EP as a result of consultation with AMSA – Marine Safety 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.
- The measures and controls described in this EP address the potential impact from the proposed activity on AMSA – Marine Safety's, interests or activities.

4.1.6 Department of Agriculture, Fisheries and Forestry (DAFF) – Fisheries

Summary of information provided and record of consultation for this EP:

- On 11 August 2025, Woodside emailed DAFF – Fisheries advising of the proposed activity (Record of Consultation, reference 6.1.41) and provided a Consultation Information Sheet and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 22 August 2025, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.43).
- On 7 October 2025, Woodside emailed DAFF - Fisheries advising of an activity update regarding the wellhead cut location (Record of Consultation, reference 6.3.3) and provided an updated Consultation Information Sheet.
- On 14 October 2025, as no response had been received, Woodside proactively sent a follow-up email (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 about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8 of the EP).	Woodside has assessed the potential for interaction with Commonwealth managed commercial fisheries in Section 4.9.2 of the EP. No additional measures or controls are required.
Summary Report – Consultation Complete			
Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with DAFF – Fisheries for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:			

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Sufficient Information

Woodside has given DAFF – Fisheries sufficient information to allow DAFF – Fisheries to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since August 2025. Woodside gave this information to DAFF – Fisheries on 11 August 2025, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the PAP, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'.*
  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).
- The updated Consultation Information Sheet for this EP has been publicly available on the Woodside website since October 2025 and sent to DAFF – Fisheries on 7 October 2025. A reminder for feedback was sent on 14 October 2025.

Reasonable Period

Woodside allowed DAFF – Fisheries a reasonable period for consultation in the preparation of the 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 allowed an additional 15 days for consultation for the activity update sent 7 October 2025.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed DAFF – Fisheries 45 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed DAFF – Fisheries a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with DAFF – Fisheries is appropriate and adapted to the nature of interests of DAFF – Fisheries:

- Woodside published advertisements in 7 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- In October 2025, Woodside held, or hosted information stalls at, a number of community events and roadshows in regional areas including the Pilbara and Gascoyne to raise awareness of the EP and provide another opportunity for feedback. These events were promoted in local newspapers and on social media.
- In the absence of feedback, Woodside sent a follow-up consultation email on 22 August and 14 October 2025, reminding DAFF – Fisheries of the opportunity to provide feedback.

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Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- No additional measures were considered as a result of consultation as DAFF – Fisheries did not provide feedback for this EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.
- The measures and controls described in this EP address the potential impact from the proposed activity on DAFF – Fisheries' functions, interests or activities.

4.1.7 Department of Defence (DoD)

Summary of information provided and record of consultation for this EP:

- On 11 August 2025, Woodside emailed DoD advising of the proposed activity (Record of Consultation, reference 6.1.14) and provided a Consultation Information Sheet, a defence map, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 22 August 2025, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.39).
- On 7 October 2025, Woodside emailed DoD advising of an activity update regarding the wellhead cut location (Record of Consultation, reference 6.3.3) and provided an updated Consultation Information Sheet.
- On 14 October 2025, as no response had been received, Woodside proactively sent a follow-up email (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 about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8 of the EP).	Woodside will provide notifications to DoD as set out in Section 7.10, Table 7-5, of this EP. Woodside has recorded the Defence areas overlapping the Operational Area/s and/or EMBA in Section 4.9.7 of the EP. No additional measures or controls are required.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with DoD for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:

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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 August 2025. Woodside gave this information to DoD on 11 August 2025, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the PAP, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'.*
  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).
- The updated Consultation Information Sheet for this EP has been publicly available on the Woodside website since October 2025 and sent to the DoD on 7 October 2025. A reminder for feedback was sent on 14 October 2025.

Reasonable Period

Woodside allowed DoD a reasonable period for consultation in the preparation of the 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 allowed an additional 15 days for consultation for the activity update sent 7 October 2025.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed DoD 45 days for consultation.
- Consultation for this EP commenced 4 months ago.
- In this context, Woodside allowed DoD a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with DoD is appropriate and adapted to the nature of interests of DoD:

- Woodside published advertisements in 7 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- In October 2025, Woodside held, or hosted information stalls at, a number of community events and roadshows in regional areas including the Pilbara and Gascoyne to raise awareness of the EP and provide another opportunity for feedback. These events were promoted in local newspapers and on social media.
- In the absence of feedback, Woodside sent a follow-up consultation email on 22 August and 14 October 2025, reminding DoD of the opportunity to provide feedback.

Outcomes of Consultation

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Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- No additional measures were considered as a result of consultation as DoD did not provide feedback for this EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.
- The measures and controls described in this EP address the potential impact from the proposed activity on DoD's functions, interests or activities.

4.1.8 Department of Planning, Lands and Heritage (DPLH)

Summary of information provided and record of consultation for this EP:

- On 11 August 2025, Woodside emailed DPLH advising of the proposed activity (Record of Consultation, reference 6.1.52) and provided a Consultation Information Sheet, a list of State shipwrecks, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 11 August 2025, DPLH emailed Woodside (SI Report A, reference 1.5.1) and:
  - **(1)** Acknowledged receipt of Woodside's consultation email. **(1)** No response was required. Woodside notes that DPLH has acknowledged receipt of its consultation email.
- On 18 August 2025, DPLH emailed Woodside (SI Report A, reference 1.5.2) and:
  - **(2)** Noted that offshore survey and exploration drilling activities within WA-49-L are within Commonwealth waters.
  - **(3)** Noted that the EMBA for this EP partially intersects with State waters. **(3)** No response was required. Woodside has described the EMBA, including its location and regional context, in the development of this EP.
  - **(4)** Informed that DPLH had no comments.
  - **(5)** Noted that Woodside has provided consultation information to the Department of Biodiversity, Conservation and Attractions (DBCA) and the Western Australian Museum (WAM).
  - **(6)** Recommended that Woodside informs the Department of Climate Change, Energy, the Environment and Water (DCCEW) and the Department of Water and Environmental Regulations (DWER) of the environmental disturbances and impacts of the proposed activities.
- On 21 August 2025, Woodside replied via email (SI Report, reference 1.5.3) and:
  - **(2)** Clarified that this EP does not propose any survey or exploration drilling activities, and that the EP pertains to permanent P&A for four wellheads.
  - **(4)** Made note that DPLH had no comments.
  - **(5)** Confirmed it had provided consultation information to DBCA and WAM.
  - **(6)** Confirmed it had provided consultation information to DCCEW and that it would provide consultation information to DWER in line with DPLH's recommendation.
- On 7 October 2025, Woodside emailed DPLH advising of an activity update regarding the wellhead cut location (Record of Consultation, reference 6.3.3) and provided an updated Consultation Information Sheet.
- On 14 October 2025, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.4.1).
- **(7)** On 16 October 2025, DPLH emailed Woodside (SI Report A, reference 1.5.4) and advised they had no further comments on the activity update.

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• (7) On 28 October 2025, Woodside emailed DPLH (SI Report A, reference 1.5.5) and noted DPLH had no further comments.			
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) DPLH acknowledged receipt of Woodside's email.	**(1)** Woodside notes that DPLH has acknowledged receipt of its email.	**(1)** Not required.	**(1)** Not required.
(2) DPLH noted that offshore survey and exploration drilling activities within WA-49-L are within Commonwealth waters.	**(2)** This EP and its associated and distributed Consultation Information Sheet demonstrate that the wells described in this EP are located within WA-49-L in Commonwealth waters. Woodside does not propose any survey or exploration drilling activities for this EP, rather, the proposed activities are permanent P&A for four subsea wells.	**(2)** Woodside clarified that this EP does not propose any survey or exploration drilling activities, and that the EP pertains to permanent P&A for four wellheads.	**(2)** The location of activities for this EP is described in Section 3.3 of this EP, and the operational area in Section 3.4 of this EP. Proposed activities are described in Section 3 of this EP.
(3) DPLH noted that the EMBA for this EP partially intersects with State waters.	**(3)** This EP, and its associated and distributed Consultation Information Sheet, demonstrates that part of the EMBA overlaps with State waters.	**(3)** Not required.	**(3)** The EMBA for this EP is described in Section 4 of the EP and is illustrated in Figure 4-1. Regional context is noted in Section 4.2.
(4) DPLH informed that it had no comments.	**(4)** Woodside notes that DPLH had no comments.	**(4)** Woodside noted that DPLH had no comments.	**(4)** Not required.
(5) DPLH noted that Woodside has provided consultation information to DBCA and WAM.	**(5)** Woodside has assessed DBCA and WAM as relevant persons for this EP and has provided these organisations with consultation information.	**(5)** Woodside confirmed it had already provided consultation information to DBCA and WAM.	**(5)** Consultation activities for this EP are demonstrated and referenced in this Appendix F, Sections 4.2.2
(6) DPLH recommended that Woodside informs DCCEW and DWER of the	**(6)** Woodside has assessed DCCEW as a relevant person for this EP and has	**(6)** Woodside confirmed it had already provided consultation information to	**(6)**

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environmental disturbances and impacts of the proposed activities.	provided the organisation with consultation information. Woodside had not assessed DWER as a relevant person for this EP but has provided the organisation with consultation information in line with DPLH's recommendation.	DCCEW. Woodside confirmed that it would also provide consultation information to DWER in line with DPLH's recommendation.	Consultation activities for this EP are demonstrated and referenced in this Appendix F, Section 4.2.3 and 5.1.1.
(7) DPLH informed that it had no comments.	**(7)** Woodside notes that DPLH had no comments.	**(7)** Woodside noted that DPLH had no comments.	**(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 of the EP).	No additional measures or controls are required.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with DPLH for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:

Sufficient Information

Woodside has given DPLH sufficient information to allow DPLH to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since August 2025. Woodside gave this information to DPLH on 11 August 2025, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the PAP, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'.*

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  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).
- The updated Consultation Information Sheet for this EP has been publicly available on the Woodside website since October 2025 and sent to DPLH on 7 October 2025. A reminder for feedback was sent on 14 October 2025.
- On 18 August and 16 October and 2025, DPLH shared its feedback, claims or objections regarding this activity, indicating the information provided was sufficient to enable DPLH to make an informed assessment of the possible consequences of the activity on its functions, interests or activities.
- On 21 August and 28 October 2025, Woodside responded to DPLH's feedback.

Reasonable Period

Woodside allowed DPLH a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to DPLH advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside allowed an additional 15 days for consultation for the activity update sent 7 October 2025.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed DPLH 45 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed DPLH a reasonable period for consultation in preparation of the EP as evidenced by DPLH's responses on 18 August and 16 October 2025.

Reasonable Opportunity

Woodside allowed DPLH reasonable opportunity for consultation in the preparation of the 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 also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- In October 2025, Woodside held, or hosted information stalls at, a number of community events and roadshows in regional areas including the Pilbara and Gascoyne to raise awareness of the EP and provide another opportunity for feedback. These events were promoted in local newspapers and on social media.
- Woodside considers a reasonable opportunity was provided to DPLH as evidenced by its response on 18 August and 16 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:

- DPLH 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 DPLH.
  - Provided consultation information to DWER as recommended by DPLH, referenced in Appendix F of this EP.
  - Made no further changes or inclusions to the EP as a result of consultation with DPLH 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.

4.1.9 Department of Primary Industries and Regional Development (DPIRD)

Summary of information provided and record of consultation for this EP:

- On 11 August 2025, Woodside emailed DPIRD advising of the proposed activity (Record of Consultation, reference 6.1.44) and provided a Consultation Information Sheet, a defence map, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 22 August 2025, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.27).
- On 8 September 2025, DPIRD emailed Woodside (SI Report A, reference 1.6.1) and:
  - **(1)** Identified as a relevant person and noted that commercial, customary, recreational, and charter fishing interests may be impacted.
  - **(2)** Recommended consultation with WA fishing and Recreational Marine sector bodies and Traditional Owners to address cumulative impacts and minimise disruption to fishing and nursery areas and DBCA for matters under its jurisdiction.
  - **(3)** Requested oil spill planning include baseline data, incident reporting, and strategies to protect spawning habitats of key fish species.
  - **(4)** Advised that biosecurity measures be included in the EP to manage marine pests and diseases, with reporting of detections.
  - **(5)** Recommended consideration of threatened and migratory species under the EPBC Act.
  - **(6)** Requested that all potential impacts to fisheries be addressed in the Environment Plan and reserved the right to request further consultation if needed.
  - **(7)** Recommended future consultation requests include a fisheries summary with impact assessments, mapping, mitigation, and stakeholder engagement details.
- On 3 October Woodside emailed DPIRD (SI Report A, reference 1.6.2) and:
  - **(1)** Recognised DPIRD as a relevant person and noted potential impacts to commercial, customary, recreational, and charter fishing interests.
  - **(2)** Confirmed consultation with WAFIC, Recfishwest, ACWA, Marine Tourism WA, Traditional Owners, and individual licence holders based through WAFIC.. (While not noted in response, DBCA was consulted as a relevant stakeholder for this EP).
  - **(3)** Stated oil spill planning included early notification to DTMI and DPIRD, stakeholder engagement, baseline data, and fisheries impact monitoring under the APPEA framework.
  - **(4)** Confirmed biosecurity measures were in place, including vessel risk assessments and 24-hour reporting of marine pests and diseases.
  - **(5)** Stated EP development considered EPBC-listed threatened and migratory species using the PMST tool and relevant recovery plans.
  - **(6)** Confirmed fisheries impacts were assessed and mitigated to ALARP and acknowledged DPIRD's right to request further consultation if needed.
  - **(7)** Proposed regular meetings with DPIRD and committed to including fisheries summaries, mapping, mitigation, and stakeholder feedback in future EPs.

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- **(8)** On 7 October 2025, DPIRD emailed Woodside (SI Report A, reference 1.6.3) and advised of a change in contact person and internal positions at DPIRD.
- **(8)** On 3 October Woodside emailed DPIRD (SI Report A, reference 1.6.4) and confirmed that future correspondence will be directed to the new contact.

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) Identified as a relevant person and stated fisheries groups that should be considered	(1) Woodside undertakes a spatial analysis of fishing interests within the Operational Area for State EPs. Woodside has assessed the potential spatial and temporal extent for interaction with each fishery by reviewing DPIRD Fishcube data within the Operational Area for the EPs.	(1) Woodside advised of its methodology to assess potentially impacted fisheries.	(1) Woodside has assessed the potential for interaction with State managed fisheries in Section 4.9.2 of the EP.
(2) Consultation with WA fishing bodies and Traditional owner groups is recommended	(2) Woodside undertakes a relevancy assessment to identify all interested persons of the activity. WA fishing bodies and Traditional Owners were consulted on this EP.	(2) Woodside confirmed that WA fishing bodies and Traditional Owners were consulted as part of the EP.	(2) Section 2.2 of Appendix F defines the relevancy assessment for this EP and which stakeholders have been consulted. Section 4 of Appendix F sets out their feedback.
(3) Oil spill planning should include baseline data and incident reporting to protect key fish species	(3) Woodside's First Strike Plan includes early notification to DTMI and DPIRD, stakeholder engagement, baseline data, and fisheries impact monitoring under the APPEA framework.	(3) Woodside confirmed the elements that were included in oil spill planning.	(3) Appendix H details the First Strike Plan for this EP
(4) Stated Biosecurity measures to be addressed in the EP	(4) Woodside has biosecurity measures in place and works with vessel contractors for the adherence to *Australian Biosecurity Act 2015.* It also recognises	(4) Confirmed biosecurity measures were in place, including vessel risk assessments and 24-hour reporting of marine pests and diseases	(4) Section 7.2.2 of the EP defines the biosecurity measures in place for this EP including implementation of Woodside's Invasive Marine Species Management

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	DPIRD requires notification within 24 hours in the event of suspected or confirmed presence of any marine pest or disease detected within Western Australian waters.		Plan and IMS risk assessment process. Section 7.3.1 of the Invasive Marine Species Management Plan stipulates the requirement to notify DPIRD in the event of suspected or confirmed presence of any marine pest or disease detected within Western Australian waters.
(5) Recommended threatened and/or migratory species should be included in EP.	(5) Woodside recognises inclusion of threatened and/or migratory species including those associated with the Matters of National Environmental Significance (MNES) in the EP and use of the PMST tool to identify species that could face interaction with the activities.	(5) Woodside confirmed it had considered threatened and/or migratory species, including those associated with MNES in EP as well as that it uses the PMST tool to develop all EPs and determine the EPBC species where interaction could take place during activities.	(5) Refer to Appendix D of the EP for Environment Protection and Biodiversity Conservation Act Protect Matter Search Tools Results.
(6) Expected that all impacts to fisheries, fishing resources and marine environment are covered in EP with defined mitigation strategies.	(6) Woodside understands the importance of identifying strategies to mitigate or minimise impacts to ALARP for fisheries, fish resources and the marine environment and includes this in the EP.	(6) Woodside acknowledged that it includes strategies to mitigate and minimise potential impacts to ALARP to fisheries, fishing resources and the marine environment within the EP.	(6) Woodside has assessed the potential for interaction with commercial fisheries in Section 4.9.2 of the EP.
(7) Requested a fisheries summary be considered for future EP consultation.	(7) Woodside understands DPIRD is interested in the development of a fisheries summary for future EP consultation and requested a meeting with DPIRD to discuss further.	(7) Woodside referred to the proposal of regular meetings with DPRID and the provision of a fisheries summary.	(7) Not required.
(8) Change to contacts details.	(8) Woodside notes the change in contact person.	(8) Woodside confirmed future correspondence will be directed to the new contact.	(8) Not required

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Woodside has addressed feedback as noted above.	Woodside has assessed each item of feedback relevant to the EP.	Woodside engages in ongoing consultation throughout the implementation 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 7.2.5 of the EP).	Woodside vessels will notify DPIRD as referenced as PS 1.2 and Section 7.10 Table 7-5 of the EP. No additional measures or controls are required.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with 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 August 2025. Woodside gave this information to DPIRD on 11 August 2025, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the PAP, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'*.
  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).
- The updated Consultation Information Sheet for this EP has been publicly available on the Woodside website since October 2025 and sent to DPIRD on 7 October 2025. A reminder for feedback was sent on 14 October 2025.
- On 8 September 2025, DPIRD shared its feedback, claims or objections regarding this activity, indicating the information provided was sufficient to enable DPIRD to make an informed assessment of the possible consequences of the activity on its functions, interests or activities.
- On 3 October2025, Woodside responded to DPIRD's feedback.

Reasonable Period

Woodside allowed DPIRD a reasonable period for consultation in the preparation of the EP because:

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- A consultation period was stated in the initial correspondence to 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 allowed an additional 15 days for consultation for the activity update sent 7 October 2025.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed DPIRD 45 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed DPIRD a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with DPIRD is appropriate and adapted to the nature of interests of DPIRD:

- Woodside published advertisements in 7 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- In October 2025, Woodside held, or hosted information stalls at, a number of community events and roadshows in regional areas including the Pilbara and Gascoyne to raise awareness of the EP and provide another opportunity for feedback. These events were promoted in local newspapers and on social media.
- Woodside considers a reasonable opportunity was provided to DPIRD as evidenced by its responses on 8 September 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:

- DPIRD provided feedback but no objections or claims. In line with the intended outcome of consultation as set out in Section 5.2 and Regulations 24 and 34(g), Woodside has:
  - Responded to feedback from DPIRD.
  - Included a biosecurity notification in the EP as DPIRD requested to be notified within 24 hours of a biosecurity incident and provided contact details.
- 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.

4.1.10 Department of Transport and Major Infrastructure (DTMI)

Summary of information provided and record of consultation for this EP:

- On 11 August 2025, Woodside emailed DTMI advising of the proposed activity (Record of Consultation, reference 6.1.43) and provided a Consultation Information Sheet and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 22 August 2025, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.26).

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- On 22 September 2025, Woodside sent DTMI the Julimar-Brunello Plug and Abandonment Oil Pollution First Strike Plan (Sensitive Information Report, reference 1.8.1).
- On 7 October 2025, Woodside emailed the DTMI advising of an activity update regarding the wellhead cut location (Record of Consultation, reference 6.3.3) and provided an updated Consultation Information Sheet.
- On 14 October 2025, as no response had been received, Woodside proactively sent a follow-up email (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 about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8 of the EP).	Woodside will consult DTMI if there is a spill impacting State waters from the proposed activity, as referenced in the Oil Pollution First Strike Plan (Appendix H).

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 August 2025. Woodside gave this information to DTMI on 11 August 2025, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the PAP, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'.*
  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).
- The updated Consultation Information Sheet for this EP has been publicly available on the Woodside website since October 2025 and sent to DTMI on 7 October 2025. A reminder for feedback was sent on 14 October 2025.

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Reasonable Period

Woodside allowed DTMI a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to DTMI advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside allowed an additional 15 days for consultation for the activity update sent 7 October 2025.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed DTMI 45 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed DTMI a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with DTMI is appropriate and adapted to the nature of interests of DTMI:

- Woodside published advertisements in 7 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- In October 2025, Woodside held, or hosted information stalls at, a number of community events and roadshows in regional areas including the Pilbara and Gascoyne to raise awareness of the EP and provide another opportunity for feedback. These events were promoted in local newspapers and on social media.
- In the absence of feedback, Woodside sent a follow-up consultation email on 22 August and 14 October 2025, reminding DTMI 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 DTMI did not provide feedback for this EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.
- The measures and controls described in this EP address the potential impact from the proposed activity on DTMI's functions, interests or activities.

4.1.11 Pilbara Ports

Summary of information provided and record of consultation for this EP:

- On 11 August 2025, Woodside emailed Pilbara Ports advising of the proposed activity (Record of Consultation, reference 6.1.16) and provided a Consultation Information Sheet and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 22 August 2025, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.5).
- On 7 October 2025, Woodside emailed the Pilbara Ports advising of an activity update regarding the wellhead cut location (Record of Consultation, reference 6.3.3) and provided an updated Consultation Information Sheet.

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- On 14 October 2025, as no response had been received, Woodside proactively sent a follow-up email (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 about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8 of the EP).	

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 August 2025. Woodside gave this information to Pilbara Ports on 11 August 2025, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the PAP, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'.*
  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).
- The updated Consultation Information Sheet for this EP has been publicly available on the Woodside website since October 2025 and sent to Pilbara Ports on 7 October 2025. A reminder for feedback was sent on 14 October 2025.

Reasonable Period

Woodside allowed Pilbara Ports a reasonable period for consultation in the preparation of the EP because:

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- A consultation period was stated in the initial correspondence to 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 allowed an additional 15 days for consultation for the activity update sent 7 October 2025.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed Pilbara Ports 45 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed Pilbara Ports a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with Pilbara Ports is appropriate and adapted to the nature of interests of Pilbara Ports:

- Woodside published advertisements in 7 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- In October 2025, Woodside held, or hosted information stalls at, a number of community events and roadshows in regional areas including the Pilbara and Gascoyne to raise awareness of the EP and provide another opportunity for feedback. These events were promoted in local newspapers and on social media.
- In the absence of feedback, Woodside sent a follow-up consultation email on 22 August and 14 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 considered as a result of consultation 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's functions, interests or activities.

4.1.12 Western Australian Museum (WAM)

Summary of information provided and record of consultation for this EP:

- On 11 August 2025, Woodside emailed WAM advising of the proposed activity (Record of Consultation, reference 6.1.54) and provided a Consultation Information Sheet, a list of State shipwrecks, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 22 August 2025, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.33).
- On 7 October 2025, Woodside emailed the WAM advising of an activity update regarding the wellhead cut location (Record of Consultation, reference 6.3.3) and provided an updated Consultation Information Sheet.
- On 14 October 2025, as no response had been received, Woodside proactively sent a follow-up email (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 about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8 of the EP).	As part of ongoing consultation engagements as set out in Table 7-5 of the EP, Woodside will notify WAM of any unexpected finds of potential Underwater Cultural Heritage under the Unexpected Finds Procedure (as described in Section 7.2.3 of the EP). No additional measures or controls are required.
Summary Report – Consultation Complete			

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Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with 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 August 2025. Woodside gave this information to WAM on 11 August 2025, 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 WAM, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'.*
  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).
- The updated Consultation Information Sheet for this EP has been publicly available on the Woodside website since October 2025 and sent to WAM on 7 October 2025. A reminder for feedback was sent on 14 October 2025.

Reasonable Period

Woodside allowed WAM a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to WAM advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside allowed an additional 15 days for consultation for the activity update sent 7 October 2025.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed WAM 45 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed WAM a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with WAM is appropriate and adapted to the nature of interests of WAM:

- Woodside published advertisements in 7 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.

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- In October 2025, Woodside held, or hosted information stalls at, a number of community events and roadshows in regional areas including the Pilbara and Gascoyne to raise awareness of the EP and provide another opportunity for feedback. These events were promoted in local newspapers and on social media.
- In the absence of feedback, Woodside sent a follow-up consultation email on 22 August and 14 October 2025, reminding WAM of the opportunity to provide feedback.

Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- No additional measures were considered as a result of consultation as WAM did not provide feedback for this EP.
- 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 11 August 2025, Woodside emailed DAFF – Biosecurity advising of the proposed activity (Record of Consultation, reference 6.1.44) and provided a Consultation Information Sheet and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 22 August 2025, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.43).
- On 7 October 2025, Woodside emailed DAFF – Biosecurity advising of an activity update regarding the wellhead cut location (Record of Consultation, reference 6.3.3) and provided an updated Consultation Information Sheet.
- On 14 October 2025, as no response had been received, Woodside proactively sent a follow-up email (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

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No feedback, objections or claims about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8 of the EP).	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 and establishment of invasive marine species in accordance with Woodside's Invasive Marine Species Management Plan (see Section 7.2.2 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 DAFF – Biosecurity for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:

Sufficient Information

Woodside has given DTMI sufficient information to allow DAFF – Biosecurity to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since August 2025. Woodside gave this information to DAFF – Biosecurity on 11 August 2025, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the PAP, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'.*
  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).
- The updated Consultation Information Sheet for this EP has been publicly available on the Woodside website since October 2025 and sent to DAFF – Biosecurity on 7 October 2025. A reminder for feedback was sent on 14 October 2025.

Reasonable Period

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Woodside allowed DAFF – Biosecurity a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to DAFF – Biosecurity advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside allowed an additional 15 days for consultation for the activity update sent 7 October 2025.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed DAFF – Biosecurity 45 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed DAFF – Biosecurity a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with DAFF – Biosecurity is appropriate and adapted to the nature of interests of DAFF – Biosecurity:

- Woodside published advertisements in 7 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- In October 2025, Woodside held, or hosted information stalls at, a number of community events and roadshows in regional areas including the Pilbara and Gascoyne to raise awareness of the EP and provide another opportunity for feedback. These events were promoted in local newspapers and on social media.
- In the absence of feedback, Woodside sent a follow-up consultation email on 22 August and 14 October 2025, reminding DAFF – Biosecurity of the opportunity to provide feedback.

Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- No additional measures were considered as a result of consultation as DAFF – Biosecurity did not provide feedback for this EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.
- The measures and controls described in this EP address the potential impact from the proposed activity on DAFF – Biosecurity 's functions, interests or activities.

4.2.2 Department of Biodiversity, Conservation and Attractions (DBCA)

Summary of information provided and record of consultation for this EP:

- On 11 August 2025, Woodside emailed DBCA advising of the proposed activity (Record of Consultation, reference 6.1.60) and provided a Consultation Information Sheet and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 22 August 2025, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.38).

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- On 8 September 2025, DBCA emailed Woodside ((SI Report A, reference 1.4.1) and:
  - **(1)** Noted previous comments to Julimar Operations EP about proximity to marine parks emphasised the importance of baseline monitoring and oil spill response preparedness
  - **(2)** Requested additional information on Woodside's monitoring or oil spill response plan.
  - **(3)** Advised that additional approvals may be required under the CALM and BC Acts should activities require access to reserves.
  - **(4)** Offered availability to discuss or provide clarification and confirmed that future notifications go to a general DBCA email. **(4)** No response needed
- On 18 September 2025, Woodside emailed DBCA (SI Report A, reference 1.4.2) and:
  - **(1)** acknowledged DBCA's previous comments and reaffirmed that nearby ecologically significant areas would not be impacted by the proposed activities.
  - **(2)** Advised that the Oil Pollution First Strike Plan would be published on the NOPSEMA website and included notification protocols, spill response strategies, and links to operational and tactical response plans.
  - **(3)** Acknowledged that additional approvals under the CALM and BC Acts may be required and committed to early consultation.
- On 7 October 2025, Woodside emailed the DBCA advising of an activity update regarding the wellhead cut location (Record of Consultation, reference 6.3.3) and provided an updated Consultation Information Sheet.
- On 10 October 2025, DBCA emailed Woodside (SI Report A, reference 1.4.3) and:
  - **(5)** Stated it had no further comments beyond its advice provided on 8 September 2025 under the CALM Act and BC Act.
- On 14 October 2025, Woodside emailed the DBCA (SI Report A, reference 1.4.4) and:
  - **(5)** Noted DBCA had no further comments.

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) Proximity to marine parks and conservation significant species requires baseline monitoring and oil spill response preparedness within the EMBA.	(1) The location of the planned activities is not within an ecologically significant area and hence baseline monitoring is not required.	(1) Woodside confirmed that nearby ecologically significant areas are not expected to be impacted and provided details on the Oil Pollution First Strike Plan.	(1) The location of activities for this EP is described in Section 3.3 of this EP, and the operational area in Section 3.4 of this EP.

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(2) Oil spill response preparedness within the EMBA is of importance and additional information on Woodside's monitoring or oil spill response preparedness is requested	(2) Oil spill preparedness within the EMBA is defined in Woodside's Oil Pollution First Strike Plan	(2) Woodside advised the Oil Pollution First Strike Plan would be available online upon submission and provided more details on its contents.	(2) Not required
(3) advised that additional approvals may be required under the CALM and BC Acts.	(3) The current planned activities are not located in managed reserves.	(3) Woodside acknowledged the requirement for additional approvals and committed to early consultation if required.	(3) Not required
(4) Confirmed the contact details for future notifications	(4) Noted the contact details for notifications remain the same	(4) No response required	(4) Not required
(5) No further comments on the activity update	(5) Woodside notes DBCA had no further comments on the activity update.	(5) Woodside noted DBCA had no further comments on the activity update.	(5) 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 of the EP).	Woodside has assessed the potential for interaction with Commonwealth managed fisheries in Section 4.9.2 of the EP. No additional measures or controls are required.
Summary Report – Consultation Complete			
Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with DBCA for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:			

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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 August 2025. Woodside gave this information to DBCA on 11 August 2025, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the PAP, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'.*
  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).
- The updated Consultation Information Sheet for this EP has been publicly available on the Woodside website since October 2025 and sent to DBCA on 7 October 2025. A reminder for feedback was sent on 14 October 2025.
- On 8 September 2025, 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.
- On 18 September 2025, Woodside responded to DBCA's feedback.

Reasonable Period

Woodside allowed DBCA a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to DBCA advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside allowed an additional 15 days for consultation for the activity update sent 7 October 2025.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed DBCA 45 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed DBCA a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with DBCA is appropriate and adapted to the nature of interests of DBCA:

- Woodside published advertisements in 7 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.

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- In October 2025, Woodside held, or hosted information stalls at, a number of community events and roadshows in regional areas including the Pilbara and Gascoyne to raise awareness of the EP and provide another opportunity for feedback. These events were promoted in local newspapers and on social media.
- Woodside considers a reasonable opportunity was provided to DBCA as evidenced by its responses on 8 September 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:

- DBCA provided feedback but no objections or claims. In line with the intended outcome of consultation as set out in Section 5.2 and Regulations 24 and 34(g), Woodside has:
  - Responded to feedback from DBCA.
  - Made no changes or inclusions to the EP as a result of consultation with DBCA because appropriate measures are already included in the EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable
- The measures and controls described in this EP address the potential impact from the proposed activity on DBCA's functions, interests or activities.

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 11 August 2025, Woodside emailed DCCEEW advising of the proposed activity (Record of Consultation, reference 6.1.51) and provided a Consultation Information Sheet, a list of State shipwrecks, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 22 August 2025, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.34).
- On 7 October 2025, Woodside emailed the DCCEEW advising of an activity update regarding the wellhead cut location (Record of Consultation, reference 6.3.3) and provided an updated Consultation Information Sheet.
- On 14 October 2025, as no response had been received, Woodside proactively sent a follow-up email (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 about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8 of 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 DBCA for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically: **Sufficient Information** Woodside has given 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 August 2025. Woodside gave this information to DCCEEW on 11 August 2025, marking the commencement of consultation on this EP. The Consultation Information Sheet included: – The purpose of consultation and set out what was being sought through consultation. – A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the PAP, and proposed mitigation and management measures. – A timeframe for consultation and the provision of feedback. – A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'.* – Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations). • The updated Consultation Information Sheet for this EP has been publicly available on the Woodside website since October 2025 and sent to DCCEEW on 7 October 2025. A reminder for feedback was sent on 14 October 2025. **Reasonable Period** Woodside allowed DCCEEW a reasonable period for consultation in the preparation of the EP because: • A consultation period was stated in the initial correspondence to DCCEEW advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission. • Woodside allowed an additional 15 days for consultation for the activity update sent 7 October 2025. • Woodside's methodology allows a 30-day consultation period and Woodside allowed DCCEEW 45 days for consultation. • Consultation for this EP commenced 3 months ago. • In this context, Woodside allowed DCCEEW a reasonable period for consultation in preparation of the EP. **Reasonable Opportunity** A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with DCCEEW is appropriate and adapted to the nature of interests of DCCEEW:

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- 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 also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- In October 2025, Woodside held, or hosted information stalls at, a number of community events and roadshows in regional areas including the Pilbara and Gascoyne to raise awareness of the EP and provide another opportunity for feedback. These events were promoted in local newspapers and on social media.
- In the absence of feedback, Woodside sent a follow-up consultation email on 22 August and 14 October 2025, reminding DCCEEW of the opportunity to provide feedback.

Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- No additional measures were considered as a result of consultation as DCCEEW did not provide feedback for this EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.
- The measures and controls described in this EP address the potential impact from the proposed activity on DCCEEW's functions, interests or activities.

4.2.4 Director of National Parks (DNP)

Summary of information provided and record of consultation for this EP:

- On 12 August 2025, Woodside emailed Director of National Parks (DNP) advising of the proposed activity (Record of Consultation, reference 6.1.42) and provided a Consultation Information Sheet and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 22 August 2025, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.25).
- On 7 October 2025, Woodside emailed the DNP advising of an activity update regarding the wellhead cut location (Record of Consultation, reference 6.3.3) and provided an updated Consultation Information Sheet.
- On 9 October 2025, the DNP sent an email to Woodside (SI Report A, reference 1.3.1) and:
  - **(1)** Confirmed no overlap with Australian Marine Parks and no authorisation requirements due to proximity to Montebello Marine Park.
  - **(2)** Acknowledged Woodside's use of the guidance notes and stated activities aligned with the North-west Marine Parks Network Management Plan 2018.
  - **(3)** Provided background on the North-West Marine Parks Network Management Plan with values for Montebello Marine Park, including ancient coastline and BIAs and noted availability of spatial information for marine parks via its information system.
  - **(4)** Advised that updates were only required if activities changed or in case of emergency.

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- **(5**) Advised of emergency response protocol expectations in the event of an incident
- **(6)** Stated that support vessel activity in the area should be considered part of the operational area and covered in the EP to ensure risk assessment and mitigation.
- **(7)** Requested notification of pollution incidents affecting marine parks, including key details and response plans, and noted DNP may request situation reports.

- **(8)** On 9 October 2025, the DNP sent an email to Woodside (SI Report A, reference 1.3.2) to confirm receipt of the activity update and advise DNP had no further comments other than those provided.
- On 29 October 2025, Woodside sent an email to DNP (SI Report A, reference 1.3.3) and:
  - Noted DNPs confirmation that:
    - **(1)** The proposed activity did not overlap with any Australian Marine Parks (AMP), and therefore no authorisation was required from DNP.
    - **(2)** Woodside had considered the Petroleum Activities and Australian Marine Parks guidance note during EP preparation
  - **(3)** Noted the management plan provides values for Dampier Marine Park and spatial information on the marine park values is available on the Australian Marine Spatial Information System.
  - **(4)** Confirmed that DNP did not require further updates unless the activity changed or in case of an emergency.
  - **(5)** Confirmed the emergency response plan includes notifications to advise DNP of an incident within 24 hours to the Compliance Duty Officer on the provided phone number.
  - **(6)** Clarified that project vessels would comply with the EP when operating within the operational area (Operational Area), and that vessels transiting to or from the Operational Area would comply with applicable maritime laws and regulations. Also noted that vessels would not enter the marine park unless required in an emergency.
  - **(7)** Confirmed Woodside's commitment to notify the 24-hour Marine Compliance Duty Officer in the event of an emergency and understanding that DNP may request daily or weekly Situation Reports in the event of a pollution incident.
  - **(8)** Confirmed that DNP had no further comments on the activity update provided by Woodside on 6 October 2025.

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) There is no overlap with Australian Marine Parks hence no authorisation required	**(1)** Woodside notes DNP's confirmation that no authorisation is required	**(1)** Woodside noted DNP's confirmation that no authorisation is required.	**(1)** Not required.

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(2) Woodside has considered the guidance note and management plan in the preparation of the EP	**(2)** Woodside notes DNP's acknowledgement that the guide and management plan had been considered in preparing the EP	**(2)** Woodside noted DNP's acknowledgement that the guidance note had been considered during EP preparation.	**(2)** Not required.
(3) Advised where to locate values for Dampier Marine Park and spatial information on the marine park values	**(3)** Woodside understands the management plan provides values for Dampier Marine Park and spatial information on the marine park values is available on the Australian Marine Spatial Information System.	**(3)** Woodside acknowledged the management plan contained values for the Marine Park and spatial information was available on the website.	**(3)** Not required)
(4) Further updates are only required if the planned activity changes or in case of an emergency	**(4)** Woodside's First Strike Plan includes early notification to DNP to advise of an incident within 24 hours to the details provided.	**(4)** Woodside confirmed that they would not provide any further updates unless the activity changed or in case of an emergency.	**(4)** Appendix H details the First Strike Plan for this EP
(5) Requested confirmation on the emergency response plan in the event of an oil spill incident.	**(5)** Woodside's First Strike Plan includes early notification to DNP to advise of an incident within 24 hours to the details provided.	**(5)** Confirmed the emergency response plan includes notifications to advise DNP of an incident within 24 hours.	**(5)** Appendix H details the First Strike Plan for this EP

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(6) The operational area includes all vessel activities and should be considered in the EP.	**(6)** Vessels outside the Operational Area comply with relevant maritime regulations, laws and safe vessel requirements.	**(6)** Woodside clarified that project vessels would comply with the EP when working within the defined Operational Area and maritime regulations when transiting.	**(6)** Not required.
(7) Notification of marine pollution incidents and the details are to be provided to DNP, in additional to weekly situational reports if needed	**(7)** Woodside notes DNP's request and has included DNP in the First Strike Plan.	**(7)** Woodside confirmed that the Maritime Duty Officer will be notified in emergencies and that DNP may request weekly reports.	**(7)** Appendix H details the First Strike Plan for this EP
(8) No further comments on the activity update provided	**(8)** Woodside notes DNP has no further comments of the activity update.	**(8)** Woodside noted that DNP had no further comments of the activity update.	**(8)** 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 of the EP).	No additional controls or measures are required.
Summary Report – Consultation Complete			

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Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with DNP for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:

Sufficient Information

Woodside has given DNP sufficient information to allow DNP to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since August 2025. Woodside gave this information to DNP on 12 August 2025, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the PAP, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'.*
  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).
- The updated Consultation Information Sheet for this EP has been publicly available on the Woodside website since October 2025 and sent to DNP on 7 October 2025. A reminder for feedback was sent on 14 October 2025.

Reasonable Period

Woodside allowed DNP a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to DNP advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside allowed an additional 15 days for consultation for the activity update sent 7 October 2025.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed DNP 45 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed DNP a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with DNP is appropriate and adapted to the nature of interests of DNP:

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- 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 also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- In October 2025, Woodside held, or hosted information stalls at, a number of community events and roadshows in regional areas including the Pilbara and Gascoyne to raise awareness of the EP and provide another opportunity for feedback. These events were promoted in local newspapers and on social media.
- In the absence of feedback, Woodside sent a follow-up consultation email on 22 August and 14 October 2025, reminding DNP 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:

- DNP provided feedback but no objections or claims. In line with the intended outcome of consultation as set out in Section 5.2 and Regulations 24 and 34(g), Woodside has:
  - Responded to feedback from DNP.
  - Made no changes or inclusions to the EP as a result of consultation with WAFIC because appropriate measures are already included in the EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.
- The measures and controls described in this EP address the potential impact from the proposed activity on DNP's functions, interests or activities.

4.3 Commonwealth and WA State Government departments or agencies – industry

4.3.1 Department of Mines, Petroleum and Exploration (DMPE)

Summary of information provided and record of consultation for this EP:

- On 11 August 2025, Woodside emailed DMPE advising of the proposed activity (Record of Consultation, reference 6.1.18) and provided a Consultation Information Sheet and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 22 August 2025, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.7).
- On 7 October 2025, Woodside emailed DMPE advising of an activity update regarding the wellhead cut location (Record of Consultation, reference 6.3.3) and provided an updated Consultation Information Sheet.
- On 14 October 2025, as no response had been received, Woodside proactively sent a follow-up email (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 about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8 of the EP).	

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 August 2025. Woodside gave this information to DMPE on 11 August 2025, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the PAP, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'.*
  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).
- The updated Consultation Information Sheet for this EP has been publicly available on the Woodside website since October 2025 and sent to DMPE on 7 October 2025. A reminder for feedback was sent on 14 October 2025.

Reasonable Period

Woodside allowed DMPE a reasonable period for consultation in the preparation of the EP because:

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- A consultation period was stated in the initial correspondence to 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 allowed an additional 15 days for consultation for the activity update sent 7 October 2025.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed DMPE 45 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed DMPE a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with DMPE is appropriate and adapted to the nature of interests of DMPE:

- Woodside published advertisements in 7 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- In October 2025, Woodside held, or hosted information stalls at, a number of community events and roadshows in regional areas including the Pilbara and Gascoyne to raise awareness of the EP and provide another opportunity for feedback. These events were promoted in local newspapers and on social media.
- In the absence of feedback, Woodside sent a follow-up consultation email on 22 August and 14 October 2025, reminding DMPE of the opportunity to provide feedback.

Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- No additional measures were considered as a result of consultation as DMPE did not provide feedback for this EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.
- The measures and controls described in this EP address the potential impact from the proposed activity on DMPE's functions, interests or activities.

4.3.2 Department of Industry, Science and Resources (DISR)

Summary of information provided and record of consultation for this EP:

- On 11 August 2025, Woodside emailed DISR advising of the proposed activity (Record of Consultation, reference 6.1.19) and provided a Consultation Information Sheet and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 22 August 2025, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.8).
- On 7 October 2025, Woodside emailed the DISR advising of an activity update regarding the wellhead cut location (Record of Consultation, reference 6.3.3) and provided an updated Consultation Information Sheet.
- On 14 October 2025, as no response had been received, Woodside proactively sent a follow-up email (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 about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8 of the EP).	No additional measures or controls are required.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with DISR for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:

Sufficient Information

Woodside has given DISR sufficient information to allow DISR to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since August 2025. Woodside gave this information to DISR on 11 August 2025, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the PAP, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'.*
  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).
- The updated Consultation Information Sheet for this EP has been publicly available on the Woodside website since October 2025 and sent to DISR on 7 October 2025. A reminder for feedback was sent on 14 October 2025.

Reasonable Period

Woodside allowed DISR a reasonable period for consultation in the preparation of the EP because:

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- A consultation period was stated in the initial correspondence to 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 allowed an additional 15 days for consultation for the activity update sent 7 October 2025.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed DISR 45 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed DISR a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with DISR is appropriate and adapted to the nature of interests of DISR:

- Woodside published advertisements in 7 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- In October 2025, Woodside held, or hosted information stalls at, a number of community events and roadshows in regional areas including the Pilbara and Gascoyne to raise awareness of the EP and provide another opportunity for feedback. These events were promoted in local newspapers and on social media.
- In the absence of feedback, Woodside sent a follow-up consultation email on 22 August and 14 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 considered as a result of consultation as DISR did not provide feedback for this EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.
- The measures and controls described in this EP address the potential impact from the proposed activity on DISR's functions, interests or activities.

4.4 Commonwealth commercial fisheries and peak representative bodies

4.4.1 Commonwealth Fisheries Association (CFA)

Summary of information provided and record of consultation for this EP:

- On 11 August 2025, Woodside emailed the CFA advising of the proposed activity (Record of Consultation, reference 6.1.38) and provided a Consultation Information Sheet and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 22 August 2025, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.41).
- On 7 October 2025, Woodside emailed the CFA advising of an activity update regarding the wellhead cut location (Record of Consultation, reference 6.3.3) and provided an updated Consultation Information Sheet.

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- On 14 October 2025, as no response had been received, Woodside proactively sent a follow-up email (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 about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8 of the EP).	No additional measures or controls are required.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with CFA for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:

Sufficient Information

Woodside has given CFA sufficient information to allow CFA to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since August 2025. Woodside gave this information to CFA on 11 August 2025, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the PAP, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'.*
  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).
- The updated Consultation Information Sheet for this EP has been publicly available on the Woodside website since October 2025 and sent to CFA on 7 October 2025. A reminder for feedback was sent on 14 October 2025.

Reasonable Period

Woodside allowed CFA a reasonable period for consultation in the preparation of the EP because:

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- A consultation period was stated in the initial correspondence to 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 allowed an additional 15 days for consultation for the activity update sent 7 October 2025.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed CFA 45 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed CFA a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with CFA is appropriate and adapted to the nature of interests of CFA:

- Woodside published advertisements in 7 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- In October 2025, Woodside held, or hosted information stalls at, a number of community events and roadshows in regional areas including the Pilbara and Exmouth to raise awareness of the EP and provide another opportunity for feedback. These events were promoted in local newspapers and on social media.
- In the absence of feedback, Woodside sent a follow-up consultation email on 22 August and 14 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 considered as a result of consultation as CFA did not provide feedback for this EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.
- The measures and controls described in this EP address the potential impact from the proposed activity on CFA's functions, interests or activities.

4.4.2 North West Slope Trawl Fishery

Summary of information provided and record of consultation for this EP:

- On 11 August 2025, Woodside emailed the North West Slope Trawl Fishery advising of the proposed activity (Record of Consultation, reference 6.1.39) and provided a Consultation Information Sheet and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 22 August 2025, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.42).
- On 7 October 2025, Woodside emailed the North West Slope Trawl Fishery advising of an activity update regarding the wellhead cut location (Record of Consultation, reference 6.3.3) and provided an updated Consultation Information Sheet.
- On 14 October 2025, as no response had been received, Woodside proactively sent a follow-up email (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 about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8 of the EP).	No additional measures or controls are required.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with the North West Slope Trawl Fishery 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 sufficient information to allow North West Slope Trawl Fishery 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 August 2025. Woodside gave this information to North West Slope Trawl Fishery on 11 August 2025, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the PAP, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'*.
  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).
- The updated Consultation Information Sheet for this EP has been publicly available on the Woodside website since October 2025 and sent to North West Slope Trawl Fishery on 7 October 2025. A reminder for feedback was sent on 14 October 2025.

Reasonable Period

Woodside allowed North West Slope Trawl Fishery a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to North West Slope Trawl Fishery 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 allowed an additional 15 days for consultation for the activity update sent 7 October 2025.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed North West Slope Trawl Fishery 45 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed North West Slope Trawl Fishery a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with North West Slope Trawl Fishery is appropriate and adapted to the nature of interests of North West Slope Trawl Fishery:

- 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 also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- In October 2025, Woodside held, or hosted information stalls at, a number of community events and roadshows in regional areas including the Pilbara and Exmouth to raise awareness of the EP and provide another opportunity for feedback. These events were promoted in local newspapers and on social media.
- In the absence of feedback, Woodside sent a follow-up consultation email on 22 August and 14 October 2025, reminding North West Slope Trawl Fishery of the opportunity to provide feedback.

Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- No additional measures were considered as a result of consultation as North West Slope Trawl Fishery 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's functions, interests or activities.

4.4.3 Western Deepwater Trawl Fishery

Summary of information provided and record of consultation for this EP:

- On 11 August 2025, Woodside emailed the Western Deepwater Trawl Fishery advising of the proposed activity (Record of Consultation, reference 6.1.39) and provided a Consultation Information Sheet and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'*.
- On 22 August 2025, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.42).
- On 7 October 2025, Woodside emailed the Western Deepwater Trawl Fishery advising of an activity update regarding the wellhead cut location (Record of Consultation, reference 6.3.3) and provided an updated Consultation Information Sheet.
- On 14 October 2025, as no response had been received, Woodside proactively sent a follow-up email (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 about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8 of the EP).	No additional measures or controls are required.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with the Western Deepwater Trawl Fishery for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:

Sufficient Information

Woodside has given Western Deepwater Trawl Fishery sufficient information to allow Western Deepwater Trawl Fishery 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 August 2025. Woodside gave this information to Western Deepwater Trawl Fishery on 11 August 2025, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the PAP, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).
- The updated Consultation Information Sheet for this EP has been publicly available on the Woodside website since October 2025 and sent to Western Deepwater Trawl Fishery on 7 October 2025. A reminder for feedback was sent on 14 October 2025.

Reasonable Period

Woodside allowed Western Deepwater Trawl Fishery a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to Western Deepwater Trawl Fishery 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 allowed an additional 15 days for consultation for the activity update sent 7 October 2025.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed Western Deepwater Trawl Fishery 45 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed Western Deepwater Trawl Fishery a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with Western Deepwater Trawl Fishery is appropriate and adapted to the nature of interests of Western Deepwater Trawl Fishery:

- 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 also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- In October 2025, Woodside held, or hosted information stalls at, a number of community events and roadshows in regional areas including the Pilbara and Exmouth to raise awareness of the EP and provide another opportunity for feedback. These events were promoted in local newspapers and on social media.
- In the absence of feedback, Woodside sent a follow-up consultation email on 22 August and 14 October 2025, reminding Western Deepwater Trawl Fishery of the opportunity to provide feedback.

Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- No additional measures were considered as a result of consultation as Western Deepwater Trawl Fishery did not provide feedback for this EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.
- The measures and controls described in this EP address the potential impact from the proposed activity on Western Deepwater Trawl Fishery's functions, interests or activities.

4.5 State commercial fisheries and peak representative bodies

4.5.1 Aquaculture Council of Western Australia (ACWA)

Summary of information provided and record of consultation for this EP:

- On 11 August 2025, Woodside emailed the ACWA advising of the proposed activity (Record of Consultation, reference 6.1.59) and provided a Consultation Information Sheet and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 22 August 2025, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.37).

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- On 7 October 2025, Woodside emailed the ACWA advising of an activity update regarding the wellhead cut location (Record of Consultation, reference 6.3.3) and provided an updated Consultation Information Sheet.
- On 14 October 2025, as no response had been received, Woodside proactively sent a follow-up email (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 about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8 of the EP).	No additional measures or controls are required.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with ACWA for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:

Sufficient Information

Woodside has given ACWA sufficient information to allow ACWA to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since August 2025. Woodside gave this information to ACWA on 11 August 2025, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the PAP, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'*.
  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).
- The updated Consultation Information Sheet for this EP has been publicly available on the Woodside website since October 2025 and sent to ACWA on 7 October 2025. A reminder for feedback was sent on 14 October 2025.

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Reasonable Period

Woodside allowed ACWA a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to ACWA advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside allowed an additional 15 days for consultation for the activity update sent 7 October 2025.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed ACWA 45 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed ACWA a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with ACWA is appropriate and adapted to the nature of interests of ACWA:

- Woodside published advertisements in 7 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- In October 2025, Woodside held, or hosted information stalls at, a number of community events and roadshows in regional areas including the Pilbara and Exmouth to raise awareness of the EP and provide another opportunity for feedback. These events were promoted in local newspapers and on social media.
- In the absence of feedback, Woodside sent a follow-up consultation email on 22 August and 14 October 2025, reminding ACWA of the opportunity to provide feedback.

Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- No additional measures were considered as a result of consultation as ACWA did not provide feedback for this EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.
- The measures and controls described in this EP address the potential impact from the proposed activity on ACWA's functions, interests or activities.

4.5.2 Western Australian Fishing Industry Council (WAFIC)

Summary of information provided and record of consultation for this EP:

- On 11 August 2025, Woodside emailed WAFIC advising of the proposed activity (Record of Consultation, reference 6.1.57) and provided a Consultation Information Sheet and a customised email (SI Report A, reference 2.1.5).

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- **(1)** On 11 August 2025, WAFIC emailed (SI Report A, reference 2.1.1) and: state fishery licence holders to share the consultation materials on behalf of Woodside and emailed Woodside to confirm that the information had been sent to state fishery licence holders, including Mackerel Managed Fishery, Marine Aquarium Managed Fishery, Onslow Prawn Managed Fishery, Pilbara Line Fishery and Pilbara Trap Fishery.
- (1) 13 August 2025, Woodside emailed (SI Report A, reference 2.1.2) WAFIC to thank it for sending the consultation materials to state fishery licence holders on behalf of Woodside.
- On 8 September 2025, WAFIC wrote to Woodside (SI Report A, reference 2.1.3) and:
  - **(2)** Confirmed it did not receive any feedback from the industry regarding the EP. (2) No response required
  - **(3)** Requested information on mitigation measures that ensure no impacts to sensitive benthic habitats from anchoring
  - requested information and raised concerns on the timing of the recovery of the wellheads if not immediately following P&A activities such as:
    - **(4)** Timing and circumstances it will be left on the seabed.
    - **(5)** How fishers will be notified of the location and recovery status.
    - **(6)** If they will be marked on navigation charts until removed.
    - **(7)** Request to be included on notifications when the seabed has been cleared.
    - **(8)** What post-removal monitoring will occur.
  - Requested information on remediation of Non-Water Based Mud (NWBM) in the annulus such as:
    - **(9)** What exactly is meant by *NWBM in the annulus*?
    - **(10)** Which method is planned for *Balnaves Deep-1* — removal or isolation (or when will this be decided)?
    - **(11)** What risks are associated with each method (both short-term and long-term)?
    - **(12)** Will long-term monitoring occur to ensure no leakage or environmental impact?
  - **(13)** Sought clarification on their understanding of Woodside's management of unplanned spills or incidence.
- On 3 October, Woodside replied by email (SI Report A, reference 2.1.4) and:
  - Thanked WAFIC for their feedback and:
    - (3) Confirmed support vessels for this EP will not anchor during the activity. Instead, they will use dynamic positioning near the MODU, eliminating any risk of seabed habitat disturbance from anchoring. Woodside committed that anchoring will not occur on identified shoals or coral lumps within the Operational Area.
    - Advised:

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    - **(4)** well infrastructure will be removed mainly using a MODU during P&A activities around Q3 2026. If MODU recovery isn't possible, wellheads will be removed by 2029 under the approved decommissioning plan.
    - **(5)** Woodside committed to include notifying regulators and stakeholders, maintaining a public activity map and ensuring vessel AIS use.
    - **(6)** AHO will be notified so it can be marked on navigational charts
    - **(7)** Woodside will notify WAFIC at least 10 days prior to commencement and upon completion of activities.
    - **(8)** Woodside will undertake ROV as-left surveys following completion of the P&A activity.
  - Provided further information on the NWBM such as:
    - **(9)** Confirmed that NWBM fluid remained in the Balnaves Deep-1 well and stated that removal was the preferred method. Advised that isolation via cement plug would be used if removal was not technically feasible, with the final method to be determined during the activity.
    - **(10)** Stated that removal was preferred to minimise discharge risk. Noted that short-term risks included technical complications that could result in minor residual release, which would be negligible and expected to dilute rapidly.
    - **(11)** Advised that recovered NWBM would be stored securely on the MODU and transported onshore for treatment and disposal at licensed facilities.
    - **(12)** Confirmed that long-term monitoring was not planned, as complete removal of NWBM was intended and no future environmental impact was anticipated.
  - **(13)** Confirmed WAFIC's understanding of Woodside's management of unplanned spills to include an Oil Pollution First Strike Plan, Operational and Scientific Monitoring Program (OSMP) and maintaining a list of WA Commercial Fisheries.
- **(14)** On 6 October 2025, WAIFC emailed Woodside (SI Report A, reference 2.1.5) and advised WAFIC had no further comments on the Julimar-Brunello Plug & Abandonment Environment Plan **(14)** No response required.
- On 9 October 2025, Woodside emailed WAFIC (SI Report A, reference 2.1.6) with a request to send the Activity Update to relevant fisheries.
- **(1)** On 10 October 2025, WAFIC emailed (SI Report A, reference 2.1.7) state fishery licence holders to share the consultation materials on behalf of Woodside, including Mackerel Managed Fishery, Marine Aquarium Managed Fishery, Onslow Prawn Managed Fishery, Pilbara Line Fishery and Pilbara Trap Fishery.
- **(1)** On 10 October 2025, WAFIC emailed (SI Report A, reference 2.1.8) Woodside to confirm the activity update had been sent to relevant fisheries.
- **(1)** On 14 October 2025, Woodside replied by email (SI Report A, reference 2.1.9) and thanked WAFIC for distributing the materials.
- **(2)** On 20 October 2025, WAFIC emailed Woodside (SI Report A, reference 2.1.10) and confirmed no feedback was received from fishers regarding the activity update.
- **(2)** On 28 October 2025, Woodside replied by email (SI Report A, reference 2.1.9) and noted no feedback from fishers on the activity update.

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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) Confirmed consultation information was sent to fisheries/licence holders.	**(1)** Woodside noted that consultation information had been distributed to relevant fishery licence holders via WAFIC.	**(1)** Woodside thanked WAFIC for distributing consultation information to relevant fishery licence holders.	**(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) Noted concerns with potential seabed disturbance from anchoring	**(3)** Woodside recognises WAFIC's concerns with anchoring near sensitive benthic areas and have provisions in the planned activities to avoid anchoring in the operational area.	**(3)** Woodside confirmed anchoring will not take place in the operational area.	**(3)** Section 3.6 of the EP states that support vessels will not anchor within the Operational Area.
(4) Sought information about the timing and circumstances the wellheads will remain on the seabed	**(4)** Woodside notes WAFIC's concerns that the wellheads will remain on the seabed for an indeterminate period of time.	**(4)** Woodside confirmed that the retrieval of the wellheads is currently expected to be completed by the end of 2029 if not by the MODU in Q3 2026.	**(4)** Section 3.5 of the EP defines the timing for the activity. Section 3.12.2 described wellhead removal and recovery methods.
(5) Sought information on how fishers will be informed of the location and status of recovery	**(5)** Woodside understands the importance of informing stakeholders of the presence of the wellheads and the progress of their recovery.	**(5)** Woodside confirmed regulators and stakeholders will be notified, maintaining a public activity map and ensuring vessel AIS use.	**(5)** Woodside will provide notifications as set out in PS 1.2 of EP and Section 7.10, Table 7-5 of this EP. Woodside will maintain a public activity map as defined in C 1.5 of the EP. Vessels will maintain AIS as per C 1.6.

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(6) Sought confirmation if they will be marked on navigation charts until removed	**(6)** Woodside notes WAFIC request for the wellheads to be marked on navigational charts	**(6)** Woodside confirmed AHO will be notified so the wellheads can be marked on navigational charts	**(6)** Woodside will provide notifications as set out in PS 1.2 of EP and Section 7.10, table 7-5 of this EP.
(7) Request to be included on notifications when the seabed has been cleared	**(7)** Woodside agrees that WAFIC should receive notifications to be notified when the wellheads have been cleared.	**(7)** Woodside will notify WAFIC at least 10 days prior to commencement and upon completion of activities.	**(7)** Woodside will provide notifications as set out in PS 1.2 of EP and Section 7.10, table 7-5 of this EP.
(8) Sought information on what post-removal monitoring will occur	**(8)** Woodside notes WAFIC's interest in post removal monitoring	**(8)** Woodside confirmed ROV as-left surveys will be conducted following completion of the P&A activity.	**(8)** Section 3.14 of the EP sets out the as-left surveys
(9) Requests clarification on Non-Water Based Mud in the annulus?	**(9)** Woodside notes WAFIC's request for information on the NWBM in the annulus	**(9)** Woodside provided details including the content, location and method of removal of the NWBM in the annulus.	**(9)** Section 3.10.2 of the EP sets out the description of the NWBM in the annulus.
(10) Requested clarification on which method is planned for *Balnaves Deep-1*	**(10)** Woodside notes WAFIC's request for information on the method and how it will be selected	**(10)** Woodside clarified the circumstances in which removal or isolation will be selected and how they are executed.	**(10)** Section 3.12.3 of the EP sets out the methods in which the NWBM will be remediated.
(11) Requested clarification on risks are associated with each method	**(11)** Woodside notes WAFIC's request for information on the associated risks	**(11)** Woodside clarified the short- and long-term risks associated with the different methods	**(11)** Section 6.8.8 of the EP sets out the associated risks for each method.

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(12) Requested clarification if long-term monitoring will be undertaken	**(12)** Woodside notes WAFIC's concern of long-term leakage risk and request for clarification on long-term monitoring	**(12)** Woodside clarified that long term monitoring would not be required given the methods that will be applied	**(12)** Not required.
(13) Requested clarification of Woodside's management of unplanned spills or incidence	**(13)** Woodside recognises WAFIC's concerns related to an unplanned event and notes that its Oil Pollution First Strike Plan and involvement with the industry OSMP addresses the concerns.	**(13)** Woodside confirmed its Oil Pollution First Strike Plan and OSMP.	**(13)** Refer to Julimar-Brunello P&A First Strike Plan, Appendix G of the EP.
(14) Confirmed no additional comments at this time.	**(14)** Woodside understands WAFIC has no further comments on the EP at this time.	**(14)** No response required	**(14)** 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 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:			

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Sufficient Information

Woodside has given WAFIC sufficient information to allow WAFIC to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since August 2025. Woodside gave this information to WAFIC on 11 August 2025, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the PAP, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'.*
  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).

Reasonable Period

Woodside allowed WAFIC a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to WAFIC advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside allowed an additional 15 days for consultation for the activity update sent 7 October 2025.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed WAFIC 45 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed WAFIC a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with WAFIC is appropriate and adapted to the nature of interests of WAFIC:

- Woodside published advertisements in 7 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- In October 2025, Woodside held, or hosted information stalls at, a number of community events and roadshows in regional areas including the Pilbara and Gascoyne to raise awareness of the EP and provide another opportunity for feedback. These events were promoted in local newspapers and on social media.
- Woodside considers a reasonable opportunity was provided to WAFIC as evidenced by its multiple responses.

Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

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- WAFIC provided feedback but no objections or claims. In line with the intended outcome of consultation as set out in Section 5.2 and Regulations 24 and 34(g), Woodside has:
  - Responded to feedback from WAFIC.
  - Made no changes or inclusions to the EP as a result of consultation with WAFIC because appropriate measures are already included in the EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.
- The measures and controls described in this EP address the potential impact from the proposed activity on WAFIC's functions, interests or activities.

4.5.3 Mackerel Managed Fishery (Area 2), Marine Aquarium Managed Fishery, Onslow Prawn Managed Fishery, Pilbara Line Fishery, Pilbara Trap Fishery

Summary of information provided and record of consultation for this EP:

- On 11 August 2025, Woodside via WAFIC emailed the State Fishery License Holders advising of the proposed activity (Record of Consultation, reference 6.1.58) and provided a Consultation Information Sheet and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- Based on WAFIC's consultation guidance, no follow-up email was required for the State Fishery license holders.
- On 7 October 2025, Woodside via WAFIC emailed the State Fishery License Holders advising of an activity update regarding the wellhead cut location (Record of Consultation, reference 6.3.3) and provided an updated Consultation Information Sheet.
- Based on WAFIC's consultation guidance, no follow-up email for the activity update was required for the State Fishery license holders.

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 of the EP).	No additional measures or controls are required.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with the State Fishery License Holders for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:

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Sufficient Information

Woodside has given State Fishery License Holders sufficient information to allow State Fishery License Holders to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since August 2025. Woodside gave this information to State Fishery License Holders on 11 August 2025, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the PAP, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'*.
  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).
- The updated Consultation Information Sheet for this EP has been publicly available on the Woodside website since October 2025 and sent to State Fishery License Holders on 7 October 2025.

Reasonable Period

Woodside allowed State Fishery License Holders a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to State Fishery License 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 allowed an additional 15 days for consultation for the activity update sent 7 October 2025.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed State Fishery License Holders45 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed State Fishery License Holders a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with State Fishery License Holders is appropriate and adapted to the nature of interests of Mackerel Managed Fishery:

- 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 also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- In October 2025, Woodside held, or hosted information stalls at, a number of community events and roadshows in regional areas including the Pilbara and Exmouth to raise awareness of the EP and provide another opportunity for feedback. These events were promoted in local newspapers and on social media.

Outcomes of Consultation

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Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- No additional measures were considered as a result of consultation as State Fishery License 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 State Fishery License Holder's functions, interests or activities.

4.6 Recreational marine users and peak representative bodies

4.6.1 Marine Tourism WA

Summary of information provided and record of consultation for this EP:

- On 11 August 2025, Woodside emailed the Marine Tourism WA advising of the proposed activity (Record of Consultation, reference 6.1.47) and provided a Consultation Information Sheet and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 22 August 2025, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.28).
- On 7 October 2025, Woodside emailed the Marine Tourism WA advising of an activity update regarding the wellhead cut location (Record of Consultation, reference 6.3.3) and provided an updated Consultation Information Sheet.
- On 14 October 2025, as no response had been received, Woodside proactively sent a follow-up email (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 about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8 of the EP).	No additional measures or controls are required.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with Marine Tourism WA for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:

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Sufficient Information

Woodside has given Marine Tourism WA sufficient information to allow Marine Tourism WA to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since August 2025. Woodside gave this information to Marine Tourism WA on 11 August 2025, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the PAP, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'*.
  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).
- The updated Consultation Information Sheet for this EP has been publicly available on the Woodside website since October 2025 and sent to Marine Tourism WA on 7 October 2025. A reminder for feedback was sent on 14 October 2025.

Reasonable Period

Woodside allowed Marine Tourism WA a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to Marine Tourism WA advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside allowed an additional 15 days for consultation for the activity update sent 7 October 2025.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed Marine Tourism WA 45 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed Marine Tourism WA a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with Marine Tourism WA is appropriate and adapted to the nature of interests of Marine Tourism WA:

- Woodside published advertisements in 7 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- In October 2025, Woodside held, or hosted information stalls at, a number of community events and roadshows in regional areas including the Pilbara and Exmouth to raise awareness of the EP and provide another opportunity for feedback. These events were promoted in local newspapers and on social media.
- In the absence of feedback, Woodside sent a follow-up consultation email on 22 August and 14 October 2025, reminding Marine Tourism WA of the opportunity to provide feedback.

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Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- No additional measures were considered as a result of consultation as 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 Gascoyne, Pilbara Kimberley, South Coast, West Coast Recreational Marine Users

Summary of information provided and record of consultation for this EP:

- On 11 August 2025, Woodside emailed or sent a letter to the Recreational Marine Users advising of the proposed activity (Record of Consultation, reference 6.1.45/46) and provided a Consultation Information Sheet and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 22/28 August 2025, as no response had been received, Woodside proactively sent a follow-up email or letter (Record of Consultation, reference 6.2.29/30).
- On 6 October 2025, Woodside emailed or sent a letter to the Recreational Marine Users advising of an activity update regarding the wellhead cut location (Record of Consultation, reference 6.3.3/6.3.5) and provided an updated Consultation Information Sheet.
- On 14 October 2025, as no response had been received, Woodside proactively sent a follow-up email or letter (Record of Consultation, reference 6.4.1/6.4.2).

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 about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8 of the EP).	No additional measures or controls are required.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with 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 Recreational Marine Users sufficient information to allow 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 August 2025. Woodside gave this information to Recreational Marine Users on 11 August 2025, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the PAP, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'*.
  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).
- The updated Consultation Information Sheet for this EP has been publicly available on the Woodside website since October 2025 and sent to Recreational Marine Users on 7 October 2025. A reminder for feedback was sent on 14 October 2025.

Reasonable Period

Woodside allowed Recreational Marine Users a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to 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 allowed an additional 15 days for consultation for the activity update sent 7 October 2025.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed Recreational Marine Users 45 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed Recreational Marine Users a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with Recreational Marine Users is appropriate and adapted to the nature of interests of Recreational Marine Users:

- 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 also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- In October 2025, Woodside held, or hosted information stalls at, a number of community events and roadshows in regional areas including the Pilbara and Exmouth to raise awareness of the EP and provide another opportunity for feedback. These events were promoted in local newspapers and on social media.
- In the absence of feedback, Woodside sent a follow-up consultation email on 22 August and 14 October 2025, reminding Recreational Marine Users of the opportunity to provide feedback.

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Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- No additional measures were considered as a result of consultation as 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 Recreational Marine Users's functions, interests or activities.

4.6.3 Recfishwest

Summary of information provided and record of consultation for this EP:

- On 11 August 2025, Woodside emailed Recfishwest advising of the proposed activity (Record of Consultation, reference 6.1.48) and provided a Consultation Information Sheet, a vessel density map, GIS shape files, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 22 August 2025, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.31).
- **(1)** On 8 September 2025, Recfishwest emailed Woodside (SI Report A, reference 2.2.1) and requested to be kept informed of the activity due to the proximity to the Montobello Islands
- **(1)** On 18 September 2025, Woodside emailed Recfishwest (SI Report A, reference 2.2.2) and confirmed it will notify Recfishwest prior to commencement of activities
- On 7 October 2025, Woodside emailed Recfishwest advising of an activity update regarding the wellhead cut location (Record of Consultation, reference 6.3.3) and provided an updated Consultation Information Sheet.
- **(2)** On 17 October 2025, Recfishwest emailed Woodside (SI Report A, reference 2.2.3) and advised it had no further comments on the activity update.
- **(2)** On 29 October 2025, Woodside emailed Recfishwest (SI Report A, reference 2.2.4) and confirmed Recfishwest's understanding of the activities and noted there were no further comments.

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) Request to be kept informed of activities	(1) Woodside notes Recfishwest request to be informed of activities	(1) Woodside confirmed Recfishwest will be notified prior to commencement of activities	(1) Woodside will provide notifications as set out in PS 1.2 of EP and Section 7.10, table 7-5 of this EP.
(2) No further comments on the planned activity	(2) Woodside notes Recfishwest has no further comments	(2) Woodside acknowledged Recfishwest had no further comments.	(2) Not required.

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While feedback has been received, there were no objections or claims.	Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24.	Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should further feedback be received, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8 of the EP).	No additional controls or measures are required.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with 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 August 2025. Woodside gave this information to Recfishwest on 11 August 2025, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the PAP, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'.*
  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).

Reasonable Period

Woodside allowed Recfishwest a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to Recfishwest advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside allowed an additional 15 days for consultation for the activity update sent 7 October 2025.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed Recfishwest 45 days for consultation.
- Consultation for this EP commenced 3 months ago.

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- In this context, Woodside allowed Recfishwest a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with Recfishwest is appropriate and adapted to the nature of interests of Recfishwest:

- Woodside published advertisements in 7 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- In October 2025, Woodside held, or hosted information stalls at, a number of community events and roadshows in regional areas including the Pilbara and Gascoyne to raise awareness of the EP and provide another opportunity for feedback. These events were promoted in local newspapers and on social media.
- In the absence of feedback on initial consultation, Woodside sent a follow-up consultation email on 22 August 2025, reminding Recfishwest of the opportunity to provide feedback.

Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- No additional measures were considered as a result of consultation as Recfishwest 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 Recfishwest's functions, interests or activities.

4.6.4 WA Game Fishing Association

Summary of information provided and record of consultation for this EP:

- On 11 August 2025, Woodside emailed the WA Game Fishing Association advising of the proposed activity (Record of Consultation, reference 6.1.49) and provided a Consultation Information Sheet and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 22 August 2025, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.32).
- On 7 October 2025, Woodside emailed the WA Game Fishing Association advising of an activity update regarding the wellhead cut location (Record of Consultation, reference 6.3.3) and provided an updated Consultation Information Sheet.
- On 14 October 2025, as no response had been received, Woodside proactively sent a follow-up email (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 about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the	No additional measures or controls are required.

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		EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8 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 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 August 2025. Woodside gave this information to WA Game Fishing Association on 11 August 2025, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the PAP, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'*.
  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).
- The updated Consultation Information Sheet for this EP has been publicly available on the Woodside website since October 2025 and sent to WA Game Fishing Association on 7 October 2025. A reminder for feedback was sent on 14 October 2025.

Reasonable Period

Woodside allowed WA Game Fishing Association a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to WA Game Fishing Association advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside allowed an additional 15 days for consultation for the activity update sent 7 October 2025.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed WA Game Fishing Association 45 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed WA Game Fishing Association a reasonable period for consultation in preparation of the EP.

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Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with WA Game Fishing Association is appropriate and adapted to the nature of interests of WA Game Fishing Association:

- Woodside published advertisements in 7 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- In October 2025, Woodside held, or hosted information stalls at, a number of community events and roadshows in regional areas including the Pilbara and Exmouth to raise awareness of the EP and provide another opportunity for feedback. These events were promoted in local newspapers and on social media.
- In the absence of feedback, Woodside sent a follow-up consultation email on 22 August and 14 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 considered as a result of consultation as WA Game Fishing Association did not provide feedback for this EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.
- The measures and controls described in this EP address the potential impact from the proposed activity on WA Game Fishing Association's functions, interests or activities.

4.7 Titleholders and operators

4.7.1 Titleholders (Beagle No. 1, Carbon CQ, Chevron Australia, InCapture, INPEX Alpha, JERA Gorgon (part of Chevron), JX Nippon O&G Exploration (Australia), KATO Energy, KUFPEC, Kyushu Electric Wheatstone, Melbana Exploration, MidOcean Gorgon (part of Chevron, replaces Tokyo Gas Gorgon), Mobil Australia Resources Company, OMV Australia, Osaka Gas Gorgon (part of Chevron), Pelsart Resources NL, PE Wheatstone, Santos NA Energy Holdings / Shell Australia, SK Earthon Australia, Skye Resources, Tanami Energy, Western Gas)

Summary of information provided and record of consultation for this EP:

- On 11 August 2025, Woodside emailed Titleholders advising of the proposed activity (Record of Consultation, reference 6.1.8) and provided a Consultation Information Sheet and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 22 August 2025, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.3).
- On 7 October 2025, Woodside emailed Titleholders advising of an activity update regarding the wellhead cut location (Record of Consultation, reference 6.3.3) and provided an updated Consultation Information Sheet.

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- On 14 October 2025, as no response had been received, Woodside proactively sent a follow-up email (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 about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8 of the EP).	No additional measures or controls are required.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with 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 August 2025. Woodside gave this information to Titleholders on 11 August 2025, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the PAP, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'.*
  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).
- The updated Consultation Information Sheet for this EP has been publicly available on the Woodside website since October 2025 and sent to Titleholders on 7 October 2025. A reminder for feedback was sent on 14 October 2025.

Reasonable Period

Woodside allowed Titleholders a reasonable period for consultation in the preparation of the EP because:

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- A consultation period was stated in the initial correspondence to 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 allowed an additional 15 days for consultation for the activity update sent 7 October 2025.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed Titleholders 45 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed Titleholders a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with Titleholders is appropriate and adapted to the nature of interests of CFA:

- 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 also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- In October 2025, Woodside held, or hosted information stalls at, a number of community events and roadshows in regional areas including the Pilbara and Exmouth to raise awareness of the EP and provide another opportunity for feedback. These events were promoted in local newspapers and on social media.
- In the absence of feedback, Woodside sent a follow-up consultation email on 22 August and 14 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 considered as a result of consultation as Titleholders did not provide feedback for this EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.
- The measures and controls described in this EP address the potential impact from the proposed activity on Titleholders functions, interests or activities.

4.7.2 Chevron Australia

Summary of information provided and record of consultation for this EP:

- On 11 August 2025, Woodside emailed Chevron Australia advising of the proposed activity (Record of Consultation, reference 6.1.56) and provided a Consultation Information Sheet and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 22 August 2025, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.36)
- On 7 September 2025, Chevron Australia sent an email to Woodside (SI Report A, reference 3.1.1) and:

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- **(1)** Advised that the proposed Julimar-Brunello P&A EP would involve MODU operations near Chevron's subsea infrastructure, including the Wheatstone trunkline, and requested alignment and agreement on mooring patterns and timing prior to commencement, particularly for activities near operated assets.
- **(2)** Stated that MODU and vessel activity would increase the risk of subsea disturbance and requested compliance with Chevron's SOP MOPDU mooring and marine standards.
- **(3)** Noted that the EP timing (16 March to 27 December) overlapped with Chevron's Offshore Campaign 2A/2B, commissioning, and start-up activities, and raised concern that a major containment loss could require Chevron to halt operations and relocate vessels to avoid contamination.
- **(4)** Highlighted a minor but present risk of vessel collision with Chevron's vessels or the FCS, and stated that this risk was expected to be managed through standard shipping protocols.
- **(5)** Advised that Woodside's activities could interfere with noise measurements during Chevron's start-up phase due to elevated background noise.

- On 3 October 2025, Woodside sent a reply to Chevron Australia (SI Report A, reference 3.1.2) and:
  - (1) Confirmed that adjacent titleholders would be notified at least 10 days before commencement and upon completion of activities.
  - (2) Agreed to engage with Chevron to review and confirm acceptability of SOP MOPDU standards, and stated that seabed disturbance impacts had been assessed with control measures in place to reduce risks to acceptable levels.
  - (3) Committed to notifying adjacent titleholders in the event of a loss of containment, and confirmed Chevron's Security Operations Centre was included in Woodside's Oil Pollution First Strike Plan.
  - (4) Confirmed compliance with Marine Orders 21, 27, and 30; notification to AHO; use of AIS; and maintenance of a public interactive map showing MODU location and activity updates.
  - (5) Committed to notifying adjacent titleholders at least 10 days prior to commencement and completion to support accurate noise impact records.
- On 7 October 2025, Woodside emailed Chevron Australia advising of an activity update regarding the wellhead cut location (Record of Consultation, reference 6.3.3) and provided an updated Consultation Information Sheet.
- On 14 October 2025, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.4.1).
- **(6)** On 20 October 2025, Chevron Australia sent an email to Woodside (SI Report A, reference 3.1.3) and confirmed no issues were identified with the activity update.
- (6) On 13 August 2025, Woodside responded to Chevron Australia (SI Report A, reference 3.1.4) via email and thanked them for their feedback, noting no issues with the update.

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) Requested alignment on mooring patterns and timing prior to	**(1)** Woodside agrees that alignment is required on mooring patterns and timing	**(1)** Woodside confirmed that adjacent titleholders would be notified at least 10	**(1)**

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commencement, particularly for activities near operated assets	for activities close to Chevron operated assets.	days before commencement and upon completion of activities	Woodside will provide notifications as set out in PS 1.2 of EP and Section 7.10, table 7-5 of this EP.
(2) Requested Woodside complies with Chevron's SOP MOPDU mooring and marine standards.	**(2)** Woodside agrees compliance with Chevron's SOP MOPDU mooring and marine standards is required.	**(2)** Woodside confirmed it will participate in ongoing engagement with Chevron with the aim to review Chevron's SOP MOPDU mooring and marine standards and confirm acceptability.	**(2)** Section 6.8.1 of the EP includes control to notify adjacent titleholders of activities prior to commencement and upon completion.
(3) Stated that EP timing posed a risk to Chevron's Offshore Campaign 2A/2B should a major loss of containment occur	**(3)** Woodside notes Chevron's concern of the risks associated with the timing of the EP to Chevron's operations.	**(3)** Woodside committed to notifying adjacent titleholders in the event of a loss of containment	**(3)** Chevron's Security Operations Centre is included in Woodside's Oil Pollution First Strike Plan as set out in Appendix H.
(4) Raised the risk of vessel collision	**(4)** Woodside notes Chevron's concern about vessel collision	**(4)** Confirmed compliance with relevant Marine Orders, notification to AHO; use of AIS; and maintenance of a public interactive map showing MODU location and activity updates.	**(4)** Woodside will provide notifications as set out in PS 1.2 of EP and Section 7.10, table 7-5 of this EP. Woodside will maintain a public activity map as defined in by control C 1.5 in the EP. Vessels will operate AIS as per control C 1.6
(5) Stated that Woodside's activities could interfere with noise measurements during Chevron's start-up phase	**(5)** Woodside noted Chevron's concern of interference with noise measurements.	**(5)** Committed to notifying adjacent titleholders at least 10 days prior to commencement and completion to support accurate noise impact records	(5) Woodside will provide notifications as set out in PS 1.2 of EP and Section 7.10, table 7-5 of this EP.
Woodside has addressed objections and claims as noted above.	Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which	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 measures or controls are required other than those stated above.

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	the EP relates, as required under Regulation 24.	received, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8 of the EP).	

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with Chevron 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 August 2025. Woodside gave this information to Chevron Australia on 11 August 2025, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the PAP, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'.*
  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).
- On 13 August 2025, 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.
- On 13 August 2025, Woodside responded to Chevron Australia's feedback.

Reasonable Period

Woodside allowed the Chevron Australia a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to the 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 allowed an additional 15 days for consultation for the activity update sent 7 October 2025.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed 45 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed Chevron Australia a reasonable period for consultation in preparation of the EP as evidenced by the Chevron Australia's responses on 12 and 13 August 2025.

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Reasonable Opportunity

Woodside allowed the Chevron Australia reasonable opportunity for consultation in the preparation of the 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 also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- In October 2025, Woodside held, or hosted information stalls at, a number of community events and roadshows in regional areas including the Pilbara and Gascoyne to raise awareness of the EP and provide another opportunity for feedback. These events were promoted in local newspapers and on social media.
- Woodside considers a reasonable opportunity was provided to the Chevron Australia as evidenced by its responses on 12 and 13 August 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 provided feedback or objections or claims about the adverse impacts of the proposed activity to which this EP relates. In line with the intended outcome of consultation as set out in Section 5.2 and Regulations 24 and 34(g), Woodside has:
  - Responded to feedback from Chevron.
  - Assessed the merits of any objection or claim about the adverse impact of activities to which this EP relates.
  - As a result of Chevron feedback, adopted a control in Section 6.8.1 of the EP, as refenced as C 1.9, to facilitate engagement with Chevron to when the MODU will be working in the vicinity of other facilities, vessels, or live infrastructure.
- 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 InCapture

Summary of information provided and record of consultation for this EP:

- On 11 August 2025, Woodside emailed InCapture advising of the proposed activity (Record of Consultation, reference 6.1.8) and provided a Consultation Information Sheet and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- **(1)** On 13 August 2025, InCapture emailed Woodside and (SI Report, reference 3.2.1) advised it had no objections
- **(1)** On 13 August 2025, Woodside responded to InCapture (SI Report, reference 3.2.2) via email and thanked them for their feedback, noting no objections.
- On 7 October 2025, Woodside emailed InCapture advising of an activity update regarding the wellhead cut location (Record of Consultation, reference 6.3.3) and provided an updated Consultation Information Sheet.
- On 14 October 2025, as no response had been received, Woodside proactively sent a follow-up email (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
(1) InCapture advised it had no objections to the planned activities.	**(1)** Woodside notes that InCapture has no objections to the planned activities.	**(1)** Woodside acknowledged that InCapture had no objections to the planned activities.	**(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 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 InCapture for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:

Sufficient Information

Woodside has given InCapture sufficient information to allow InCapture to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since August 2025. Woodside gave this information to InCapture on 11 August 2025, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the PAP, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'.*
  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).

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- On 13 August 2025, InCapture shared its feedback, claims or objections regarding this activity, indicating the information provided was sufficient to enable InCapture to make an informed assessment of the possible consequences of the activity on its functions, interests or activities.
- On 13 August 2025, Woodside responded to InCapture's feedback.
- The updated Consultation Information Sheet for this EP has been publicly available on the Woodside website since October 2025 and sent to InCapture on 7 October 2025. A reminder for feedback was sent on 14 October 2025.

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 the 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 allowed an additional 15 days for consultation for the activity update sent 7 October 2025.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed 45 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed InCapture a reasonable period for consultation in preparation of the EP as evidenced by the InCapture's response on 13 August 2025.

Reasonable Opportunity

Woodside allowed InCapture reasonable opportunity for consultation in the preparation of the 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 also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- In October 2025, Woodside held, or hosted information stalls at, a number of community events and roadshows in regional areas including the Pilbara and Gascoyne to raise awareness of the EP and provide another opportunity for feedback. These events were promoted in local newspapers and on social media.
- Woodside considers a reasonable opportunity was provided to InCapture as evidenced by its responses on 13 August 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:

- 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.
  - Made no changes or inclusions to the EP as a result of consultation with InCapture because appropriate measures are already included in the EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable
- The measures and controls described in this EP address the potential impact from the proposed activity on InCapture's functions, interests or activities.

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4.7.4 Santos

Summary of information provided and record of consultation for this EP:

- On 11 August 2025, Woodside emailed Santos advising of the proposed activity (Record of Consultation, reference 6.1.8) and provided a Consultation Information Sheet and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 22 August 2025, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.36)
- On 28 August 2025, Santos emailed Woodside (SI Report, reference 3.3.1) to advise it had reviewed the consultation material and had no questions or comments.
- On 7 October 2025, Woodside emailed Santos (SI Report, reference 3.3.2) advising of an activity update regarding the wellhead cut location (Record of Consultation, reference 6.3.3) and provided an updated Consultation Information Sheet.
- On 14 October 2025, as no response had been received, Woodside proactively sent a follow-up email (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
(1) Santos advised it had no comments on the planned activities.	**(1)** Woodside notes that Santos has no objections to the planned activities.	**(1)** Woodside acknowledged that Santos had no objections to the planned activities.	**(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 of the EP).	No additional controls or measures are required.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with Santos for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:

Sufficient Information

Woodside has given Santos sufficient information to allow Santos to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

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- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since August 2025. Woodside gave this information to Santos on 21 August 2025, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the PAP, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'.*
  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).
- The updated Consultation Information Sheet for this EP has been publicly available on the Woodside website since October 2025 and sent to Santos on 7 October 2025. A reminder for feedback was sent on 14 October 2025.

Reasonable Period

Woodside allowed Santos a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to Santos advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside allowed an additional 15 days for consultation for the activity update sent 7 October 2025.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed Santos 45 days for consultation.
- Consultation for this EP commenced 6 months ago.
- In this context, Woodside allowed Santos 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 Santos is appropriate and adapted to the nature of interests of Santos WA Northwest/Southwest:

- 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 also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- In October 2025, Woodside held, or hosted information stalls at, a number of community events and roadshows in regional areas including the Pilbara to raise awareness of the EP and provide another opportunity for feedback. These events were promoted in local newspapers and on social media.
- In the absence of feedback, Woodside sent a follow-up consultation email on 22 August and 14 October 2025, reminding Santos 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 Santos did not provide feedback for this EP.

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- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.
- The measures and controls described in this EP address the potential impact from the proposed activity on Santos WA Northwest/Southwest'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 11 August 2025, Woodside emailed AEP advising of the proposed activity (Record of Consultation, reference 6.1.20) and provided a Consultation Information Sheet and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 22 August 2025, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.9).
- On 7 October 2025, Woodside emailed Titleholders advising of an activity update regarding the wellhead cut location (Record of Consultation, reference 6.3.3) and provided an updated Consultation Information Sheet.
- On 14 October 2025, as no response had been received, Woodside proactively sent a follow-up email (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 about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8 of the EP).	No additional measures or controls are required.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with AEP for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:

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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 August 2025. Woodside gave this information to AEP on 11 August 2025, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the PAP, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'*.
  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).
- The updated Consultation Information Sheet for this EP has been publicly available on the Woodside website since October 2025 and sent to AEP on 7 October 2025. A reminder for feedback was sent on 14 October 2025.

Reasonable Period

Woodside allowed AEP a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to AEP advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside allowed an additional 15 days for consultation for the activity update sent 7 October 2025.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed AEP 45 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed AEP a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with AEP is appropriate and adapted to the nature of interests of AEP:

- Woodside published advertisements in 7 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- In October 2025, Woodside held, or hosted information stalls at, a number of community events and roadshows in regional areas including the Pilbara and Exmouth to raise awareness of the EP and provide another opportunity for feedback. These events were promoted in local newspapers and on social media.
- In the absence of feedback, Woodside sent a follow-up consultation email on 22 August and 14 October 2025, reminding AEP of the opportunity to provide feedback.

Outcomes of Consultation

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Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- No additional measures were considered as a result of consultation as AEP did not provide feedback for this EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.
- The measures and controls described in this EP address the potential impact from the proposed activity on AEP's functions, interests or activities.

4.9 Local government and elected parliamentary representatives, community groups or organisations

4.9.1 Exmouth Chamber of Commerce and Industry (ECCI)

Summary of information provided and record of consultation for this EP:

- On 11 August 2025, Woodside emailed the ECCI advising of the proposed activity (Record of Consultation, reference 6.1.22) and provided a Consultation Information Sheet and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 22 August 2025, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.10).
- On 7 October 2025, Woodside emailed the ECCI advising of an activity update regarding the wellhead cut location (Record of Consultation, reference 6.3.3) and provided an updated Consultation Information Sheet.
- On 14 October 2025, as no response had been received, Woodside proactively sent a follow-up email (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 about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8 of the EP).	No additional measures or controls are required.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with the ECCI 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 ECCI sufficient information to allow ECCI 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 August 2025. Woodside gave this information to ECCI on 11 August 2025, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the PAP, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'*.
  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).
- The updated Consultation Information Sheet for this EP has been publicly available on the Woodside website since October 2025 and sent to ECCI on 7 October 2025. A reminder for feedback was sent on 14 October 2025.

Reasonable Period

Woodside allowed ECCI a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to ECCI 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 allowed an additional 15 days for consultation for the activity update sent 7 October 2025.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed ECCI 45 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed ECCI 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 ECCI is appropriate and adapted to the nature of interests of ECCI:

- 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 also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- In October 2025, Woodside held, or hosted information stalls at, a number of community events and roadshows in regional areas including the Pilbara and Exmouth to raise awareness of the EP and provide another opportunity for feedback. These events were promoted in local newspapers and on social media.
- In the absence of feedback, Woodside sent a follow-up consultation email on 22 August and 14 October 2025, reminding KDCCI of the opportunity to provide feedback.

Outcomes of Consultation

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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 ECCI 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 ECCI's functions, interests or activities.

4.9.2 Karratha and Districts Chamber of Commerce and Industry (KDCCI)

Summary of information provided and record of consultation for this EP:

- On 11 August 2025, Woodside emailed the KDCCI advising of the proposed activity (Record of Consultation, reference 6.1.23) and provided a Consultation Information Sheet and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 22 August 2025, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.11).
- On 7 October 2025, Woodside emailed the KDCCI advising of an activity update regarding the wellhead cut location (Record of Consultation, reference 6.3.3) and provided an updated Consultation Information Sheet.
- On 14 October 2025, as no response had been received, Woodside proactively sent a follow-up email (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 about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8 of the EP).	No additional measures or controls are required.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with the 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

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:

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- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since August 2025. Woodside gave this information to KDCCI on 11 August 2025, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the PAP, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'.*
  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).
- The updated Consultation Information Sheet for this EP has been publicly available on the Woodside website since October 2025 and sent to KDCCI on 7 October 2025. A reminder for feedback was sent on 14 October 2025.

Reasonable Period

Woodside allowed KDCCI a reasonable period for consultation in the preparation of the 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 allowed an additional 15 days for consultation for the activity update sent 7 October 2025.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed KDCCI 45 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed KDCCI 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 KDCCI is appropriate and adapted to the nature of interests of KDCCI:

- 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 also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- In October 2025, Woodside held, or hosted information stalls at, a number of community events and roadshows in regional areas including the Pilbara and Exmouth to raise awareness of the EP and provide another opportunity for feedback. These events were promoted in local newspapers and on social media.
- In the absence of feedback, Woodside sent a follow-up consultation email on 22 August and 14 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 considered as a result of consultation as KDCCI did not provide feedback for this EP.

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- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.
- The measures and controls described in this EP address the potential impact from the proposed activity on KDCCI's functions, interests or activities.

4.9.3 Exmouth Community Liaison Group (Exmouth CLG)

Summary of information provided and record of consultation for this EP:

- On 11 August 2025, Woodside emailed the Exmouth CLG advising of the proposed activity (Record of Consultation, reference 6.1.24) and provided a Consultation Information Sheet and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 22 August 2025, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.12).
- On 7 October 2025, Woodside emailed the Exmouth CLG advising of an activity update regarding the wellhead cut location (Record of Consultation, reference 6.3.3) and provided an updated Consultation Information Sheet.
- On 14 October 2025, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.4.1).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim	Woodside's Response	Inclusion in Environment Plan
No feedback, objections or claims received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8 of the EP).	No additional measures or controls are required.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with Exmouth CLG for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:

Sufficient Information

Woodside has given Exmouth CLG sufficient information to allow Exmouth CLG to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since August 2025. Woodside gave this information to Exmouth CLG on 11 August 2025, 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 PAP, and proposed mitigation and management measures.
- A timeframe for consultation and the provision of feedback.
- A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'.*
- Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).

Reasonable Period

Woodside allowed Exmouth CLG a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to Exmouth CLG advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside allowed an additional 15 days for consultation for the activity update sent 7 October 2025.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed Exmouth CLG 45 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed Exmouth CLG a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with Exmouth CLG is appropriate and adapted to the nature of interests of Exmouth CLG:

- Woodside published advertisements in 7 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside ran targeted social media campaigns (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- (If applicable) In October 2025, Woodside held, or hosted information stalls at, a number of community events and roadshows in regional areas including the Pilbara and Gascoyne to raise awareness of the EP and provide another opportunity for feedback. These events were promoted in local newspapers and on social media.
- In the absence of feedback, Woodside sent a follow-up consultation email on 22 August and 14 October, reminding Exmouth CLG of the opportunity to provide feedback.

Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- No additional measures were considered as a result of consultation as Exmouth CLG did not provide feedback for this EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.
- The measures and controls described in this EP address the potential impact from the proposed activity on Exmouth CLG's functions, interests or activities.

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4.9.4 Karratha Community Liaison Group (Karratha CLG)

Summary of information provided and record of consultation for this EP:

- On 11 August 2025, Woodside emailed the Exmouth CLG advising of the proposed activity (Record of Consultation, reference 6.1.25) and provided a Consultation Information Sheet and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 22 August 2025, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.).
- On 25 September 2025, Woodside presented to the Karratha CLG on EP consultation requirements and Woodside activities, including activities for this EP (SI Report A, reference 7.1).
  - Woodside presented slides on how it consults relevant persons in the course of preparing EPs and provided information on relevant persons and EMBAs and an overview of the NWS Phase 1 P&A and TPA03 Well Intervention EP-Update, Pluto 4D M3 Marine Seismic Survey EP, Echo Yodel Subsea Decommissioning EP and Julimar-Brunello Plug & Abandonment (P&A) EP.
    - The slides included a QR code and a URL for the Consultation Activities page of the Woodside website.
    - 9 CLG members attended the meeting representing:
      - City of Karratha
      - Department of Education
      - Dampier Community Association
      - Karratha Central Healthcare
      - Karratha & Districts Chamber of Commerce and Industry
      - Pilbara Ports
      - Department of Creative Industries, Tourism and Sport
      - Community member x 2
  - No feedback was provided for this EP.
- On 26 September 2025, the following day, Woodside's September presentation summary pack to the CLG was emailed to the CLG members regardless of their attendance at the meeting.
- On 7 October 2025, Woodside emailed the Exmouth CLG advising of an activity update regarding the wellhead cut location (Record of Consultation, reference 6.3.3) and provided an updated Consultation Information Sheet.
- On 14 October 2025, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.4.1).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim	Woodside's Response	Inclusion in Environment Plan
No feedback, objections or claims received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the	No additional measures or controls are required.

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		EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8 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 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 August 2025. Woodside gave this information to Karratha CLG on 11 August 2025, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the PAP, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'.*
  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).

Reasonable Period

Woodside allowed Karratha CLG a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to Karratha CLG advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside allowed an additional 15 days for consultation for the activity update sent 7 October 2025.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed Karratha CLG 45 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed Karratha CLG a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with Karratha CLG is appropriate and adapted to the nature of interests of Karratha CLG:

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- 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 also of consultation.
- Woodside ran a targeted social media campaigns (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- (If applicable) In October 2025, Woodside held, or hosted information stalls at, a number of community events and roadshows in regional areas including the Pilbara and Gascoyne to raise awareness of the EP and provide another opportunity for feedback. These events were promoted in local newspapers and on social media.
- In the absence of feedback, Woodside sent a follow-up consultation email on 21 August and 15 October, reminding Karratha CLG of the opportunity to provide feedback.

Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- No additional measures were considered as a result of consultation as X 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 X's functions, interests or activities.

4.9.5 City of Karratha

Summary of information provided and record of consultation for this EP:

- On 11 August 2025, Woodside emailed the City of Karratha advising of the proposed activity (Record of Consultation, reference 6.1.27) and provided a Consultation Information Sheet and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 22 August 2025, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.14).
- **(1)** On 28 August 2025, the City of Karratha emailed (SI Report A, reference 4.1.1) Woodside to advise it had reviewed the consultation materials and no questions or comments on the activity.
- **(1)** On 5 September 2025, Woodside replied (SI Report A, reference 4.1.2) to City of Karratha thanking them for their feedback and acknowledging the City has no comments on the activities proposed.
- On 7 October 2025, Woodside emailed the City of Karratha advising of an activity update regarding the wellhead cut location (Record of Consultation, reference 6.3.3) and provided an updated Consultation Information Sheet.
- **(1)** On 7 October 2025, the City of Karratha emailed (SI Report A, reference 4.1.3) Woodside to advise it had no questions or comments on the activity.
- **(1)** On 29 October 2025, Woodside replied (SI Report A, reference 4.1.3) to City of Karratha thanking them for their feedback and acknowledging the City has no comments on the activities proposed.

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)	**(1)**	**(1)**	**(1)**

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City of Karratha advised it had no comments on the planned activities.	Woodside notes that City of Karratha has no objections to the planned activities.	Woodside acknowledged that City of Karratha had no objections to the planned activities.	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 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 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 August 2025. Woodside gave this information to City of Karratha on 21 August 2025, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the PAP, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'.*
  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).
- The updated Consultation Information Sheet for this EP has been publicly available on the Woodside website since October 2025 and sent to the City of Karratha on 7 October 2025. A reminder for feedback was sent on 14 October 2025.

Reasonable Period

Woodside allowed City of Karratha a reasonable period for consultation in the preparation of the EP because:

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- A consultation period was stated in the initial correspondence to 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 allowed an additional 15 days for consultation for the activity update sent 7 October 2025.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed City of Karratha 45 days for consultation.
- Consultation for this EP commenced 6 months ago.
- In this context, Woodside allowed City of Karratha a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with City of Karratha is appropriate and adapted to the nature of interests of City of Karratha:

- Woodside published advertisements in 7 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside allowed an additional 15 days for consultation for the activity update sent 7 October 2025.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- In October 2025, Woodside held, or hosted information stalls at, a number of community events and roadshows in regional areas including the Pilbara to raise awareness of the EP and provide another opportunity for feedback. These events were promoted in local newspapers and on social media.
- Woodside considers a reasonable opportunity was provided to City of Karratha as evidenced by its responses on 28 August 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:

- No additional measures were considered as a result of consultation as City of Karratha did not provide feedback for this EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.
- The measures and controls described in this EP address the potential impact from the proposed activity on City of Karratha's functions, interests or activities.

4.9.6 Shire of Ashburton

Summary of information provided and record of consultation for this EP:

- On 11 August 2025, Woodside emailed the Shire of Ashburton advising of the proposed activity (Record of Consultation, reference 6.1.55) and provided a Consultation Information Sheet and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 22 August 2025, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.35).

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- On 7 October 2025, Woodside emailed the Shire of Ashburton advising of an activity update regarding the wellhead cut location (Record of Consultation, reference 6.3.3) and provided an updated Consultation Information Sheet.
- On 14 October 2025, as no response had been received, Woodside proactively sent a follow-up email (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 about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8 of the EP).	No additional measures or controls are required.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with the Shire of Ashburton for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:

Sufficient Information

Woodside has given Shire of Ashburton sufficient information to allow Shire of Ashburton to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since August 2025. Woodside gave this information to Shire of Ashburton on 11 August 2025, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the PAP, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'*.
  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).
- The updated Consultation Information Sheet for this EP has been publicly available on the Woodside website since October 2025 and sent to Shire of Ashburton on 7 October 2025. A reminder for feedback was sent on 14 October 2025.

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Reasonable Period

Woodside allowed Shire of Ashburton a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to Shire of Ashburton advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside allowed an additional 15 days for consultation for the activity update sent 7 October 2025.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed Shire of Ashburton 45 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed Shire of Ashburton a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with Shire of Ashburton is appropriate and adapted to the nature of interests of Shire of Ashburton:

- Woodside published advertisements in 7 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside allowed an additional 15 days for consultation for the activity update sent 7 October 2025.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- In October 2025, Woodside held, or hosted information stalls at, a number of community events and roadshows in regional areas including the Pilbara and Exmouth to raise awareness of the EP and provide another opportunity for feedback. These events were promoted in local newspapers and on social media.
- In the absence of feedback, Woodside sent a follow-up consultation email on 22 August and 14 October 2025, reminding Shire of Ashburton of the opportunity to provide feedback.

Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- No additional measures were considered as a result of consultation as Shire of Ashburton did not provide feedback for this EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.
- The measures and controls described in this EP address the potential impact from the proposed activity on Shire of Ashburton's functions, interests or activities.

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4.10 Other non-government groups or organisations (NGOs) or individuals

4.10.1 Cape Conservation Group (CCG)

Summary of information provided and record of consultation for this EP:

- On 11 August 2025, Woodside emailed the CCG advising of the proposed activity (Record of Consultation, reference 6.1.28) and provided a Consultation Information Sheet and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 22 August 2025, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.15).
- On 7 October 2025, Woodside emailed the CCG advising of an activity update regarding the wellhead cut location (Record of Consultation, reference 6.3.3) and provided an updated Consultation Information Sheet.
- On 14 October 2025, as no response had been received, Woodside proactively sent a follow-up email (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 about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8 of the EP).	No additional measures or controls are required.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with CCG for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:

Sufficient Information

Woodside has given CCG sufficient information to allow CCG to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since August 2025. Woodside gave this information to CCG on 11 August 2025, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the PAP, and proposed mitigation and management measures.

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  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'.*
  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).
- The updated Consultation Information Sheet for this EP has been publicly available on the Woodside website since October 2025 and sent to CCG on 7 October 2025. A reminder for feedback was sent on 14 October 2025.

Reasonable Period

Woodside allowed CCG a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to CCG advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside allowed an additional 15 days for consultation for the activity update sent 7 October 2025.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed CCG 45 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed CCG a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with CCG is appropriate and adapted to the nature of interests of CCG:

- Woodside published advertisements in 7 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- In October 2025, Woodside held, or hosted information stalls at, a number of community events and roadshows in regional areas including the Pilbara and Exmouth to raise awareness of the EP and provide another opportunity for feedback. These events were promoted in local newspapers and on social media.
- In the absence of feedback, Woodside sent a follow-up consultation email on 22 August and 14 October 2025, reminding CCG of the opportunity to provide feedback.

Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- No additional measures were considered as a result of consultation as CCG did not provide feedback for this EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.
- The measures and controls described in this EP address the potential impact from the proposed activity on CCG's functions, interests or activities.

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4.10.2 Friends of the Earth Australia (FOEA)

Summary of information provided and record of consultation for this EP:

- On 13 August 2025, Woodside emailed FOEA advising of the proposed activity (Record of Consultation, reference 6.1.35) and provided a Consultation Information Sheet and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 22 August 2025, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.24).
- On 7 October 2025, Woodside emailed FOEA advising of an activity update regarding the wellhead cut location (Record of Consultation, reference 6.3.3) and provided an updated Consultation Information Sheet.
- On 14 October 2025, as no response had been received, Woodside proactively sent a follow-up email (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 about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8 of the EP).	Woodside has addressed maritime security-related issues in Section 7 of the EP based on previous offshore activities. No additional measures or controls are required.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with FOEA for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:

Sufficient Information

Woodside has given FOEA sufficient information to allow FOEA to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since August 2025. Woodside gave this information to FOEA on 11 August 2025, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the PAP, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'.*

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  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).
- The updated Consultation Information Sheet for this EP has been publicly available on the Woodside website since October 2025 and sent to FOEA on 7 October 2025. A reminder for feedback was sent on 14 October 2025.

Reasonable Period

Woodside allowed FOEA a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to FOEA advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside allowed an additional 15 days for consultation for the activity update sent 7 October 2025.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed FOEA 45 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed FOEA a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with the FOEA is appropriate and adapted to the nature of interests of the FOEA:

- 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 also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- In October, Woodside held, or hosted information stalls at, a number of community events and roadshows in regional areas including the Pilbara to raise awareness of the EP and provide another opportunity for feedback. These events were promoted in local newspapers and on social media.
- In the absence of feedback, Woodside sent a follow-up consultation email on 22 August and 14 October 2025, reminding the FOEA of the opportunity to provide feedback.

Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- No additional measures were considered as a result of consultation as the FOEA did not provide feedback for this EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.
- The measures and controls described in this EP address the potential impact from the proposed activity on the FOEA's functions, interests or activities.

4.10.3 The Wilderness Society

Summary of information provided and record of consultation for this EP:

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- On 11 August 2025, Woodside emailed The Wilderness Society advising of the proposed activity (Record of Consultation, reference 6.1.36) and provided a Consultation Information Sheet and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 22 August 2025, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.22).
- On 22 August 2025, The Wilderness Society sent an email to Woodside (SI Report A, reference 5.3.1) and:
  - **(1)** Identified themselves as a relevant person for the Offshore Petroleum and Greenhouse Gas Storage Act and associated regulations.
  - **(2)** Objected to the possibility that wellhead infrastructure might be recovered at a later date and requested an explanation for this approach, advocating for immediate removal at the time of cutting to reduce environmental risks.
  - **(3)** Requested further information about the remediation of Non-Water-Based-Mud (NWBM), specifically whether the mud would be removed, what would happen to it if not, and what contaminants it contained. Advocated for the removal and onshore treatment of contaminated mud to minimise the risk of marine contamination.
- On 23 September 2025, Woodside sent an email to The Wilderness Society (SI Report A, reference 5.3.2) and:
  - **(1)** Noted The Wilderness Society's feedback and its assertion of self-identification as a relevant person for the purposes of this EP.
  - **(2)** Confirmed that wellheads would be removed either by MODU around Q3 2026 or by a construction support vessel by 2029 and stated that seabed placement had been previously assessed with no new environmental risks identified.
  - **(3)** Stated that NWBM would be extracted and replaced with water-based fluids, then securely transported onshore for treatment; if extraction was not possible, a cement plug would be used to isolate the mud, which contained paraffin synthetic base oil and minor additives.
- On 7 October 2025, Woodside emailed The Wilderness Society advising of an activity update regarding the wellhead cut location (Record of Consultation, reference 6.3.3) and provided an updated Consultation Information Sheet.
- On 14 October 2025, as no response had been received, Woodside proactively sent a follow-up email (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
(1) Identified themselves as a relevant person	**(1)** Woodside notes that The Wilderness Society identifies as a relevant person for this EP.	**(1)** Woodside acknowledged that The Wilderness Society identified as a relevant person for this EP.	**(1)** Not required.
(2) Objected to wellheads not being removed from the seabed immediately after cutting and sought clarification	**(2)** Woodside notes the objection and that seabed placement has been previously assessed with no new risks identified.	**(2)** Woodside confirmed the timing for the removal of the wellheads and clarified no new risks were being introduced.	**(2)** Section 3.5 of the EP sets out the timing of EP activities. Removal and recovery of wellhead is described in Section 3.12.2. Impacts and risks associated

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			with the Petroleum Activity are described in Section 6.8 and Section 6.9 of the EP.
(3) Requested further information about the remediation of Non-Water-Based-Mud (NWBM)	**(3)** Woodside notes WAFIC's request for information on the remediation of Non-Water-Based-Mud (NWBM)	**(3)** Woodside provided details including the content, location and method of removal of the NWBM in the annulus.	**(3)** Section 3.10.2 of the EP sets out the description of the NWBM in the annulus.
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 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 The Wilderness Society for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:

Sufficient Information

Woodside has given The Wilderness Society sufficient information to allow The Wilderness Society 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 August 2025. Woodside gave this information to The Wilderness Society on 11 August 2025, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the PAP, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'.*
  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).
- On 22 August 2025, The Wilderness Society shared its feedback, claims or objections regarding this activity, indicating the information provided was sufficient to enable The Wilderness Society to make an informed assessment of the possible consequences of the activity on its functions, interests or activities.
- On 23 September 2025, Woodside responded to The Wilderness Society's feedback.

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Reasonable Period

Woodside allowed The Wilderness Society a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to The Wilderness Society 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 allowed an additional 15 days for consultation for the activity update sent 7 October 2025.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed 45 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed The Wilderness Society a reasonable period for consultation in preparation of the EP as evidenced by The Wilderness Society's responses on 12 and 13 August 2025.

Reasonable Opportunity

Woodside allowed The Wilderness Society reasonable opportunity for consultation in the preparation of the 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 also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- In October 2025, Woodside held, or hosted information stalls at, a number of community events and roadshows in regional areas including the Pilbara and Gascoyne to raise awareness of the EP and provide another opportunity for feedback. These events were promoted in local newspapers and on social media.
- Woodside considers a reasonable opportunity was provided to The Wilderness Society as evidenced by its responses on 12 and 13 August 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:

- The Wilderness Society 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 The Wilderness Society.
  - Aside from including The Wilderness Society notifications in the EP, made no changes or inclusions to the EP as a result of consultation with The Wilderness Society 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
- The measures and controls described in this EP address the potential impact from the proposed activity on the FOEA's functions, interests or activities.

4.10.4 Ningaloo Coast World Heritage Advisory Committee (NCWHAC)

Summary of information provided and record of consultation for this EP:

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- On 11 August 2025, Woodside emailed NCWHAC advising of the proposed activity (Record of Consultation, reference 6.1.17) and provided a Consultation Information Sheet and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 22 August 2025, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.6).
- On 7 October 2025, Woodside emailed the NCWHAC advising of an activity update regarding the wellhead cut location (Record of Consultation, reference 6.3.3) and provided an updated Consultation Information Sheet.
- On 14 October 2025, as no response had been received, Woodside proactively sent a follow-up email (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 about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8 of 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 NCWHAC for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:

Sufficient Information

Woodside has given NCWHAC sufficient information to allow NCWHAC to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

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- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since August 2025. Woodside gave this information to NCWHAC on 11 August 2025, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the PAP, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'.*
  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).
- The updated Consultation Information Sheet for this EP has been publicly available on the Woodside website since October 2025 and sent to Pilbara Ports on 7 October 2025. A reminder for feedback was sent on 14 October 2025.

Reasonable Period

Woodside allowed NCWHAC a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to NCWHAC advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside allowed an additional 15 days for consultation for the activity update sent 7 October 2025.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed NCWHAC 45 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed NCWHAC a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with NCWHAC is appropriate and adapted to the nature of interests of NCWHAC:

- Woodside published advertisements in 7 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- In October 2025, Woodside held, or hosted information stalls at, a number of community events and roadshows in regional areas including the Pilbara and Gascoyne to raise awareness of the EP and provide another opportunity for feedback. These events were promoted in local newspapers and on social media.
- In the absence of feedback, Woodside sent a follow-up consultation email on 22 August and 14 October 2025, reminding NCWHAC of the opportunity to provide feedback.

Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

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- No additional measures were considered as a result of consultation as NCWHAC did not provide feedback for this EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.
- The measures and controls described in this EP address the potential impact from the proposed activity on NCWHAC's functions, interests or activities.

4.11 Research institutes and local conservation groups or organisations

4.11.1 Protect Ningaloo

Summary of information provided and record of consultation for this EP:

- On 11 August 2025, Woodside emailed Titleholders advising of the proposed activity (Record of Consultation, reference 6.1.29) and provided a Consultation Information Sheet and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 22 August 2025, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.16).
- On 7 October 2025, Woodside emailed the Protect Ningaloo advising of an activity update regarding the wellhead cut location (Record of Consultation, reference 6.3.3) and provided an updated Consultation Information Sheet.
- On 14 October 2025, as no response had been received, Woodside proactively sent a follow-up email (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 about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8 of the EP).	No additional measures or controls are required.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with Protect Ningaloo for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:

Sufficient Information

Woodside has given Protect Ningaloo sufficient information to allow Protect Ningaloo to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

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- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since August 2025. Woodside gave this information to Protect Ningaloo on 11 August 2025, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the PAP, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'.*
  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).
- The updated Consultation Information Sheet for this EP has been publicly available on the Woodside website since October 2025 and sent to Protect Ningaloo on 7 October 2025. A reminder for feedback was sent on 14 October 2025.

Reasonable Period

Woodside allowed Protect Ningaloo a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to Protect Ningaloo advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside allowed an additional 15 days for consultation for the activity update sent 7 October 2025.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed Protect Ningaloo 45 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed Protect Ningaloo a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with Protect Ningaloo is appropriate and adapted to the nature of interests of Protect Ningaloo:

- Woodside published advertisements in 7 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- In October 2025, Woodside held, or hosted information stalls at, a number of community events and roadshows in regional areas including the Pilbara and Exmouth to raise awareness of the EP and provide another opportunity for feedback. These events were promoted in local newspapers and on social media.
- In the absence of feedback, Woodside sent a follow-up consultation email on 22 August and 14 October 2025, reminding Protect Ningaloo of the opportunity to provide feedback.

Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

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- No additional measures were considered as a result of consultation as Protect Ningaloo did not provide feedback for this EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.
- The measures and controls described in this EP address the potential impact from the proposed activity on Protect Ningaloo's functions, interests or activities.

4.12 Traditional custodians and nominated representative corporations

4.12.1 Buurabalayji Thalanyji Aboriginal Corporation (BTAC)

BTAC is established under *the Native Title Act 1993* by the Thalanyji people to represent the Thalanyji people (defined broadly by reference to descent from the set of ancestors who were known to have a continuous and unbroken connection as the Traditional Custodians at the time of European colonisation) and represent their communal interests including, among other things, management and protection of cultural values.

Woodside has an existing relationship with BTAC 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 BTAC, who is responsible for building a consultative relationship and is readily available to provide information and take feedback.

At the start of consultation, Woodside provided BTAC a table of cultural values previously identified for BTAC through consultation and reviews of publicly available literature. Woodside invited BTAC to make changes or provide additional information about these cultural values. BTAC did not request changes. This context and process demonstrates that Woodside's consultation approach with BTAC is appropriate and adapted to the nature and interests of BTAC.

Summary of information provided and record of consultation for this EP:

- On 11 August 2025, Woodside emailed BTAC advising of the proposed activity (Record of Consultation, reference 6.1.60), which included the activity's Summary Information Sheet and Consultation Information Sheet. The email included:
  - An overview of the proposed activity.
  - Links to the NOPSEMA Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information, and contact details.
  - Information on the cultural values that BTAC has previously provided to Woodside considered relevant to the activity:
    - **(1)** BTAC's cultural obligation to care for the environmental values of Sea Country, such as archaeological sites identified on nearshore islands including the Montebello Islands, Barrow Island and Mackerel Islands.
  - **(1)** A request from Woodside that BTAC confirm if there were any changes or additional information regarding cultural values that Woodside should consider in the preparation for this EP.
  - A request for feedback by 8 September 2025 for the purposes of preparation of this EP.
  - A request for information on how BTAC would like to engage with Woodside about the proposed activity, including the opportunity to meet face to face.

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- That feedback can continue to be accepted by Woodside during the life of the EP.
- A request for BTAC to provide information about the proposed activity to other individuals, as required.
- Acknowledgement that discussions relating to Woodside's framework agreement has been ongoing and that these discussions will progress in parallel with consultation for the proposed activity's EP.

- On 26 August 2025, Woodside emailed BTAC a reminder about the proposed activity and received an automated response from BTAC that the email had been received (SI Report B, references 1.1.1, 1.1.2.). The email included:
  - A reference to the original consultation email for this EP sent to BTAC on 11 August 2025, which included a Summary Information Sheet and a link to the Consultation Information Sheet.
  - A reminder that consultation for the preparation of this EP closes on 8 September 2025.
  - A request for information on how BTAC would like to engage with Woodside about the proposed activity, including the opportunity to meet face to face.
  - Woodside's commitment to managing gender-restricted or other culturally sensitive information.
  - 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 6 October 2025, Woodside emailed BTAC an activity update for this EP (SI Report B, reference 1.1.3). Woodside requested feedback be provided by 20 October 2025 to allow time for inclusion in the EP submission.

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim	Woodside's Response	Inclusion in Environment Plan
(1) Cultural Values: Sea Country – connection to, access to and transfer of knowledge: • Enduring deep connection north of Onslow, extending out to Islands off the Pilbara coast including the Montebello, Barrow and Mackerel Islands. • Cultural obligation to care for environment and values of Sea Country. • Resources including fish, shellfish, crabs, crustaceans, sea urchins, eggs, turtles, dugongs, flora and	**(1)** This value has been identified through Woodside's data collection processes (consultation and reviews of publicly available literature).	**(1)** At the beginning of consultation for this EP, Woodside invited BTAC to make changes or provide additional information about these cultural values (ROC, 6.1.60). BTAC did not request changes.	**(1)** Woodside has updated Section 4.9.1 to record these interests and cultural values and assessed the potential impacts on these and where appropriate included controls in Sections 6.8 and Section 6.9.

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fauna associated with mangrove communities. • Artefacts and burials in coastal sand dunes. • Archaeological sites on Barrow and Montebello Islands. • Archaeological evidence of use of resources including fish, turtles, marine mammals, crocodiles, crabs and sea urchins. • Ceremonial sites (Thalu) for the increase of turtle, shark, ray, fish, squid, octopus, hill kangaroo and emu.			
No feedback, objection or claim 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 literature review.	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).	No additional measures or controls are required.
Summary Report – Consultation Complete			
Woodside has discharged its obligations for consultation under regulation 25 of the Environmental Regulations and consultation with BTAC for the purpose of regulation 25 is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.4 of the EP. Specifically: **Sufficient Information** Sufficient information has been provided because: • On 11 August 2025, Woodside made the Consultation Information Sheet available on the Woodside website. • Woodside provided information to BTAC on 11 August 2025 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. – Links to the NOPSEMA Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information, and contact details.			

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  - Confirmation of the purpose of consultation, what was being sought by Woodside through consultation including understanding the nature of BTAC's interests and how the activity could impact those interests.
  - A request for the consultation and information sheets to be distributed to members and individuals as required.
  - An offer to provide more specific information, maps and images if required.
- Woodside provided contact information for Woodside and NOPSEMA.

Reasonable Period

A reasonable period for consultation in the preparation of the EP has been provided because:

- Woodside commenced consultation on this EP with BTAC on 11 August 2025 and requested BTAC provide feedback by 8 September 2025 for the purposes of preparation of the EP in line with Woodside's methodology of a 30-day period for consultation.
- On 6 October 2025, Woodside provided BTAC with an activity update and extended the date to provide feedback to 20 September 2025.
- Woodside has addressed and responded to BTAC for three months, demonstrating a "reasonable period" of consultation.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided and Woodside's approach to consultation is appropriate and adapted because:

- Woodside sought direction on BTAC's preferred method of consultation and has consulted in a way that Woodside understands is appropriate for First Nations groups.
- Woodside has made information on this EP publicly available for three months. This has included publishing advertisements in national, state and local newspapers including Indigenous newspapers, the Koori Mail (13 August 2025) and National Indigenous Times (26-27 August 2025) advising of the proposed activities and requesting comments or feedback.
- Woodside's initial email about this EP on 11 August 2025:
  - Included a general email address and telephone number for Woodside, as well as a direct email and telephone number for a dedicated focal person from Woodside's First Nations engagement team. Woodside also provided contact details for NOPSEMA.
  - Offered for Woodside to speak with BTAC members as well as the BTAC Board.
  - Asked BTAC to advise how it would like Woodside to engage and whether BTAC required further information.
- Throughout the consultation period, Woodside and BTAC have had direct contact lines to each other.

Outcomes of Consultation

The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- Woodside has incorporated cultural values previously provided by BTAC into the EP.
- During the past three months, BTAC has not raised objections or claims about the adverse impact of the activity to which this EP relates.

Woodside engages in ongoing consultation once an EP has been submitted for assessment as well as throughout the life of an EP. Should feedback be received after the EP has been accepted (including relevant new information relating to cultural values), it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8 of the EP).

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4.12.2 Kariyarra Aboriginal Corporation (KAC)

Kariyarra is established under the *Native Title Act 1993* by Kariyarra people to represent the Kariyarra people (defined broadly by reference to descent from the set of ancestors who were known to have a continuous and unbroken connection as the Traditional Custodians at the time of European colonisation) and represent their communal interests including, among other things, management and protection of cultural values.

Woodside has an existing relationship with KAC 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 KAC, who is responsible for building a consultative relationship and is readily available to provide information and take feedback.

At the start of consultation, Woodside provided KAC a table of cultural values previously identified for KAC through consultation and reviews of publicly available literature. Woodside invited KAC to make changes or provide additional information about these cultural values. During consultation, KAC shared additional cultural values with Woodside. Woodside updated the EP to reflect these additional values, with potential impacts assessed and relevant controls applied where appropriate. This context and process demonstrates that Woodside's consultation approach with KAC is appropriate and adapted to the nature and interests of KAC.

Summary of information provided and record of consultation for this EP:

- On 11 August 2025, Woodside emailed KAC advising of the proposed activity (Record of Consultation, reference 6.1.61), which included the activity's Summary Information Sheet and Consultation Information Sheet. The email included:
  - An overview of the proposed activity.
  - Links to the NOPSEMA Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information, and contact details.
  - Information on the cultural values that KAC has previously provided to Woodside considered relevant to the activity:
    - **(1)** Marine Animals – management of sea turtle nesting, impacts to whale migration (whales are connected to Songlines).
    - **(2)** Sea Country – cultural obligations to care for Country, Secret habitat totems, access required for fishing, trapping, crabbing, catching turtle, hunting dugong, using stingray barbs for spears, collecting shellfish and visiting offshore islands at low tide.
    - **(3)** Yinta – significant cultural/spiritual sites, cultural rights to land.
    - **(4)** Marine species as resources – marine mammals, fish, molluscs.
    - **(5)** Potential impacts on coastal landforms and vegetation.
    - **(6)** Heritage sites associated with the coast and ocean including the presence of mythical snakes.
    - **(7)** Transfer of knowledge to future generations – impacts of species reduction and temporary exclusion to areas in the case of an oil spill etc.
    - **(8)** Islands of the coast of Port Hedland are significant – Little Turtle, North Turtle, Bedout.
  - **(1, 2, 3, 4, 5, 6, 7, 8)** A request from Woodside that KAC confirm if there were any changes or additional information regarding cultural values that Woodside should consider in the preparation for this EP.

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  - A request for feedback by 8 September 2025 for the purposes of preparation of this EP.
  - A request for information on how KAC would like to engage with Woodside about the proposed activity, including the opportunity to meet face to face.
  - That feedback can continue to be accepted by Woodside during the life of the EP.
  - A request for KAC to provide information about the proposed activity to other individuals, as required.
  - Acknowledgement that discussions relating to Woodside's framework agreement has been ongoing and that these discussions will progress in parallel with consultation for the proposed activity's EP.
- Between 12 and 20 August 2025, KAC and Woodside exchanged emails about a meeting scheduled for 21 August 2025. KAC requested Woodside include details about this EP during the meeting (SI Report B, references 1.2.1-1.2.11).
- On 21 August 2025, Woodside met with KAC in Port Hedland to consult on this EP and another (SI Report B, reference 1.2.12). During the meeting:
  - Woodside provided an explanation of EPs and regulatory requirements.
  - Woodside discussed how modelling was used to determine EMBAs.
  - **(9)** KAC enquired about EMBAs in regard to extreme weather events such as cyclones and spill response times. **(9)** Woodside stated that there are many factors that affect spill modelling for EMBAs including weather conditions, ocean currents, and the type of vessels. Woodside took the query about cyclone data being included in EMBA modelling on notice.
  - **(10)** KAC asked about timeframes around plugging and abandonment or drilling because the Board needs to be aware of the circumstances that may impact cultural values and the environment. **(10)** Woodside stated that it puts in place plans to mitigate impacts to cultural values and the environment in EPs, and that is why consultation about cultural values is important.
  - **(11)** KAC asked about cement being used for plug and abandonment activities and if there is an environmental risk of cement degradation over time. **(11)** Woodside took the question on notice.
  - **(12)** KAC queried where Woodside had collated its list of KAC's cultural values. **(12)** Woodside stated it had sourced KAC's cultural values via consultation and feedback from KAC when consulting on other EPs and desktop research.
  - **(1)** KAC provided additional information on marine species identified as cultural values which include: shellfish, cockles, oysters, clam shells, con shells, mullets and sea cow (dugong), as well as the importance of **(13)** river systems as food chains. **(1,13)** Woodside acknowledged this new information and advised it would update its records and current and future EPs accordingly.
  - **(14)** KAC asked if Woodside considered historical mapping of cultural values and prehistoric coastlines when understanding the closeness of the activity to KAC's Native Title determination. **(14)** Woodside stated that underwater archaeologists are often engaged to assess underwater marine life when undertaking its activities.
- On 26 August 2025, Woodside emailed KAC to clarify the names of people present during the 21 August meeting. KAC replied with the names (SI Report B, references 1.2.13, 1.2.14).
- On 17 September 2025, Woodside emailed KAC updated information about its record of Cultural Values and responses to questions taken on notice during their 21 August 2025 meeting (SI Report B, reference 1.2.15):
  - **(9)** Information about consideration of cyclone events in spill modelling. The modelling does capture large-scale ocean changes caused by cyclones.
  - **(11)** Information about the use of cement to plug wells. Cement is non-corrosive and resistant to chemical degradation. it will not pose significant damage or harm to the immediate surrounding marine environment.

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• On 6 October 2025, Woodside emailed KAC an activity update for this EP (SI Report B, reference 1.2.16). Woodside requested feedback be provided by 20 October 2025 to allow time for inclusion in the EP submission.			
Summary of Feedback, Objection or Claim	**Woodside's Assessment of Merits of Feedback, Objection or Claim**	**Woodside's Response**	**Inclusion in Environment Plan**
(1) Cultural Value: Marine Animals • Management of sea turtle nesting. • Impacts to whale migration (whales are connected to Songlines). Additional species identified during consultation for this EP: • Shellfish • Cockles • Oysters • clam shells, • con shells • mullets • sea cow (dugong),	**(1)** This value has been identified through Woodside's data collection processes (consultation).	**(1)** At the beginning of consultation for this EP, Woodside invited KAC to make changes or provide additional information about this cultural value (See ROC, 6.1.61). During consultation for this EP, KAC identified additional species. Woodside has updated its records and the EP to reflect this feedback.	**(1)** Woodside has updated Section 4.9 to record these interests and cultural values and assessed the potential impacts on these and where appropriate included controls in Sections 6.8 and 6.9 of the EP.
(2) Cultural Value: Sea Country • Cultural obligations to care for Country. • Secret habitat totems. • Access required for fishing, trapping, crabbing, catching turtle, hunting dugong, using stingray barbs for spears, collecting shellfish and visiting offshore islands at low tide.	**(2)** This value has been identified through Woodside's data collection processes (consultation and reviews of publicly available literature).	**(2)** At the beginning of consultation for this EP, Woodside invited KAC to make changes or provide additional information about this cultural value (See ROC, 6.1.61). KAC did not request changes.	**(2)** Woodside has updated Section 4.9 to record these interests and cultural values and assessed the potential impacts on these and where appropriate included controls in Sections 6.8 and 6.9 of the EP.

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(3) Cultural Value: Yinta • Significant cultural/spiritual sites. • Cultural rights to land.	**(3)** This value has been identified through Woodside's data collection processes (consultation and reviews of publicly available literature).	**(3)** At the beginning of consultation for this EP, Woodside invited KAC to make changes or provide additional information about this cultural value (See ROC, 6.1.61). KAC did not request changes.	**(3)** Woodside has updated Section 4.9 to record these interests and cultural values and assessed the potential impacts on these and where appropriate included controls in Sections 6.8 and 6.9 of the EP.
(4) Cultural Value: Marine species as resources • Marine mammals. • Fish. • Molluscs.	**(4)** This value has been identified through Woodside's data collection processes (consultation).	**(4)** At the beginning of consultation for this EP, Woodside invited KAC to make changes or provide additional information about this cultural value (See ROC, 6.1.61). KAC did not request changes.	**(4)** Woodside has updated Section 4.9 to record these interests and cultural values and assessed the potential impacts on these and where appropriate included controls in Sections 6.8 and 6.9 of the EP.
(5) Cultural Value: Potential impacts on coastal landforms and vegetation.	**(5)** This value has been identified through Woodside's data collection processes (consultation).	**(5)** At the beginning of consultation for this EP, Woodside invited KAC to make changes or provide additional information about this cultural value (See ROC, 6.1.61). KAC did not request changes.	**(5)** Woodside has updated Section 4.9 to record these interests and cultural values and assessed the potential impacts on these and where appropriate included controls in Sections 6.8 and 6.9 of the EP.
(6) Cultural Value: Heritage sites associated with the coast and ocean including the presence of mythical snakes.	**(6)** This value has been identified through Woodside's data collection processes (consultation and reviews of publicly available literature).	**(6)** At the beginning of consultation for this EP, Woodside invited KAC to make changes or provide additional information about this cultural value (See ROC, 6.1.61). KAC did not request changes.	**(6)** Woodside has updated Section 4.9 to record these interests and cultural values and assessed the potential impacts on these and where appropriate included controls in Section 6.9 of the EP.
(7) Cultural Value: Transfer of knowledge to future generations • Impacts of species reduction.	**(7)** This value has been identified through Woodside's data collection processes (consultation).	**(7)** At the beginning of consultation for this EP, Woodside invited KAC to make changes or provide additional	**(7)** Woodside recorded this cultural value in section 4.9 of the EP. Measures relating to oil spills are covered in Appendix G - Oil spill

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• Temporary exclusion to areas in the case of an oil spill etc		information about this cultural value (See ROC, 6.1.61). KAC did not request changes.	Preparedness and Response and Appendix H – Oil Pollution First Strike Plan.
(8) Islands off the coast of Port Hedland are extremely important to KAC (Little Turtle, North Turtle and Bedout).	**(8)** This value has been identified through Woodside's data collection processes (consultation). Woodside notes these Islands fall outside of the EMBA.	**(8)** At the beginning of consultation for this EP, Woodside invited KAC to make changes or provide additional information about this cultural value (See ROC, 6.1.61). KAC did not request changes.	**(8)** Woodside has updated Section 4.9 to record these interests and cultural values however these islands fall outside the EMBA and therefore no impacts are not anticipated to be affected in the event of a spill.
(9) KAC enquired about EMBAs in regard to extreme weather events such as cyclones and spill response times.	**(9)** Spill modelling for EMBAS includes assessment of weather conditions, ocean currents and vessel types.	**(9)** Woodside provided information about EMBA spill modelling during its meeting on 21 August 2025, further information was provided via email on 17 September 2025.	**(9)** Measures relating to oil spills are covered in Appendix G - Oil spill Preparedness and Response and Appendix H – Oil Pollution First Strike Plan.
(10) KAC asked about timeframes around plugging and abandonment or drilling because the Board needs to be aware of the circumstances that may impact cultural values and the environment	**(10)** Woodside stated that it puts in place plans to mitigate impacts to cultural values and the environment in EPs	**(10)** Woodside provided information about timeframes to KAC in the Summary Information Sheet (Appendix F, reference 6.1.2). Woodside explained that consultation about Cultural Values is important so appropriate mitigation measures can be put in place.	**(10)** Woodside has updated Section 4.9 to record these interests and cultural values and assessed the potential impacts on these and where appropriate included controls in Sections 6.8 and 6.9 of the EP.
(11) KAC asked about cement being used for plug and abandonment activities and if there is an environmental risk of cement degradation over time	**(11)** Cement is non-corrosive and resistant to chemical degradation, making it a suitable and reliable choice for permanent well abandonment (P&A)	**(11)** The use of any environment/cement plugs for the Julimar-Brunello P&A activity considers that any potential minor degradation of cement over significantly long periods (hundreds of years) will not pose significant damage or harm to the immediate surrounding marine environment. Woodside provided	**(11)** Details about permanent cement plugging is in Section 3.12 of the EP.

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		additional information about cement to KAC via email on 17 September 2025.	
(12) KAC queried where Woodside had collated its list of KAC's cultural values.	**(12)** At the start of consultation, Woodside provided KAC with information Cultural Values it had collated for the group through consultation and publicly available literature.	**(12)** Woodside explained to KAC that it had sourced KAC's cultural values via consultation and feedback from KAC when consulting on other EPs and desktop research.	**(12)** No further action required.
(13) River systems are important to the food chain.	**(13)** Woodside assesses environmental impacts of its EPs and puts in place appropriate mitigation measures. River systems are not relevant to this EP.	**(13)** Woodside has informed KAC that it will update it records and current and future EPs accordingly.	**(13)** Cultural values relating to river systems are in 4.9. River systems are not relevant to this EP therefore no impacts are expected.
(14) KAC asked if Woodside considered historical mapping of cultural values and prehistoric coastlines when understanding the closeness of the activity to KAC's Native Title determination.	**(14)** Woodside conducts a thorough assessment of coastlines when developing EPs.	**(14)** Woodside has informed KAC that archaeologists are often engaged to assess underwater marine life when undertaking its activities.	**(14)** Cultural values relating to coastlines are in Section 4.9. No further action required.
While feedback has been received, there were no objections or claims.	Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24.	Woodside engages in ongoing consultation throughout the life of an EP. 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 this EP).	Based on the engagement to date, no additional measures or controls are required.
Summary Report – Consultation Complete			
Woodside has discharged its obligations for consultation under regulation 25 of the Environmental Regulations and consultation with KAC for the purpose of regulation 25 is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.4 of the EP. Specifically: **Sufficient Information**			

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Sufficient information has been provided because:

- On 11 August 2025, Woodside made the Consultation Information Sheet available on the Woodside website.
- Woodside provided information to KAC on 11 August 2025 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.
  - Links to the NOPSEMA Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information, and contact details.
  - Confirmation of the purpose of consultation, what was being sought by Woodside through consultation including understanding the nature of KAC's interests and how the activity could impact those interests.
  - A request for the consultation and information sheets to be distributed to members and individuals as required.
  - An offer to provide more specific information, maps and images if required.
- Woodside provided contact information for Woodside and NOPSEMA.

Reasonable Period

A reasonable period for consultation in the preparation of the EP has been provided because:

- Woodside commenced consultation on this EP with KAC on 11 August 2025 and requested KAC provide feedback by 8 September 2025 for the purposes of preparation of the EP in line with Woodside's methodology of a 30-day period for consultation.
- On 6 October 2025, Woodside provided KAC with an activity update and extended the date to provide feedback to 20 September 2025.
- Woodside has addressed and responded to KAC for three months, demonstrating a "reasonable period" of consultation.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided and Woodside's approach to consultation is appropriate and adapted because:

- Woodside sought direction on KAC'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 three months. This has included publishing advertisements in national, state and local newspapers including Indigenous newspapers, the Koori Mail (13 August 2025) and National Indigenous Times (26-27 August 2025) advising of the proposed activities and requesting comments or feedback.
- Woodside's initial email about this EP on 11 August 2025:
  - Included a general email address and telephone number for Woodside, as well as a direct email and telephone number for a dedicated focal person from Woodside's First Nations Engagement team. Woodside also provided contact details for NOPSEMA.
  - Offered for Woodside to speak with KAC members as well as the KAC board.
  - Asked KAC to advise how it would like Woodside to engage and whether KAC required further information.
- Woodside met with KAC on 21 August 2025 to discuss the proposed activity and other matters.
- Throughout the consultation period, Woodside and KAC have exchanged multiple emails, had phone calls and a meeting.

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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:

- Woodside has updated the EP to include new cultural values provided by KAC
- During the past three months, KAC has provided feedback but has not raised objections or claims about the adverse impact of the activity to which this EP relates.

Woodside engages in ongoing consultation once an EP has been submitted for assessment as well as throughout the life of an EP. Should feedback be received after the EP has been accepted (including relevant new information relating to cultural values), it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8 of the EP).

4.12.3 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. In July 2025, United Nations Educational, Scientific and Cultural Organization (UNESCO) inscribed the Murujuga Cultural Landscape on the World Heritage list.

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.

At the start of consultation, Woodside provided MAC a table of cultural values previously identified for MAC through consultation and reviews of publicly available literature. Woodside invited MAC to make changes or provide additional information about these cultural values. During consultation, MAC shared additional cultural values with Woodside. Woodside updated the EP to include these additional values, with potential impacts assessed and relevant controls applied where appropriate. 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 11 August 2025, Woodside emailed MAC advising of the proposed activity (Record of Consultation, reference 6.1.62) which included the activity's Summary Information Sheet and Consultation Information Sheet. The email included:
  - Links to the NOPSEMA Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information, and contact details.
  - Information on the cultural values that MAC has previously provided to Woodside considered relevant to the activity:
    - **(1)** Ecosystem and health of Mermaid Sound.
    - **(2)** Marine species – whales, dolphins, dugongs, fish, sea snakes, turtles, coral, seagrass.

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    - **(3)** Marine eco-systems – mangroves, macroalgal (seaweed) communities, subtidal soft bottom communities, intertidal sand and mudflat communities, rocky shores.
    - **(4)** Fish traps in Conzinc Bay, and Angel and Gidley Islands.
    - **(5)** Harvesting squid around Conzinc Bay.
    - **(6)** MAC is the appropriate cultural authority for Murujuga.
    - **(7)** Potential impact on Jinna (Songlines) on the submerged landscape.
  - **(1, 2, 3, 4, 5, 6, 7)** 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 for this EP.
  - A request for feedback by 8 September 2025 for the purposes of preparation of this EP.
  - A request for information on how MAC would like to engage with Woodside about the proposed activity, including the opportunity to meet face to face.
  - That feedback can continue to be accepted by Woodside during the life of the EP.
  - A request for MAC to provide information about the proposed activity to other individuals, as required.
- On 22 August 2025, MAC emailed Woodside a response to an earlier email about Cultural Values (SI Report B, reference 1.3.1) Matters relevant to this EP included:
  - **(2)** Additional culturally valued species: stingrays, sharks, crustaceans, octopus, sea stars, sea urchins, sponges and molluscs.
  - **(8)** MAC's view that any changes to the feeding, breeding or migratory behaviour of culturally significant species would impact significantly on subsistence, cultural and ceremonial activities.
  - **(7)** 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.
  - **(4)** Feedback that fish traps are not limited to Conzinc, Angel and Gidley as significant.
  - **(5)** Feedback that harvesting squid at Conzinc Bay is one of many subsistence activities that have been and continue to be practiced across the archipelago.
- On 22 August 2025, Woodside emailed MAC to acknowledge its feedback about cultural values (SI Report B, reference 1.3.2).
- On 22 August 2025, MAC emailed Woodside a letter (SI Report B, reference 1.3.3). In the letter, MAC provided feedback about the EP:
  - **(9)** Protection of environmental values should be assessed separately to protection of cultural values.
  - **(8)** Activities that could potentially affect the natural movement, migration and/or other behaviour of marine species (including sea birds) may have an impact on the cultural interpretation of the seasonal landscape and seascape and associated cultural behaviours.
  - **(10)** MAC had no further comment about the EP and did not require further consultation. **(10)** Woodside acknowledges this feedback.
  - **(11)** MAC expects to be consulted on future projects located closer to Murujuga. **(11)** Woodside consults MAC on EPs when the EMBA overlaps or is adjacent to the Murujuga cultural landscape.
- On 28 August 2025, Woodside responded by email to MAC's feedback about this EP and another (SI Report B, reference 1.3.4). Woodside:
  - **(2 4,5,6,8)** Provided MAC with an expanded Cultural Values table (Appendix A) which included new information provided by MAC and details about sources.
  - **(4,5,9)** Explained how Woodside sources information about Cultural Values for EPs.

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– **(2,4,5,7,9)** Invited MAC to review the Cultural Values table and provide further feedback if necessary.

- On 6 October 2025, Woodside emailed MAC an activity update for this EP (SI Report B, reference 1.3.5). Woodside requested feedback be provided by 20 October 2025 to allow time for inclusion in the EP submission.

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim	Woodside's Response	Inclusion in Environment Plan
(1) Cultural Value: Ecosystem and health of Mermaid Sound.	**(1)** This value has been identified through Woodside's data collection processes (consultation). Woodside notes that Mermaid Sound does not fall within the EMBA.	**(1)** At the beginning of consultation for this EP, 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 (see ROC, 6.1.59). MAC did not request changes.	**(1)** Cultural values relating to Mermaid Sound are in Section 4.9 of this EP. Mermaid Sound is not relevant to this EP therefore no impacts are expected.
(2) Cultural Value: Marine species: • Whales, totemic importance. • Dolphins, cultural ceremonies. • Dugongs, food source. • Fish, cultural ceremonies. • Sea Snakes, culturally important. • Turtles, Songlines • Coral, attract fish and other species • Seagrass, provide protection for animals. Locations include Conzinc Bay, and between Angel and Gidley Islands. On 22 August 2025, MAC advised Woodside that these species also had cultural value: • Stingrays • Sharks	**(2)** This value has been identified through Woodside's data collection processes (consultation).	**(2)** At the beginning of consultation for this EP, 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 (See ROC, 6.1.59). On 22 August 2025, MAC provided Woodside with updated details. Woodside has amended the EP and its records to reflect this new information.	**(2)** Woodside has updated Section 4.9 to record these interests and cultural values and assessed the potential impacts on these and where appropriate included controls in Sections 6.8 and 6.9 of the EP.

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• Crustaceans • Octopus • Sea star • Sea urchins • Sponges • Molluscs			
(3) Cultural Value: Marine eco-systems: • Mangroves. • Macroalgal (seaweed) communities. • Subtidal soft bottom communities. • Intertidal sand and mudflat communities. • Rocky shores.	**(3)** This value has been identified through Woodside's data collection processes (consultation and publicly available literature).	**(3)** At the beginning of consultation for this EP, Woodside provided 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 (See ROC, 6.1.59). MAC did not request changes.	**(3)** Woodside has updated Section 4.9 to record these interests and cultural values and assessed the potential impacts on these and where appropriate included controls in Sections 6.8 and 6.9 of the EP.
(4) Cultural Value: Fish traps in Conzinc Bay, and Angel and Gidley Islands.	**(4)** This value has been identified through Woodside's data collection processes (publicly available literature). Although this area is not within the EP EMBA Woodside has noted this value in the EP.	**(4)** At the beginning of consultation for this EP, 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 (See ROC, 6.1.59) During consultation for an unrelated EP MAC queried this cultural value. Woodside explained how it sources information about Cultural Values for EPs.	**(4)** Cultural values relating to Fish traps in Conzinc Bay and Angel and Gidley Islands are in 4.9. These areas are not relevant to this EP therefore no impacts are expected.
(5) Cultural Value: Harvesting squid around Conzinc Bay.	**(5)** This value has been identified through Woodside's data collection processes (publicly available literature).	**(5)** At the beginning of consultation for this EP, Woodside provided MAC with a list of the cultural values known to	**(5)** Cultural values relating to harvesting squid in Conzinc Bay are in 4.9. This

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	Although this area is not within the EP EMBA Woodside has noted this value in the EP.	Woodside that it believed relevant to the group and invited it to make changes or provide additional information (See ROC,6.1.59). During consultation for an unrelated EP MAC queried this cultural value. Woodside explained how it sources information about Cultural Values for EPs.	area is not relevant to this EP therefore no impacts are expected.
(6) Cultural Value: MAC is the appropriate cultural authority for Murujuga.	**(6)** This value has been identified through Woodside's data collection processes (consultation). Murujuga does not fall within the EMBA therefore no impacts are expected.	**(6)** At the beginning of consultation for this EP, 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 (See ROC, 6.1.59). MAC did not request changes.	**(6)** Woodside has updated Section 4.9 to record this cultural value. Murujuga does not fall within the EMBA therefore no impacts are expected.
(7) Cultural Value: Potential impact on Jinna (Songlines) on the submerged landscape. On 22 August MAC provided this additional detail: 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.	**(7)** This value has been identified through Woodside's data collection processes (consultation).	**(7)** At the beginning of consultation for this EP, 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 (See ROC, 6.1.59). On 22 August 2025, MAC provided additional information about this Cultural Value. Woodside has amended its records and informed MAC of these changes.	**(7)** Woodside considers underwater cultural heritage in Section 4.9 and relevant controls are in Section 6.8 and 6.9.
(8) Any changes to the feeding, breeding or migratory behaviour of culturally	**(8)** Woodside acknowledges this feedback and has updated its Cultural Values	**(8)**	**(8)** Woodside has updated Section 4.9 to record these interests and cultural

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significant species would impact significantly on subsistence, cultural and ceremonial activities.	records for MAC. Woodside has also included this information in the EP.	Woodside has provided MAC with details of Woodside's updated Cultural Values records.	values and assessed the potential impacts on these and where appropriate included controls in Sections 6.8 and 6.9 of the EP.
(9) MAC requested separate assessments for the protection of environmental and cultural values.	**(9)** Woodside undertakes assessments for both environmental and cultural values. These are considered individually and collaboratively.	**(9)** Woodside has advised MAC that it assesses environmental and cultural values both individually and collaboratively.	**(9)** Woodside has assessed impacts to cultural and environmental values in Sections 6.8 and 6.9 of the EP.
(10) MAC had no further comment about the EP and did not require further consultation.	**(10)** Woodside acknowledges this feedback.	**(10)** 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.	**(10)** No action required.
(11) MAC expects to be consulted on future projects located closer to Murujuga.	**(11)** Woodside acknowledges MAC's advice that it should be consulted about any activity located near Murujuga.	**(11)** Under Woodside's methodology, MAC is considered a relevant person for all EPs with EMBAs that overlap or are adjacent to Murujuga.	**(11)** No action required.
While feedback has been received, there were no objections or claims.	Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24.	Woodside engages in ongoing consultation throughout the life of an EP. 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 this EP).	Based on the engagement to date, no additional measures or controls are required.
Summary Report – Consultation Complete			

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Woodside has discharged its obligations for consultation under regulation 25 of the Environmental Regulations and consultation with MAC for the purpose of regulation 25 is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.4 of the EP. Specifically:

Sufficient Information

Sufficient information has been provided because:

- On 11 August 2025, Woodside made the Consultation Information Sheet available on the Woodside website.
- Woodside provided information to MAC on 11 August 2025 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.
  - Links to the NOPSEMA Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information, and contact details.
  - Confirmation of the purpose of consultation, what was being sought by Woodside through consultation including understanding the nature of MAC's interests and how the activity could impact those interests.
  - A request for the consultation and information sheets to be distributed to members and individuals as required.
  - An offer to provide more specific information, maps and images if required.
- Woodside provided contact information for Woodside and NOPSEMA.

Reasonable Period

A reasonable period for consultation in the preparation of the EP has been provided because:

- Woodside commenced consultation on this EP with MAC on 11 August 2025 and requested MAC provide feedback by 8 September 2025 for the purposes of preparation of the EP in line with Woodside's methodology of a 30-day period for consultation.
- On 6 October 2025, Woodside provided MAC with an activity update and extended the date to provide feedback to 20 September 2025.
- Woodside has addressed and responded to MAC for three months, demonstrating a "reasonable period" of consultation.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided and Woodside's approach to consultation is appropriate and adapted because:

- Woodside sought direction on 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 three months. This has included publishing advertisements in national, state and local newspapers including Indigenous newspapers, the Koori Mail (13 August 2025) and National Indigenous Times (26-27August 2025) advising of the proposed activities and requesting comments or feedback.
- Woodside's initial email about this EP on 11 August 2025:
  - Included a general email address and telephone number for Woodside, as well as a direct email and telephone number for a dedicated focal person from Woodside's First Nations Engagement team. Woodside also provided contact details for NOPSEMA.
  - Offered for Woodside to speak with MAC members as well as the MAC Board.

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  - Asked MAC to advise how it would like Woodside to engage and whether MAC required further information.
- Woodside offered to meet with MAC on a number of occasions.
- Throughout the consultation period, Woodside and MAC have had direct contact lines to each other during the period.
- Woodside invites MAC to Monthly Community Luncheons and/or Heritage Meetings.

Outcomes of Consultation

The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- Woodside has updated the EP to include new cultural values provided by MAC.
- During the past three months, MAC has provided feedback but has not raised objections or claims about the adverse impact of the activity to which this EP relates.
- On 22 August 2025, MAC informed Woodside that it had no further comment about the EP and did not require further consultation.

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 the EP).

4.12.4 Nganhurra Thanardi Garrbu Aboriginal Corporation (NTGAC)

NTGAC is established under the *Native Title Act 1993* by the Baiyungu people to represent the Baiyungu people (defined broadly by reference to descent from the set of ancestors who were known to have a continuous and unbroken connection as the Traditional Custodians at the time of European colonisation) and represent their communal interests including, among other things, management and protection of cultural values.

Woodside has an existing relationship with NTGAC 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 NTGAC, who is responsible for building a consultative relationship and is readily available to provide information and take feedback.

At the start of consultation, Woodside provided NTGAC a table of cultural values previously identified for NTGAC through consultation and reviews of publicly available literature. Woodside invited NTGAC to make changes or provide additional information about these cultural values. NTGAC did not request changes. Woodside consults NTGAC via YMAC. This context and process demonstrates that Woodside's consultation approach with NTGAC is appropriate and adapted to the nature and interests of NTGAC.

Summary of information provided and record of consultation for this EP:

- On 11 August 2025, Woodside emailed NTGAC via YMAC advising of the proposed activity (Record of Consultation, reference 6.1.63), 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 the NOPSEMA Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information, and contact details.
- Information on the cultural values that NTGAC has previously provided to Woodside considered relevant to the activity:
  - **(1)** Interests in marine ecosystems and species – invasive marine species, chemicals released into the water (ballast water discharges), risks to marine parks.
- **(1)** A request from Woodside that NTGAC confirm if there were any changes or additional information regarding cultural values that Woodside should consider in the preparation for this EP.
- A request for feedback by 8 September 2025 for the purposes of preparation of this EP.
- A request for information on how NTGAC would like to engage with Woodside about the proposed activity, including the opportunity to meet face to face.
- That feedback can continue to be accepted by Woodside during the life of the EP.
- A request for NTGAC to provide information about the proposed activity to other individuals, as required.
- Acknowledgement that discussions relating to a consultation framework agreement with Woodside has been ongoing and that these discussions will progress in parallel with consultation for the proposed activity's EP.

- On 26 August 2025, Woodside emailed NTGAC via YMAC a reminder about the proposed activity (SI Report B, reference 1.4.1). The email included:
  - A reference to the original consultation email for this EP sent to NTGAC on 11 August 2025, which included a Summary Information Sheet and a link to the Consultation Information Sheet and listed cultural values previously provided by NTGAC to Woodside.
  - A reminder that consultation for the preparation of this EP closes on 8 September 2025.
  - A request for information on how NTGAC would like to engage with Woodside about the proposed activity, including the opportunity to meet face to face.
  - Woodside's commitment to managing gender-restricted or other culturally sensitive information.
  - 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 26 August 2025, NTGAC via YMAC acknowledged receipt of the follow-up email. Woodside replied to this acknowledgement (SI Report B, references 1.4.2, 1.4.3).
- On 6 October 2025, Woodside emailed NTGAC via YMAC an activity update for this EP (SI Report B, reference 1.4.4). Woodside requested feedback be provided by 20 October 2025 to allow time for inclusion in the EP submission.

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim	Woodside's Response	Inclusion in Environment Plan
(1) Cultural Value: Interests in marine ecosystems and species – invasive marine species, chemicals released into the water (ballast water discharges), risks to marine parks.	**(1)** This value has been identified through Woodside's data collection processes (consultation).	**(1)** At the beginning of consultation for this EP, Woodside provided NTGAC 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 (See ROC, 6.1.60).	**(1)** Woodside recorded this cultural value in Section 4.9 of the EP. The management of ballast water discharges is covered in Section 6.9.9 of the EP.

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		NTGAC did not request changes.	
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 / or literature review.	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).	No additional measures or controls are required.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environmental Regulations and consultation with NTGAC for the purpose of regulation 25 is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.4 of the EP. Specifically:

Sufficient Information

Sufficient information has been provided because:

- On 11 August 2025, Woodside made the Consultation Information Sheet available on the Woodside website.
- Woodside provided information to NTGAC on 11 August 2025 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.
  - Links to the NOPSEMA Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information, and contact details.
  - Confirmation of the purpose of consultation, what was being sought by Woodside through consultation including understanding the nature of NTGAC's interests and how the activity could impact those interests.
  - A request for the consultation and information sheets to be distributed to members and individuals as required.
  - An offer to provide more specific information, maps and images if required.
- Woodside provided contact information for Woodside and NOPSEMA.

Reasonable Period

A reasonable period for consultation in the preparation of the EP has been provided because:

- Woodside commenced consultation on this EP with NTGAC on 11 August 2025 and requested NTGAC provide feedback by 8 September 2025 for the purposes of preparation of the EP in line with Woodside's methodology of a 30-day period for consultation.
- On 6 October 2025, Woodside provided NTGAC with an activity update and extended the date to provide feedback to 20 September 2025.
- Woodside has addressed and responded to NTGAC for three months, demonstrating a "reasonable period" of consultation.

Reasonable Opportunity

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A reasonable opportunity to provide feedback has been provided and Woodside's approach to consultation is appropriate and adapted because:

- Woodside sought direction on NTGAC's preferred method of consultation and has consulted in a way that Woodside understands is appropriate for First Nations groups.
- Woodside has made information on this EP publicly available for three months. This has included publishing advertisements in national, state and local newspapers including Indigenous newspapers, the Koori Mail (13 August 2025) and National Indigenous Times (26-27 August 2025) advising of the proposed activities and requesting comments or feedback.
- Woodside's initial email about this EP on 11 August 2025:
  - 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 NTGAC members as well as the NTGAC Board.
  - Asked NTGAC to advise how it would like Woodside to engage and whether NTGAC required further information.
- Throughout the consultation period, Woodside and NTGAC have had direct contact lines to each other.

Outcomes of Consultation

The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- Woodside has incorporated cultural values previously provided by NTGAC into the EP.
- During the past three months, NTGAC has not raised objections or claims about the adverse impact of the activity to which this EP relates.

Woodside engages in ongoing consultation once an EP has been submitted for assessment as well as throughout the life of an EP. Should feedback be received after the EP has been accepted (including relevant new information relating to cultural values), it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8 of the EP).

4.12.5 Ngarluma Aboriginal Corporation (NAC)

NAC is established under the Native Title Act 1993 by the Ngarluma people to represent the Ngarluma people (defined broadly by reference to descent from the set of ancestors who were known to have a continuous and unbroken connection as the Traditional Custodians at the time of European colonisation) and represent their communal interests including, among other things, management and protection of cultural values.

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 about EPs, NAC also attends Quarterly Heritage Meetings hosted by Woodside.

At the start of consultation, Woodside provided NAC a table of cultural values previously identified for NAC through consultation. Woodside invited NAC to make changes or provide additional information about these cultural values. 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.

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Summary of information provided and record of consultation for this EP:

- On 11 August 2025, Woodside emailed NAC advising of the proposed activity (Record of Consultation, reference 6.1.64), which included the activity's Summary Information Sheet and Consultation Information Sheet. The email included:
  - An overview of the proposed activity.
  - Links to the NOPSEMA Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information, and contact details.
  - Information on the cultural values that NAC has previously provided to Woodside considered relevant to the activity:
    - **(1)** Onshore heritage.
    - **(2)** Potential of 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.
  - 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.
  - A request for feedback by 8 September 2025 for the purposes of preparation of this EP.
  - Requested information on how NAC 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 during the life of the EP.
  - A request for NAC to provide information about the proposed activity to other individuals, as required.
  - Acknowledgement that discussions relating to Woodside's framework agreement has been ongoing and that these discussions will progress in parallel with consultation for the proposed activity's EP.
- On 26 August 2025, Woodside emailed NAC a reminder about the proposed activity (SI Report B, reference 1.5.1). The email included:
  - A reference to the original consultation email for this EP sent to NAC on 11 August 2025, which included a Summary Information Sheet and a link to the Consultation Information Sheet.
  - A reminder that consultation for the preparation of this EP closes on 8 September 2025.
  - A request for information on how NAC would like to engage with Woodside about the proposed activity, including the opportunity to meet face to face.
  - Woodside's commitment to managing gender-restricted or other culturally sensitive information.
  - 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 September 2025, Wong Goo Tt Oo, WAC and NAC attended Woodside's Quarterly Heritage Meeting (SI Report B, reference 5.1). Matters discussed relating to this EP included:
  - Cultural heritage update
  - Training and contracting opportunities

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– Project updates			
Summary of Feedback, Objection or Claim	**Woodside's Assessment of Merits of Feedback, Objection or Claim**	**Woodside's Response**	**Inclusion in Environment Plan**
(1) Cultural Value: Onshore Heritage.	**(1)** This value has been identified through Woodside's data collection processes (consultation).	**(1)** At the beginning of consultation for this EP, 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 (See ROC, 6.1.61). NAC did not request changes.	**(1)** Woodside has updated Section 4.9 to record these interests and cultural values and assessed the potential impacts on these and where appropriate included controls in Sections 6.8 and 6.9 of the EP.
(2) Cultural Value: Potential of submerged heritage.	**(2)** This value has been identified through Woodside's data collection processes (consultation).	**(2)** At the beginning of consultation for this EP, Woodside provided 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 (See ROC, 6.1.61). NAC did not request changes.	**(2)** Woodside considers underwater cultural heritage in Section 4.9 and relevant controls are in Section 6.8 and 6.9.
(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 (literature review).	**(3)** At the beginning of consultation for this EP, 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 (See ROC, 6.1.61). NAC did not request changes.	**(3)** Woodside has updated Section 4.9 to record these interests and cultural values; where relevant, controls have been adopted in Section 6.8.
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	Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be	No additional measures or controls are required.

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	included based on consultation and / or literature review.	assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8).	

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 and a reasonable period have been provided, as described in Section 5.4 of the EP. Specifically:

Sufficient Information

Sufficient information has been provided because:

- On 11 August 2025, Woodside made the Consultation Information Sheet available on the Woodside website.
- Woodside provided information to NAC on 11 August 2025 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.
  - Links to the NOPSEMA Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information, and contact details.
  - Confirmation of the purpose of consultation, what was being sought by Woodside through consultation including understanding the nature of NAC's interests and how the activity could impact those interests.
  - A request for the consultation and information sheets to be distributed to members and individuals as required.
  - An offer to provide more specific information, maps and images if required.
- Woodside provided contact information for Woodside and NOPSEMA.

Reasonable Period

A reasonable period for consultation in the preparation of the EP has been provided because:

- Woodside commenced consultation on this EP with NAC on 11 August 2025 and requested NAC provide feedback by 8 September for the purposes of preparation of the EP in line with Woodside's methodology of a 30-day period for consultation.
- On 6 October 2025, Woodside provided NAC with an activity update and extended the date to provide feedback to 20 September 2025.
- Woodside has addressed and responded to NAC for three months, demonstrating a "reasonable period" of consultation.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided and Woodside's approach to consultation is appropriate and adapted because:

- Woodside sought direction on NAC's preferred method of consultation and has consulted in a way that Woodside understands is appropriate for First Nations groups.

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- Woodside has made information on this EP publicly available for three months. This has included publishing advertisements in national, state and local newspapers including Indigenous newspapers, the Koori Mail (13 August 2025) and National Indigenous Times (26-27 August 2025) advising of the proposed activities and requesting comments or feedback.
- Woodside's initial email about this EP on 11 August 2025:
  - Included a general email address and telephone number for Woodside, as well as a direct email and telephone number for a dedicated focal person from Woodside's First Nations Engagement team. Woodside also provided contact details for NOPSEMA.
  - Offered for Woodside to speak with NAC members as well as the NAC Board.
  - Asked NAC to advise how it would like Woodside to engage and whether NAC required further information.
- Throughout the consultation period, Woodside and NAC have had direct contact lines to each other.
- Woodside invites NAC to Heritage Meetings.

Outcomes of Consultation

The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- Woodside has incorporated cultural values previously provided by NAC into the EP.
- During the past three months, NAC has not raised objections or claims about the adverse impact of the activity to which this EP relates.

Woodside engages in ongoing consultation once an EP has been submitted for assessment as well as throughout the life of an EP. Should feedback be received after the EP has been accepted (including relevant new information relating to cultural values), it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8 of the EP).

4.12.6 Nhuwala Claim Group (Nhuwala)

The Nhuwala Claim Group Native Title claim is in Western Australia's Pilbara region within the Shire of Ashburton. The application area covers around 3,475 square kilometres surrounding Onslow. Nhuwala is represented by YMAC. During consultation for this EP, Nhuwala via YMAC requested a meeting with Woodside to discuss this EP and others. This meeting was booked for 4 November 2025 but was cancelled by Nhuwala via YMAC on 30 October 2025. Nhuwala via YMAC requested the meeting be postponed to the week beginning 17 November 2025. Woodside informed Nhuwala via YMAC that this EP would be submitted ahead of this date and any feedback received during the meeting would be considered ongoing consultation. This context and process demonstrates that Woodside's consultation approach with Nhuwala is appropriate and adapted to the nature and interests of Nhuwala.

Summary of information provided and record of consultation for this EP:

- On 11 August 2025, Woodside emailed Nhuwala via YMAC advising of the proposed activity (Record of Consultation, reference 6.1.65), which included the activity's Summary Information Sheet and Consultation Information Sheet. The email included:
  - An overview of the proposed activity.
  - Links to the NOPSEMA Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information, and contact details.

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- A request for feedback by 8 September for the purposes of preparation of this EP.
- A request for information on how Nhuwala 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 during the life of the EP.
- A request for Nhuwala to provide information about the proposed activity to other individuals, as required.

- On 22 August 2025, Nhuwala emailed Woodside via YMAC and requested a meeting to discuss this EP (SI Report B, reference 1.6.1).
- On 26 August 2025, Woodside emailed Nhuwala via YMAC an update about the activity, acknowledging that a consultation meeting would be held at a later date (SI Report B, reference 1.6.2). The email included:
  - A reference to the original consultation email for this EP sent to Nhuwala on 11 August 2025, which included a Summary Information Sheet and a link to the Consultation Information Sheet.
  - A reminder that consultation for the preparation of this EP closes on 8 September 2025.
  - A request for information on how Nhuwala would like to engage with Woodside about the proposed activity, including the opportunity to meet face to face.
  - Woodside's commitment to managing gender-restricted or other culturally sensitive information.
  - 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 26 August 2025, Nhuwala via YMAC emailed Woodside proposing a meeting in Karratha to discuss this EP and another (SI Report B, reference 1.6.3).
- Between 27 August 2025 and 1 October 2025, Woodside and Nhuwala via YMAC exchanged emails and text messages about the date, time and location for a meeting in Karratha (SI Report B, references 1.6.4 – 1.6.11).
- On 6 October 2025, Woodside emailed Nhuwala via YMAC an activity update for this EP (SI Report B, reference 1.6.12). Woodside requested feedback be provided by 20 October 2025 to allow time for inclusion in the EP submission.
- Between 15 October and 30 October 2025, Woodside and Nhuwala via YMAC exchanged emails to finalise details for a meeting. During the exchange it was agreed to meet in Karratha on 4 November 2025 (SI Report B, references 1.6.13 – 1.6.28).
- On 30 October 2025, Nhuwala via YMAC emailed Woodside to cancel the meeting scheduled for 4 November 2025. Nhuwala via YMAC requested the meeting be rescheduled to the week beginning 17 November 2025 (SI Report B, reference 1.6.29).
- Between 30 and 31 October 2025, Woodside and Nhuwala via YMAC exchanged emails about the meeting cancellation (SI Report B, references 1.6.30 -1.6.32).
- On 4 November 2025, Woodside emailed Nhuwala via YMAC about its proposal to reschedule their meeting to the week beginning 17 November. Woodside advised that this EP would be closed for consultation by that time and that any engagement from that point forward would be considered part of ongoing consultation (SI Report B, reference 1.6.33).
- Between 6 and 7 November 2025, Nhuwala via YMAC and Woodside exchanged emails to confirm the rescheduling of their planned meeting to 20 November in Karratha (SI Report B, references 1.6.34 – 1.6.35).

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim	Woodside's Response	Inclusion in Environment Plan

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No feedback, objection or claim about the adverse impact of the activity received despite follow-up.	Woodside engages in ongoing consultation throughout the life of an EP.	Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8 of this EP).	No additional measures or controls are required.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environmental Regulations and consultation with Nhuwala Claim Group for the purpose of regulation 25 is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.4 of the EP. Specifically:

Sufficient Information

Sufficient information has been provided because:

- On 11 August 2025 Woodside made the Consultation Information Sheet available on the Woodside website.
- Woodside provided information to Nhuwala via YMAC on 11 August 2025 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.
  - Links to the NOPSEMA Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information, and contact details.
  - Confirmation of the purpose of consultation, what was being sought by Woodside through consultation including understanding the nature of the Nhuwala Claim Group's interests and how the activity could impact those interests.
  - A request for the consultation and information sheets to be distributed to members and individuals as required.
  - An offer to provide more specific information, maps and images if required.
- Woodside provided contact information for Woodside and NOPSEMA.

Reasonable Period

A reasonable period for consultation in the preparation of the EP has been provided because:

- Woodside commenced consultation on this EP with Nhuwala on 11 August 2025 and requested the Nhuwala Claim Group provide feedback by 8 September 2025 for the purposes of preparation of the EP in line with Woodside's methodology of a 30-day period for consultation.
- On 6 October 2025, Woodside provided Nhuwala with an activity update and extended the date to provide feedback to 20 September 2025.
- Woodside has addressed and responded to Nhuwala for three months, demonstrating a "reasonable period" of consultation.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided and Woodside's approach to consultation is appropriate and adapted because:

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- Woodside sought direction on Nhuwala'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 three months. This has included publishing advertisements in national, state and local newspapers including Indigenous newspapers, the Koori Mail (13 August 2025) and National Indigenous Times (26-27 August 2025) advising of the proposed activities and requesting comments or feedback.
- Woodside's initial email about this EP on 11 August 2025.
  - 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 Nhuwala members.
  - Asked Nhuwala to advise how it would like Woodside to engage and whether Nhuwala required further information.

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 three months, Nhuwala has not raised objections or claims about the adverse impact of the activity to which this EP relates.

Woodside engages in ongoing consultation once an EP has been submitted for assessment as well as throughout the life of an EP. Should feedback be received after the EP has been accepted (including relevant new information relating to cultural values), it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8 of the EP).

4.12.7 Robe River Kuruma Aboriginal Corporation (RRKAC)

RRKAC is established under the *Native Title Act 1993* by the Robe River Kuruma people to represent the Robe River Kuruma people (defined broadly by reference to descent from the set of ancestors who were known to have a continuous and unbroken connection as the Traditional Custodians at the time of European colonisation) and represent their communal interests including, among other things, management and protection of cultural values.

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.

At the start of consultation, Woodside provided RRKAC a table of cultural values previously identified for RRKAC through consultation and reviews of publicly available literature. Woodside invited RRKAC to make changes or provide additional information about these cultural values. 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:

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- On 11 August 2025, Woodside emailed RRKAC advising of the proposed activity (Record of Consultation, reference 6.1.66), which included the activity's Summary Information Sheet and Consultation Information Sheet. The email included:
  - An overview of the proposed activity.
  - Links to the NOPSEMA Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information, and contact details.
  - A request for feedback by 8 September 2025 for the purposes of preparation of this EP.
  - A request for information on how RRKAC would like to engage with Woodside about the proposed activity, including the opportunity to meet face to face.
  - That feedback can continue to be accepted by Woodside during the life of the EP.
  - A request for RRKAC to provide information about the proposed activity to other individuals, as required.
  - Acknowledgement that discussions relating to Woodside's framework agreement has been ongoing and that these discussions will progress in parallel with consultation for the proposed activity's EP.
- On 26 August 2025, Woodside emailed RRKAC a reminder about the proposed activity (SI Report B, reference 1.7.1). The email included:
  - A reference to the original consultation email for this EP sent to RRKAC on 11 August 2025, which included a Summary Information Sheet and a link to the Consultation Information Sheet.
  - A reminder that consultation for the preparation of this EP closes on 8 September 2025.
  - A request for information on how RRKAC would like to engage with Woodside about the proposed activity, including the opportunity to meet face to face.
  - Woodside's commitment to managing gender-restricted or other culturally sensitive information.
  - 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 6 October 2025, Woodside emailed RRKAC an activity update for this EP (SI Report B, reference 1.7.2). Woodside requested feedback be provided by 20 October 2025 to allow time for inclusion in the EP submission.

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim	Woodside's Response	Inclusion in Environment Plan
(1) Cultural Value: Concerns about underwater heritage – impacts at shoreline.	**(1)** This value has been identified through Woodside's data collection processes (consultation).	**(1)** At the beginning of consultation for this EP, Woodside provided RRKAC 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 (See ROC, 6.1.63). RRKAC did not request changes.	**(1)** Woodside considers underwater cultural heritage in Section 4.9 and relevant controls are in Section 6.8 and 6.9.
(2)	**(2)**	**(2)**	**(2)**

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Cultural Value: The coastline.	This value has been identified through Woodside's data collection processes (consultation).	At the beginning of consultation for this EP, Woodside provided RRKAC 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 (See ROC, 6.1.63). RRKAC did not request changes.	Woodside considers cultural heritage in Section 4.9 and relevant controls are in Sections 6.8 and 6.9.
No feedback, objections or claims about the adverse impact of the activity received despite follow-up.	Although no feedback, objections or claims were provided for this EP, historical cultural values considered relevant have been identified and included based on consultation.	Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8).	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 and a reasonable period have been provided, as described in Section 5.4 of the EP. Specifically:

Sufficient Information

Sufficient information has been provided because:

- On 11 August 2025, Woodside made the Consultation Information Sheet available on the Woodside website.
- Woodside provided information to RRKAC on 11 August 2025 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.
  - Links to the NOPSEMA Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information, and contact details.
  - Confirmation of the purpose of consultation, what was being sought by Woodside through consultation including understanding the nature of RRKAC's interests and how the activity could impact those interests.
  - A request for the consultation and information sheets to be distributed to members and individuals as required.
  - An offer to provide more specific information, maps and images if required.
- Woodside provided contact information for Woodside and NOPSEMA.

Reasonable Period

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A reasonable period for consultation in the preparation of the EP has been provided because:

- Woodside commenced consultation on this EP with RRKAC on 11 August 2025 and requested RRKAC provide feedback by 8 September 2025 for the purposes of preparation of the EP in line with Woodside's methodology of a 30-day period for consultation.
- On 6 October 2025, Woodside provided RRKAC with an activity update and extended the date to provide feedback to 20 September 2025.
- Woodside has addressed and responded to RRKAC for three months, demonstrating a "reasonable period" of consultation.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided and Woodside's approach to consultation is appropriate and adapted because:

- Woodside sought direction on 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 three months. This has included publishing advertisements in national, state and local newspapers including Indigenous newspapers, the Koori Mail (13 August 2025) and National Indigenous Times (26-27 August 2025) advising of the proposed activities and requesting comments or feedback.
- Woodside's initial email about this EP on 11 August 2025:
  - 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.
- Throughout the consultation period, Woodside and RRKAC have had direct contact lines to each other.

Outcomes of Consultation

The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- Woodside has incorporated cultural values previously provided by RRKAC into the EP.
- During the past three months, RRKAC has not raised objections or claims about the adverse impact of the activity to which this EP relates.

Woodside engages in ongoing consultation once an EP has been submitted for assessment as well as throughout the life of an EP. Should feedback be received after the EP has been accepted (including relevant new information relating to cultural values), it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8 of the EP).

4.12.8 Thalanyji/Nhuwala People

The Thalanyji/Nhuwala People Native Title claim is in Western Australia's Pilbara region within the Shire of Ashburton. The application area consists of multiple parts with a total combined area of around 2,058 square kilometres in an area surrounding Onslow. The Thalanyji/Nhuwala People have legal representation and are associated with BTAC. Woodside has consulted with the Thalanyji/Nhuwala People via BTAC. This context and process demonstrates

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that Woodside's consultation approach with The Thalanyji/Nhuwala People is appropriate and adapted to the nature and interests of the Thalanyji/Nhuwala People.

Summary of information provided and record of consultation for this EP:

- On 11 August 2025, after reviewing the Thalanyji/Nhuwala People Native Title claim and determining that BTAC was the group's representative body (SI Report B, reference 1.8.1), Woodside emailed the Thalanyji/Nhuwala People via BTAC advising of the proposed activity (Record of Consultation, reference 6.1.67), which included the activity's Summary Information Sheet and Consultation Information Sheet. The email included:
  - An overview of the proposed activity.
  - Links to the NOPSEMA Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information, and contact details.
  - A request for feedback by 8 September for the purposes of preparation of this EP.
  - A request for information on how the Thalanyji/Nhuwala People 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 during the life of the EP.
  - A request for the Thalanyji/Nhuwala People to provide information about the proposed activity to other individuals, as required.
- On 11 August 2025, Woodside called and emailed BTAC to discuss appropriate contact details for the Thalanyji/Nhuwala People and confirm that the Record of Consultation was forwarded to the group (SI Report B, references 1.8.2-1.8.4).
- On 26 August 2025, Woodside emailed Thalanyji/Nhuwala People via BTAC a reminder about the proposed activity (SI Report B, reference 1.8.5). The email included:
  - A reference to the original consultation email for this EP sent to Thalanyji/Nhuwala People on 11 August 2025, which included a Summary Information Sheet and a link to the Consultation Information Sheet.
  - A reminder that consultation for the preparation of this EP closes on 8 September 2025.
  - A request for information on how Thalanyji/Nhuwala People would like to engage with Woodside about the proposed activity, including the opportunity to meet face to face.
  - Woodside's commitment to managing gender-restricted or other culturally sensitive information.
  - 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 6 October 2025, Woodside emailed Thalanyji/Nhuwala People via BTAC an activity update for this EP (SI Report B, reference 1.8.6). Woodside requested feedback be provided by 20 October 2025 to allow time for inclusion in the EP submission.

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim	Woodside's Response	Inclusion in Environment Plan
No feedback, objection or claim about the adverse impact of the activity received despite follow-up.	Woodside engages in ongoing consultation throughout the life of an EP.	Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate,	No additional measures or controls are required.

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		Woodside will apply its Management of Change and Revision process (see Section 7.8 of this EP).	

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environmental Regulations and consultation with the Thalanyji/Nhuwala People for the purpose of regulation 25 is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.4 of the EP. Specifically:

Sufficient Information

Sufficient information has been provided because:

- On 11 August 2025, Woodside made the Consultation Information Sheet available on the Woodside website.
- Woodside provided information to the Thalanyji/Nhuwala People on 11 August 2025 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.
  - Links to the NOPSEMA Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information, and contact details.
  - Confirmation of the purpose of consultation, what was being sought by Woodside through consultation including understanding the nature of the Thalanyji/Nhuwala People interests and how the activity could impact those interests.
  - A request for the consultation and information sheets to be distributed to members and individuals as required.
  - An offer to provide more specific information, maps and images if required.
- Woodside provided contact information for Woodside and NOPSEMA.

Reasonable Period

A reasonable period for consultation in the preparation of the EP has been provided because:

- Woodside commenced consultation on this EP with the Thalanyji/Nhuwala People on 11 August 2025 and requested the Thalanyji/Nhuwala People provide feedback by 8 September 2025 for the purposes of preparation of the EP in line with Woodside's methodology of a 30-day period for consultation.
- On 6 October 2025, Woodside provided Thalanyji/Nhuwala People with an activity update and extended the date to provide feedback to 20 September 2025.
- Woodside has addressed and responded to the Thalanyji/Nhuwala People for three months, demonstrating a "reasonable period" of consultation.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided and Woodside's approach to consultation is appropriate and adapted because:

- Woodside sought direction on the Thalanyji/Nhuwala People's preferred method of consultation and has consulted in a way that Woodside understands is appropriate for First Nations groups.

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- Woodside has made information on this EP publicly available for three months. This has included publishing advertisements in national, state and local newspapers including Indigenous newspapers, the Koori Mail (13 August 2025) and National Indigenous Times (26-27 August 2025) advising of the proposed activities and requesting comments or feedback.
- Woodside's initial email about this EP on 11 August 2025:
  - 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 the Thalanyji/Nhuwala People members.
  - Asked the Thalanyji/Nhuwala People to advise how they would like Woodside to engage and whether they required further information.

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 three months, has not raised objections or claims about the adverse impact of the activity to which this EP relates.

Woodside engages in ongoing consultation once an EP has been submitted for assessment as well as throughout the life of an EP. Should feedback be received after the EP has been accepted (including relevant new information relating to cultural values), it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8 of the EP).

4.12.9 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 acknowledges the YM people as part of the Traditional Owner groups represented by MAC and also recognises WAC's establishment under the Native Title Act 1993 (Cth) to represent the YM people. Woodside celebrates the Yaburara and Mardudhunera as one of the five language groups having achieved World Heritage Listing for the Murujuga Cultural Landscape.

Woodside's consultation approach for Traditional Owners has a focus on building and maintaining long-term relationships and has maintained a positive and collaborative relationship with WAC over several years. WAC also attends Quarterly Heritage Meetings hosted by Woodside. At the start of consultation, Woodside provided WAC a list of cultural values that Woodside understands are relevant for WAC, identified through previous consultation or reviews of publicly available literature. Woodside invited WAC to make changes or provide additional information about these cultural values. WAC has not provided any additional information to Woodside in relation to the values provided.

Summary of information provided and record of consultation for this EP:

- On 11 August 2025, Woodside emailed WAC advising of the proposed activity (Record of Consultation, reference 6.1.68), which included the activity's Summary Information Sheet and Consultation Information Sheet. The email included:

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  - An overview of the proposed activity.
  - Links to the NOPSEMA Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information, and contact details.
  - Information on the cultural values that WAC has previously provided to Woodside considered relevant to the activity:
    - **(1)** Marine species – whales, turtles.
    - **(2)** Potential impact of emissions on rock art.
    - **(3)** Underwater and onshore heritage.
  - **(1, 2, 3)** 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.
  - A request for feedback by 8 September 2025 for the purposes of preparation of this EP.
  - A request for information on how WAC would like to engage with Woodside about the proposed activity, including the opportunity to meet face to face.
  - That feedback can continue to be accepted by Woodside during the life of the EP.
  - A request for WAC to provide information about the proposed activity to other individuals, as required.
  - Acknowledgement that discussions relating to Woodside's framework agreement has been ongoing and that these discussions will progress in parallel with consultation for the proposed activity's EP
- On 26 August 2025, Woodside emailed WAC a reminder about the proposed activity (SI Report B, reference B 1.9.1). The email included:
  - A reference to the original consultation email for this EP sent to WAC on 11 August 2025, which included a Summary Information Sheet and a link to the Consultation Information Sheet.
  - A reminder that consultation for the preparation of this EP closes on 8 September 2025.
  - A request for information on how WAC would like to engage with Woodside about the proposed activity, including the opportunity to meet face to face.
  - Woodside's commitment to managing gender-restricted or other culturally sensitive information.
  - 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 September 2025, Wong Goo Tt Oo, WAC and NAC attended Woodside's Quarterly Heritage Meeting (SI Report B, reference 5.1). Matters discussed relating to this EP included:
  - Cultural heritage update.
  - Training and contracting opportunities.
  - Project updates.
- On 6 October 2025, Woodside emailed WAC an activity update for this EP (SI Report B, reference 1.9.2). Woodside requested feedback be provided by 20 October 2025 to allow time for inclusion in the EP submission.

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim	Woodside's Response	Inclusion in Environment Plan

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(1) Cultural Value: Marine species: • Whales • Turtles.	**(1)** This value has been identified through Woodside's data collection processes (consultation).	**(1)** At the beginning of consultation for this EP, 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 (See ROC, 6.1.65).	**(1)** Woodside has updated Section 4.9 to record these interests and cultural values and assessed the potential impacts on these and where appropriate included controls in Sections 6.8 and 6.9 of the EP.
(2) Cultural Value: Potential impact of emissions on rock art.	**(2)** This value has been identified through Woodside's data collection processes (consultation). Onshore emissions are not considered within the scope of this activity and therefore not relevant to the EP.	**(2)** At the beginning of consultation for this EP, 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 (See ROC, 6.1.65).	**(2)** Woodside has updated Section 4.9 to record these interests and cultural values. Onshore emissions are not considered within the scope of this activity and therefore not relevant to the EP.
(3) Cultural Value: Underwater and onshore heritage.	**(3)** This value has been identified through Woodside's data collection processes (consultation).	**(3)** At the beginning of consultation for this EP, 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 (See ROC, 6.1.65).	**(3)** Woodside has updated Section 4.9 to record these interests and cultural values and assessed the potential impacts on these and where appropriate included controls in Sections 6.8 and 6.9 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.	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).	No additional measures or controls are required.
Summary Report – Consultation Complete			

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Woodside has discharged its obligations for consultation under regulation 25 of the Environmental Regulations and consultation with WAC for the purpose of regulation 25 is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.4 of the EP. Specifically:

Sufficient Information

Sufficient information has been provided because:

- On 11 August 2025, Woodside made the Consultation Information Sheet available on the Woodside website.
- Woodside provided information to WAC on 11 August 2025 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.
  - Links to the NOPSEMA Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information, and contact details.
  - Confirmation of the purpose of consultation, what was being sought by Woodside through consultation including understanding the nature of WAC's interests and how the activity could impact those interests.
  - A request for the consultation and information sheets to be distributed to members and individuals as required.
  - An offer to provide more specific information, maps and images if required.
- Woodside provided contact information for Woodside and NOPSEMA.

Reasonable Period

A reasonable period for consultation in the preparation of the EP has been provided because:

- Woodside commenced consultation on this EP with WAC on 11 August 2025 and requested WAC provide feedback by 8 September 2025 for the purposes of preparation of the EP in line with Woodside's methodology of a 30-day period for consultation.
- On 6 October 2025, Woodside provided WAC with an activity update and extended the date to provide feedback to 20 September 2025.
- Woodside has addressed and responded to WAC for three months, demonstrating a "reasonable period" of consultation.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided and Woodside's approach to consultation is appropriate and adapted because:

- Woodside sought direction on 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 three months. This has included publishing advertisements in national, state and local newspapers including Indigenous newspapers, the Koori Mail (13 August 2025) and National Indigenous Times (26-27 August 2025) advising of the proposed activities and requesting comments or feedback.
- Woodside's initial email about this EP on 11 August 2025:
  - Included a general email address and telephone number for Woodside, as well as a direct email and telephone number for a dedicated focal person from Woodside's First Nations Engagement team. Woodside also provided contact details for NOPSEMA.
  - Offered for Woodside to speak with WAC members as well as the WAC Board.

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  - Asked WAC to advise how it would like Woodside to engage and whether WAC required further information.
- Throughout the consultation period, Woodside and WAC have had direct contact lines to each other.
- Woodside invites WAC to Monthly Community Luncheons and/or Heritage Meetings.

Outcomes of Consultation

The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- Woodside has incorporated cultural values previously provided by WAC into the EP.
- During the past three months, WAC has not raised objections or claims about the adverse impact of the activity to which this EP relates.

Woodside engages in ongoing consultation once an EP has been submitted for assessment as well as throughout the life of an EP. Should feedback be received after the EP has been accepted (including relevant new information relating to cultural values), it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8 of the EP).

4.12.10 Yindjibarndi Aboriginal Corporation (Yindjibarndi)

Yindjibarndi is established under the *Native Title Act 1993* by the Yindjibarndi people to represent the Yindjibarndi people (defined broadly by reference to descent from the set of ancestors who were known to have a continuous and unbroken connection as the Traditional Custodians at the time of European colonisation) and represent their communal interests including, among other things, management and protection of cultural values.

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 11 August 2025, Woodside emailed Yindjibarndi via NYFL advising of the proposed activity (Record of Consultation, reference 6.1.69), which included the activity's Summary Information Sheet and Consultation Information Sheet. The email included:
  - An overview of the proposed activity.
  - Links to the NOPSEMA Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information, and contact details.

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  - A request for feedback by 8 September 2025 for the purposes of preparation of this EP.
  - A request for information on how Yindjibarndi would like to engage with Woodside about the proposed activity, including the opportunity to meet face to face.
  - That feedback can continue to be accepted by Woodside during the life of the EP.
  - A request for Yindjibarndi to provide information about the proposed activity to other individuals, as required.
  - Acknowledgement that discussions relating to Woodside's framework agreement has been ongoing and that these discussions will progress in parallel with consultation for the proposed activity's EP.
- On 26 August 2025, Woodside emailed Yindjibarndi via NYFL a reminder about the proposed activity (SI Report B, reference 3.1.1) The email included:
  - A reference to the original consultation email for this EP sent to Yindjibarndi on 11 August 2025, which included a Summary Information Sheet and a link to the Consultation Information Sheet.
  - A reminder that consultation for the preparation of this EP closes on 8 September 2025.
  - A request for information on how Yindjibarndi would like to engage with Woodside about the proposed activity, including the opportunity to meet face to face.
  - Woodside's commitment to managing gender-restricted or other culturally sensitive information.
  - 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 6 October 2025, Woodside emailed Yindjibarndi via NYFL an activity update for this EP (SI Report B, reference 3.1.2). Woodside requested feedback be provided by 20 October 2025 to allow time for inclusion in the EP submission.

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim	Woodside's Response	Inclusion in Environment Plan
No feedback, objection or claim about the adverse impact of the activity received despite follow-up.	Woodside engages in ongoing consultation throughout the life of an EP.	Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8 of this EP).	No additional measures or controls are required.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environmental Regulations and consultation with Yindjibarndi for the purpose of regulation 25 is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.4 of the EP. Specifically:

Sufficient Information

Sufficient information has been provided because:

- On 11 August 2025, Woodside made the Consultation Information Sheet available on the Woodside website.
- Woodside provided information to Yindjibarndi on 11 August 2025 when consultation commenced. Woodside provided:

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  - 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.
  - Links to the NOPSEMA Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information, and contact details.
  - Confirmation of the purpose of consultation, what was being sought by Woodside through consultation including understanding the nature of Yindjibarndi interests and how the activity could impact those interests.
  - A request for the consultation and information sheets to be distributed to members and individuals as required.
  - An offer to provide more specific information, maps and images if required.
- Woodside provided contact information for Woodside and NOPSEMA.

Reasonable Period

A reasonable period for consultation in the preparation of the EP has been provided because:

- Woodside commenced consultation on this EP with Yindjibarndi on 11 August 2025 and requested Yindjibarndi provide feedback by 8 September 2025 for the purposes of preparation of the EP in line with Woodside's methodology of a 30-day period for consultation.
- On 6 October 2025, Woodside provided Yindjibarndi with an activity update and extended the date to provide feedback to 20 September 2025.
- Woodside has addressed and responded to Yindjibarndi for three months, demonstrating a "reasonable period" of consultation.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided and Woodside's approach to consultation is appropriate and adapted because:

- Woodside sought direction on 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 three months. This has included publishing advertisements in national, state and local newspapers including Indigenous newspapers, the Koori Mail (13 August 2025) and National Indigenous Times (26-27 August 2025) advising of the proposed activities and requesting comments or feedback.
- Woodside's initial email about this EP on 11 August 2025:
  - 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 members as well as the Yindjibarndi Board.
  - Asked Yindjibarndi to advise how it would like Woodside to engage and whether Yindjibarndi required further information.

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 three months, Yindjibarndi has not raised objections or claims about the adverse impact of the 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 of the EP).

4.12.11 Yinggarda Aboriginal Corporation (YAC)

YAC is established under the Native Title Act 1993 by the Yinggarda people to represent the Yinggarda people (defined broadly by reference to descent from the set of ancestors who were known to have a continuous and unbroken connection as the Traditional Custodians at the time of European colonisation) and represent their communal interests including, among other things, management and protection of cultural values.

Woodside has an existing relationship with YAC 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 YAC, who is responsible for building a consultative relationship and is readily available to provide information and take feedback.

This context and process demonstrates that Woodside's consultation approach with YAC is appropriate and adapted to the nature and interests of YAC.

Summary of information provided and record of consultation for this EP:

- On 11 August 2025, Woodside emailed YAC via its legal representative advising of the proposed activity (Record of Consultation, reference 6.1.70), which included the activity's Summary Information Sheet and Consultation Information Sheet. The email included:
  - An overview of the proposed activity.
  - Links to the NOPSEMA Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information, and contact details.
  - Information on the cultural values that Yinggarda has previously provided to Woodside considered relevant to the activity:
    - **(1)** Right and responsibility to speak and care for Country.
    - **(2)** Use of Country for cultural activities – fishing, camping hunting and gathering.
    - **(3)** Health of ecosystems – plants, animals, seagrass is an important food source for dugongs.
    - **(4)** Marine mammals – dugongs, whales (potential impact to migration patterns and potential collisions with vessels).
  - **(1, 2, 3, 4)** A request from Woodside that YAC confirm if there were any changes or additional information regarding cultural values that Woodside should consider in the preparation for this EP.
  - A request for feedback by 8 September 2025 for the purposes of preparation of this EP.
  - A request for information on how Yinggarda 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 during the life of the EP.
  - A request for Yinggarda to provide information about the proposed activity to other individuals, as required.

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- Acknowledgement that discussions relating to Woodside's framework agreement has been ongoing and that these discussions will progress in parallel with consultation for the proposed activity's EP.

- On 26 August 2025, Woodside emailed YAC via its legal representative a reminder about the proposed activity (SI Report B, reference 1.11.1). The email included:
  - A reference to the original consultation email for this EP sent to YAC on 11 August 2025, which included a Summary Information Sheet and a link to the Consultation Information Sheet.
  - A reminder that consultation for the preparation of this EP closes on 8 September 2025.
  - A request for information on how YAC would like to engage with Woodside about the proposed activity, including the opportunity to meet face to face.
  - Woodside's commitment to managing gender-restricted or other culturally sensitive information.
  - 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 26 August 2025, Woodside and YAC exchanged emails about new contact details for YAC. YAC explained that Woodside should contact YAC directly about EPs. Previously Woodside had been instructed to contact YAC's legal representative. (SI Report B, reference 1.11.2-1.11.3).
- On 6 October 2025, Woodside emailed YAC an activity update for this EP (SI Report B, reference 1.11.4). Woodside requested feedback be provided by 20 October 2025 to allow time for inclusion in the EP submission.

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim	Woodside's Response	Inclusion in Environment Plan
(1) Cultural Value: Right and responsibility to speak and care for Country.	**(1)** This value has been identified through Woodside's data collection processes (publicly available literature).	**(1)** At the beginning of consultation for this EP, Woodside provided YAC 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 (See ROC, 6.1.67). YAC did not request changes.	**(1)** Woodside has updated Section 4.9 to record these interests and cultural values and assessed the potential impacts on these and where appropriate included controls in Sections 6.8 and 6.9 of the EP.
(2) Cultural Value: Use of Country for cultural activities: • Fishing • Camping • Hunting and gathering.	**(2)** This value has been identified through Woodside's data collection processes (consultation and publicly available literature).	**(2)** At the beginning of consultation for this EP, Woodside provided YAC 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 (See ROC 6.1.67).	**(2)** Woodside has updated Section 4.9 to record these interests and cultural values and assessed the potential impacts on these and where appropriate included controls in Sections 6.8 and 6.9 of the EP.

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		YAC did not request changes.	
(3) Cultural Value: Health of ecosystems • Plants and animals. • Seagrass is an important food. source for dugongs.	**(3)** This value has been identified through Woodside's data collection processes (consultation).	**(3)** At the beginning of consultation for this EP, Woodside provided YAC 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 (See ROC, 6.1.67). YAC did not request changes.	**(3)** Woodside has updated Section 4.9 to record these interests and cultural values and assessed the potential impacts on these and where appropriate included controls in Sections 6.8 and 6.9 of the EP.
(4) Cultural Value: Marine mammals: • Dugongs. • Whales (potential impact to migration patterns and potential collisions with vessels).	**(4)** This value has been identified through Woodside's data collection processes (consultation).	**(4)** At the beginning of consultation for this EP, Woodside provided YAC 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 (See ROC, 6.1.67). YAC did not request changes.	**(4)** Woodside has updated Section 4.9 to record these interests and cultural values and assessed the potential impacts on these and where appropriate included controls in Sections 6.8 and 6.9 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.	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).	No additional measures or controls are required.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environmental Regulations and consultation with YAC for the purpose of regulation 25 is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.4 of the EP. Specifically:

Sufficient Information

Sufficient information has been provided because:

- On 11 August 2025, Woodside made the Consultation Information Sheet available on the Woodside website.

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- Woodside provided information to YAC on 11 August 2025 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.
  - Links to the NOPSEMA Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information, and contact details.
  - Confirmation of the purpose of consultation, what was being sought by Woodside through consultation including understanding the nature of YAC's interests and how the activity could impact those interests.
  - A request for the consultation and information sheets to be distributed to members and individuals as required.
  - An offer to provide more specific information, maps and images if required.
- Woodside provided contact information for Woodside and NOPSEMA.

Reasonable Period

A reasonable period for consultation in the preparation of the EP has been provided because:

- Woodside commenced consultation on this EP with YAC on 11 August 2025 and requested YAC provide feedback by 8 September 2025 for the purposes of preparation of the EP in line with Woodside's methodology of a 30-day period for consultation.
- On 6 October 2025, Woodside provided YAC with an activity update and extended the date to provide feedback to 20 September 2025.
- Woodside has addressed and responded to YAC for three months, demonstrating a "reasonable period" of consultation.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided and Woodside's approach to consultation is appropriate and adapted because:

- Woodside sought direction on YAC's preferred method of consultation and has consulted in a way that Woodside understands is appropriate for First Nations groups.
- Woodside has made information on this EP publicly available for three months. This has included publishing advertisements in national, state and local newspapers including Indigenous newspapers, the Koori Mail (13 August 2025) and National Indigenous Times (26-27 August 2025) advising of the proposed activities and requesting comments or feedback.
- Woodside's initial email about this EP on 11 August 2025:
  - Included a general email address and telephone number for Woodside, as well as a direct email and telephone number for a dedicated focal person from Woodside's First Nations Engagement team. Woodside also provided contact details for NOPSEMA.
  - Offered for Woodside to speak with YAC members as well as the YAC Board.
  - Asked YAC to advise how it would like Woodside to engage and whether YAC required further information.
- Throughout the consultation period, Woodside and YAC have had direct contact lines to each other.

Outcomes of Consultation

The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- Woodside has incorporated cultural values previously provided by YAC into the EP.

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- During the past three months, YAC has not raised objections or claims about the adverse impact of the activity to which this EP relates.

Woodside engages in ongoing consultation once an EP has been submitted for assessment as well as throughout the life of an EP. Should feedback be received after the EP has been accepted (including relevant new information relating to cultural values), it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8 of the EP).

4.13 Native Title representative bodies

4.13.1 Kimberley Land Council (KLC)

Kimberley Land Council is the Native Title Representative Body for the Kimberley region of Western Australia. As such, it is not a Prescribed Body Corporate or Registered Native Title Body Corporate but exists to assist Native Title claimants and holders.

Woodside has an existing relationship with KLC 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 KLC, who is responsible for building a consultative relationship and is readily available to provide information and take feedback.

This context and process demonstrates that Woodside's consultation approach with KLC is appropriate and adapted to the nature and interests of KLC.

Summary of information provided and record of consultation for this EP:

- On 11 August 2025, Woodside emailed KLC advising of the proposed activity (Record of Consultation, reference 6.1.71), which included the activity's Summary Information Sheet and Consultation Information Sheet. The email included:
  - An overview of the proposed activity.
  - Links to the NOPSEMA Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information, and contact details.
  - A request from Woodside that KLC confirm if there were any changes or additional information regarding cultural values that Woodside should consider in the preparation for this EP.
  - A request for feedback by 8 September 2025for the purposes of preparation of this EP.
  - A request for information on how KLC would like to engage with Woodside about the proposed activity, including the opportunity to meet face to face.
  - That feedback can continue to be accepted by Woodside during the life of the EP.
  - A request for KLC to provide information about the proposed activity to other individuals, as required.
- On 26 August 2025, Woodside emailed KLC a reminder about the proposed activity (SI Report B, reference 2.1.1). The email included:
  - A reference to the original consultation email for this EP sent to KLC on 11 August 2025, which included a Summary Information Sheet and a link to the Consultation Information Sheet.
  - A reminder that consultation for the preparation of this EP closes on 8 September 2025.
  - A request for information on how KLC would like to engage with Woodside about the proposed activity, including the opportunity to meet face to face.

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  - Woodside's commitment to managing gender-restricted or other culturally sensitive information.
  - Advice that feedback can continue to be provided to Woodside during the life of an EP, including after consultation for the EP has closed, during EP assessment, and after an EP has been accepted by NOPSEMA.
- On 6 October 2025, Woodside emailed KLC an activity update for this EP (SI Report B, reference 2.1.2). Woodside requested feedback be provided by 20 October 2025 to allow time for inclusion in the EP submission.

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim	Woodside's Response	Inclusion in Environment Plan
No feedback, objection or claim about the adverse impact of the activity received despite follow-up.	Woodside engages in ongoing consultation throughout the life of an EP.	Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8 of this EP).	No additional measures or controls are required.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environmental Regulations and consultation with KLC for the purpose of regulation 25 is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.4 of the EP. Specifically:

Sufficient Information

Sufficient information has been provided because:

- On 11 August 2025, Woodside made the Consultation Information Sheet available on the Woodside website.
- Woodside provided information to KLC on 11 August 2025 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.
  - Links to the NOPSEMA Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information, and contact details.
  - Confirmation of the purpose of consultation, what was being sought by Woodside through consultation including understanding the nature of KLC's interests and how the activity could impact those interests.
  - A request for the consultation and information sheets to be distributed to members and individuals as required.
  - An offer to provide more specific information, maps and images if required.
- Woodside provided contact information for Woodside and NOPSEMA.

Reasonable Period

A reasonable period for consultation in the preparation of the EP has been provided because:

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- Woodside commenced consultation on this EP with KLC on 11 August 2025 and requested KLC provide feedback by 8 September 2025 for the purposes of preparation of the EP in line with Woodside's methodology of a 30-day period for consultation.
- On 6 October 2025, Woodside provided KLC with an activity update and extended the date to provide feedback to 20 September 2025.
- Woodside has addressed and responded to KLC for three months, demonstrating a "reasonable period" of consultation.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided and Woodside's approach to consultation is appropriate and adapted because:

- Woodside sought direction on 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 three months. This has included publishing advertisements in national, state and local newspapers including Indigenous newspapers, the Koori Mail (13 August 2025) and National Indigenous Times (26-27 August 2025) advising of the proposed activities and requesting comments or feedback.
- Woodside's initial email about this EP on 11 August 2025:
  - 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 members as well as the KLC Board.
  - Asked KLC to advise how it would like Woodside to engage and whether KLC required further information.
- Throughout the consultation period, Woodside and KLC have had direct contact lines to each other.

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 three months, KLC has not raised objections or claims about the adverse impact of the activity to which this EP relates.

Woodside engages in ongoing consultation once an EP has been submitted for assessment as well as throughout the life of an EP. Should feedback be received after the EP has been accepted (including relevant new information relating to cultural values), it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8 of the EP).

4.13.2 Yamatji Marlpa Aboriginal Corporation (YMAC)

YMAC is the Native Title Representative Body for the Yamatji and Pilbara regions of Western Australia. As such, they are not a Prescribed or Registered Native Title Body Corporate representing the cultural rights of a Traditional Custodian Community but exist to assist native title claimants and holders.

Summary of information provided and record of consultation for this EP:

- On 11 August 2025, Woodside emailed YMAC advising of the proposed activity (Record of Consultation, reference 6.1.72), which included the activity's Summary Information Sheet and Consultation Information Sheet. The email included:

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  - An overview of the proposed activity.
  - Links to the NOPSEMA Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information, and contact details.
  - A request for feedback by 8 September 2025 for the purposes of preparation of this EP.
  - A request for information on how YMAC would like to engage with Woodside about the proposed activity, including the opportunity to meet face to face.
  - That feedback can continue to be accepted by Woodside during the life of the EP.
  - A request for YMAC to provide information about the proposed activity to other individuals, as required.
- On 26 August 2025, Woodside emailed YMAC a reminder about the proposed activity (SI Report B, reference 2.2.1). The email included:
  - A reference to the original consultation email for this EP sent to YMAC on 11 August 2025, which included a Summary Information Sheet and a link to the Consultation Information Sheet.
  - A reminder that consultation for the preparation of this EP closes on 8 September 2025
  - A request for information on how YMAC would like to engage with Woodside about the proposed activity, including the opportunity to meet face to face.
  - Woodside's commitment to managing gender-restricted or other culturally sensitive information.
  - 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 6 October 2025, Woodside emailed YMAC an activity update for this EP (SI Report B, reference 2.2.2). Woodside requested feedback be provided by 20 October 2025 to allow time for inclusion in the EP submission.

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim	Woodside's Response	Inclusion in Environment Plan
No feedback, objection or claim about the adverse impact of the activity received despite follow-up.	Woodside engages in ongoing consultation throughout the life of an EP.	Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8 of this EP).	No additional measures or controls are required.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environmental Regulations and consultation with YMAC for the purpose of regulation 25 is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.4 of the EP. Specifically:

Sufficient Information

Sufficient information has been provided because:

- On 11 August 2025, Woodside made the Consultation Information Sheet available on the Woodside website.

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- Woodside provided information to YMAC on 11 August 2025 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.
  - Links to the NOPSEMA Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information, and contact details.
  - Confirmation of the purpose of consultation, what was being sought by Woodside through consultation including understanding the nature of YMAC's interests and how the activity could impact those interests.
  - A request for the consultation and information sheets to be distributed to members and individuals as required.
  - An offer to provide more specific information, maps and images if required.
- Woodside provided contact information for Woodside and NOPSEMA.

Reasonable Period

A reasonable period for consultation in the preparation of the EP has been provided because:

- Woodside commenced consultation on this EP with YMAC on 11 August 2025 and requested YMAC provide feedback by 8 September 2025 for the purposes of preparation of the EP in line with Woodside's methodology of a 30-day period for consultation.
- On 6 October 2025, Woodside provided YMAC with an activity update and extended the date to provide feedback to 20 September 2025.
- Woodside has addressed and responded to YMAC for three months, demonstrating a "reasonable period" of consultation.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided and Woodside's approach to consultation is appropriate and adapted because:

- Woodside sought direction on 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 three months. This has included publishing advertisements in national, state and local newspapers including Indigenous newspapers, the Koori Mail (13 August 2025) and National Indigenous Times (26-27 August 2025) advising of the proposed activities and requesting comments or feedback.
- Woodside's initial email about this EP on 11 August 2025:
  - Included a general email address and telephone number for Woodside, as well as a direct email and telephone number for a dedicated focal person from Woodside's First Nations Engagement team. Woodside also provided contact details for NOPSEMA.
  - Offered for Woodside to speak with YMAC members as well as the YMAC Board.
  - Asked YMAC to advise how it would like Woodside to engage and whether YMAC required further information.
- Throughout the consultation period, Woodside and YMAC have had direct contact lines to each other.

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 three months, YMAC has not raised objections or claims about the adverse impact of the 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 of the EP).

4.14 Self-identified First Nations groups

4.14.1 Ngarluma Yindjibarndi Foundation Ltd (NYFL)

NYFL was created to act as Trustee for the Trust under the *Northwest Shelf Agreement 1998* struck between the Ngarluma and Yindjibarndi registered native title claimants, the NWS JVs and Woodside, prior to the resolution of the Ngarluma and Yindjibarndi native title claim. Its purpose is to carry on the business of enterprise development, investment and social welfare.

In 1999 the Ngarluma and Yindjibarndi Native Title claim was settled with the Federal Court appointing, at the request of the Native Title holders, the Ngarluma Aboriginal Corporation (NAC) as PBC to represent the communal interests of the Ngarluma people and the Yindjibarndi Aboriginal Corporation as PBC to represent the communal interests of the Yindjibarndi people. Woodside consulted both NAC and Yindjibarndi as relevant persons in the course of preparing this EP. 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. 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 11 August 2025, Woodside emailed NYFL advising of the proposed activity (Record of Consultation, reference 6.1.73), which included the activity's Summary Information Sheet and Consultation Information Sheet. The email included:
  - An overview of the proposed activity.
  - Links to the NOPSEMA Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information, and contact details.
  - A request for feedback by 8 September 2025 for the purposes of preparation of this EP.
  - A request for information on how NYFL would like to engage with Woodside about the proposed activity, including the opportunity to meet face to face.
  - That feedback can continue to be accepted by Woodside during the life of the EP.
  - A request for NYFL to provide information about the proposed activity to other individuals, as required.
  - Acknowledgement that discussions relating to a consultation framework agreement with Woodside has been ongoing and that these discussions will progress in parallel with consultation for the proposed activity's EP.

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- On 26 August 2025, Woodside emailed NYFL a reminder about the proposed activity (SI Report B, reference 3.1.1). The email included:
  - A reference to the original consultation email for this EP sent to NYFL on 11 August 2025, which included a Summary Information Sheet and a link to the Consultation Information Sheet.
  - A reminder that consultation for the preparation of this EP closes on 8 September 2025.
  - A request for information on how NYFL would like to engage with Woodside about the proposed activity, including the opportunity to meet face to face.
  - Woodside's commitment to managing gender-restricted or other culturally sensitive information.
  - 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 6 October 2025, Woodside emailed NYFL an activity update for this EP (SI Report B, reference 3.1.2). Woodside requested feedback be provided by 20 October 2025 to allow time for inclusion in the EP submission.
- On 7 October 2025, Woodside emailed the activity update for this EP to a different staff member at NYFL (SI Report B, reference 3.1.3).

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim	Woodside's Response	Inclusion in Environment Plan
No feedback, objection or claim about the adverse impact of the activity received despite follow-up.	Woodside engages in ongoing consultation throughout the life of an EP.	Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8 of this EP).	No additional measures or controls are required.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environmental Regulations and consultation with NYFL for the purpose of regulation 25 is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.4 of the EP. Specifically:

Sufficient Information

Sufficient information has been provided because:

- On 11 August 2025 Woodside made the Consultation Information Sheet available on the Woodside website.
- Woodside provided information to NYFL on 11 August 2025 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.
  - Links to the NOPSEMA Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information, and contact details.
  - Confirmation of the purpose of consultation, what was being sought by Woodside through consultation including understanding the nature of NYFL's interests and how the activity could impact those interests.

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  - A request for the consultation and information sheets to be distributed to members and individuals as required.
  - An offer to provide more specific information, maps and images if required.
- Woodside provided contact information for Woodside and NOPSEMA.

Reasonable Period

A reasonable period for consultation in the preparation of the EP has been provided because:

- Woodside commenced consultation on this EP with NYFL on 11 August 2025 and requested NYFL provide feedback by 8 September 2025 for the purposes of preparation of the EP in line with Woodside's methodology of a 30-day period for consultation.
- On 6 October 2025, Woodside provided NYFL with an activity update and extended the date to provide feedback to 20 September 2025.
- Woodside has addressed and responded to NYFL for three months, demonstrating a "reasonable period" of consultation.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided and Woodside's approach to consultation is appropriate and adapted because:

- Woodside sought direction on 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 three months. This has included publishing advertisements in national, state and local newspapers including Indigenous newspapers, the Koori Mail (13 August 2025) and National Indigenous Times (26-27 August 2025) advising of the proposed activities and requesting comments or feedback.
- Woodside's initial email about this EP on 11 August 2025:
  - 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 NYFL members as well as the NYFL Board.
  - Asked NYFL to advise how it would like Woodside to engage and whether NYFL required further information.
- Throughout the consultation period, Woodside and NYFL have had direct contact lines to each other.

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 three months, NYFL has not raised objections or claims about the adverse impact of the activity to which this EP relates.

Woodside engages in ongoing consultation once an EP has been submitted for assessment as well as throughout the life of an EP. Should feedback be received after the EP has been accepted (including relevant new information relating to cultural values), it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8 of the EP).

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4.15 Other First Nations groups

4.15.1 Save Our Songlines and [Individual 1]

SOS and [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 Woodside currently understands is the group's primary spokesperson. The stated interests of [Individual 1] and SOS include the conservation of Murujuga rock art, and opposition to expansion of projects on the Burrup Peninsula. [Individual 1] and SOS are together represented by lawyers from Johnson Legal Pty Ltd. Woodside understands that the views expressed by SOS align with the views of [Individual 1]. Woodside therefore approaches communication with SOS and [Individual 1] as communication with SOS and has consulted them concurrently.

Woodside understands [Individual 1] is a Mardudhunera woman and a Traditional Custodian of Murujuga. Woodside has consulted with the Kuruma and Mardudhunera people including through consultation with MAC, WAC, NAC and RRKAC. [Individual 1] and SOS have expressly stated to Woodside that their views and positions differ from that of MAC and other elders. Woodside has observed social media statements and news articles from Traditional Owner groups with cultural authority over Murujuga expressing a view that the views held by SOS are not views held by community. [Ref for example, 9 August 2025 - The Saturday Paper and MAC LinkedIn]. During consultation for this EP, and in previous EP consultation, Woodside reiterated to [Individual 1] and SOS that the Federal Court case of Munkara v Santos highlights the importance of demonstrating that individual cultural beliefs are representative of the broader group. Woodside respects this by consulting relevant cultural authorities and, where necessary, restricting gender-sensitive information to women elders and knowledge holders. Woodside has advised [Individual 1] and SOS that any cultural information shared with Woodside by [Individual 1] and SOS would need to be verified with the appropriate authority.

Conversations and meetings with [Individual 1] and SOS have been occurring since around 2021, dating back to when [Individual 1] was a Board member of MAC and when SOS was first established. During this time, [Individual 1] and SOS have been actively engaged in consultation on Woodside's EPs and environmental approvals. [Individual 1] and SOS have provided information for Woodside's consideration in various forms and forums. As evidenced by Woodside's publicly available EPs, Woodside has, and continues to, review, assess and consider [Individual 1] and SOS's information when developing EPs.

This context and process demonstrates that Woodside's consultation approach with [Individual 1] and SOS is appropriate and adapted to the nature and interests of [Individual 1] and SOS.

Summary of information provided and record of consultation for this EP

- On 11 August 2025, Woodside emailed SOS and [Individual 1] advising of the proposed activity (Record of Consultation, reference 6.1.74), which included the activity's Summary Information Sheet and Consultation Information Sheet. The email included:
  - An overview of the proposed activity.
  - Links to the NOPSEMA Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information, and contact details.
  - A request for feedback by 8 September 2025 for the purposes of preparation of this EP.

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  - A request for information on how SOS and [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 during the life of the EP.
  - A request for SOS and [Individual 1] to provide information about the proposed activity to other individuals, as required
- On 26 August 2025, Woodside emailed SOS and [Individual 1] via its legal representative a reminder about the proposed activity (SI Report B, reference 4.1.1). The email included:
  - A reference to the original consultation email for this EP sent to SOS and [Individual 1] on 11 August 2025, which included a Summary Information Sheet and a link to the Consultation Information Sheet.
  - A reminder that consultation for the preparation of this EP closes on 8 September 2025.
  - A request for information on how SOS and [Individual 1] would like to engage with Woodside about the proposed activity, including the opportunity to meet face to face.
  - Woodside's commitment to managing gender-restricted or other culturally sensitive information.
  - Advice that feedback can continue to be provided to Woodside during the life of an EP, including after consultation for the EP has closed, during EP assessment, and after an EP has been accepted by NOPSEMA.
- On 8 September 2025, SOS and [Individual 1] via their legal representative emailed Woodside (SI Report B, reference 4.1.2):
  - A letter relating to two unrelated WA EPs. Matters relevant to this EP included:
    - SOS and [Individual 1]'s view that Woodside is required by law to consult with SOS and [Individual 1] due to [Individual 1]'s cultural connections to the Land and Sea Country on which Woodside seeks to work.
    - **(1)** SOS and [Individual 1] disputes Woodside's assertion that they are not an appropriate authority in relation to cultural information about the Murujuga area.
    - **(2)** SOS and [Individual 1]'s view that Woodside was encouraging [Individual 1] to breach cultural protections by disclosing culturally sensitive information.
  - A submission about this EP stating:
    - **(1)** SOS and [Individual 1]'s view that [Individual 1] is a Mardudhunera lore woman, elder and a traditional custodian of Murujuga and is therefore a person who is required to be consulted.
    - **(3)** Concerns around non-compliance with monitoring and maintenance obligations as demonstrated by a list of events.
    - **(4)** Concerns about cultural significance of the World Heritage Listed areas close to the activity.
    - **(5)** Environmental significance of the marine environment where the activity is being conducted.
    - **(6)** SOS and [Individual 1]'s views on the potential indirect impacts on the environment and World Heritage listed areas due to uncertainty of when the wellhead infrastructure will be cut and recovered.
    - **(7)** Concerns around the perceived lack of assessment of cumulative impacts. Woodside has understated risks to the environment and marine fauna -
    - **(8)** SOS and [Individual 1]'s view that there was a lack of discussion or disclosure of financial assurance relating to unplanned events and monitoring costs.
    - **(9)** SOS and [Individual 1]'s view that Woodside should implement the recommendations from the Best Practice Regulatory Reform for Plugging and Permanent Abandonment of Offshore Petroleum Wells in Australia.

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  - **(10)** Cultural values raised relevant to this EP:
    - [Individual 1] has the totem animals eagle and kangaroo.
    - [Individual 1] carries the whale dreaming story.
    - [Individual 1] is connected to the sea, animals and Country through her heart, energy and songlines, all of which are connected and interrelated and cannot be separated.
    - Places where salt water from the sea and fresh water from the land connect.
    - Songlines - whales carry important songlines.
    - The whale Dreaming, and connection between land and sea.
  - **(11)** The proposed activity is planned to commence at the beginning of Ningaloo's whale shark season and continue throughout the whale migration season.
- On 6 October 2025, Woodside emailed SOS and [Individual 1] an activity update for this EP (SI Report B, reference 4.1.3). Woodside requested feedback be provided by 20 October 2025 to allow time for inclusion in the EP submission.
- On 28 October 2025, Woodside emailed SOS and [Individual 1] a reply to its letter and submission on 8 September 2025 (SI Report B, reference 4.1.4). The letter included that:
  - **(1)** Woodside considers MAC to be the cultural authority authorised to represent the views and knowledge of the five language groups of Murujuga. MAC has also provided confirmation to Woodside that they are the relevant cultural authority over Murujuga. This is set out in previous publicly available EPs and set out in previous consultations with SOS and [Individual 1].
  - **(2)** Woodside has advised SOS and [Individual 1] on a number of occasions that if they do not feel comfortable sharing information with Woodside there are alternative methods of providing that information, for example feedback can be provided directly to NOPSEMA.
  - **(3)** When an event occurs, Woodside follows relevant processes to understand the event, put in place controls and incorporate learnings into future activities. Woodside notes that events highlighted by SOS and [Individual 1] are not directly relevant to the activities under the EP and disagrees with the conclusions drawn.
  - **(4)** The Ningaloo World Heritage Area is 175km to the southwest of the Operational Area and the Murujuga Cultural Landscape is 136km to the southeast of the Operational Area. Woodside takes a robust and systematic approach to environmental management of our activities. An environmental assessment has been undertaken in planning this activity with risks analysed and mitigation measures put in place.
  - **(5)** Potential impacts to cultural heritage and the marine environment are considered in the EP with guidance from Woodside's Environment and Biodiversity Policy as well as assessments that review physical environmental characteristics, habitats, biological communities, protected species and protected places. Potential impacts to cultural values are assessed and managed with relevant environmental controls and in accordance with applicable Commonwealth legislation.
  - **(6)** Woodside disagrees with SOS and [Individual 1]'s assertion about uncertainty of timing. Consultation information previously provided includes details of when the wellhead infrastructure will be cut and recovered and was again reiterated.
  - **(7)** Woodside disagrees with the assertion that there has been a lack of assessment of cumulative impacts of the activities on the marine environment and cultural heritage. The EP acknowledges the interconnectedness of marine ecological values and intangible cultural heritage. Cumulative impacts from concurrent operations have been assessed as possible in relation to fisheries, light emissions, acoustic emissions, and routine and non-routine discharges but are expected to be temporary and localised. Cumulative impacts have been considered in accordance with relevant regulatory requirements.
  - **(8)** A financial assurance process has been completed for this activity. Consistent with the *Offshore Petroleum and Greenhouse Gas Storage Act 2006* OPGGS(E) Regulations, NOPSEMA assesses financial assurance, however this information is not included in the EP.

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- **(9)** Woodside's plug and abandonment activities are designed, planned and executed in accordance with the NOPSEMA-accepted Well Operational Management Plan (WOMP) under the OPGGS (Resource Management and Administration) Regulations 2011. Woodside will consider the report provided by SOS and [Individual 1] and will apply findings Woodside considers are relevant to the EP as appropriate.
- **(10)** During the course of consultation on various EPs, Woodside has received substantial information from SOS and [Individual 1] about its cultural values. Woodside confirms this information has been assessed and incorporated into the EP where relevant.
- **(11)** An environmental assessment has been undertaken in planning this activity with risks analysed and mitigation measures put in place. The EP will include key controls to mitigate a number of potential impacts, including to whale sharks and other marine fauna, based on impact assessments using relevant and available scientific literature. Potential indirect impacts to cultural values and heritage, and the marine environment resulting from planned impacts and/or unplanned risks have been assessed through an environmental impact assessment. Mitigation measures have been adopted to minimise impacts and risks to ALARP and an acceptable level.

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim	Woodside's Response	Inclusion in Environment Plan
(1) That [Individual 1] is a Mardudhunera lore woman, elder and a traditional custodian of Murujuga. SOS and [Individual 1] disputes Woodside's assertion that they are not an appropriate authority in relation to cultural information about the Murujuga area.	**(1)** Woodside considers MAC to be the cultural authority authorised to represent the views and knowledge of the five language groups of Murujuga. MAC has also provided confirmation to Woodside that they are the relevant cultural authority over Murujuga.	**(1)** Woodside has reiterated to SOS and [Individual 1] that MAC is the relevant cultural authority over Murujuga. This is set out in previous publicly available EPs and set out in previous consultations with SOS and [Individual 1].	**(1)** No action required.
(2) Woodside is encouraging [Individual 1] to breach cultural protections by disclosing culturally sensitive information	**(2)** Woodside has advised SOS and [Individual 1] on a number of occasions that if they do not feel comfortable sharing information with Woodside there are alternative methods of providing that information, for example feedback can be provided directly to NOPSEMA.	**(2)** Woodside has reiterated to SOS and [Individual 1] they can provide feedback to NOPSEMA directly in accordance with NOPSEMA's policies.	**(2)** No action required.
(3) Concerns around Woodside's non-compliance with monitoring and maintenance obligations	**(3)** Woodside disputes SOS and [Individual 1]'s claims of non-compliance with monitoring and maintenance obligations. When an event occurs, Woodside	**(3)** Woodside notes that events highlighted by SOS and [Individual 1] are not directly relevant to the activities under the EP	**(3)** No action required.

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	follows relevant processes to understand the event, put in place controls and incorporate learnings into future activities.	and disagrees with the conclusions drawn.	
(4) Concerns about cultural significance of the World Heritage Listed areas close to the activity.	**(4)** The Ningaloo Coast World Heritage Area is 175km to the southwest of the Operational Area and the Murujuga Cultural Landscape is 136km to the southeast of the Operational Area. Woodside takes a robust and systematic approach to environmental management of its activities.	**(4)** An environmental assessment has been undertaken in planning this activity with risks analysed and mitigation measures put in place.	**(4)** The cultural significance of World Heritage Listed areas is noted in Section 4.9 of the EP. The Murujuga Cultural landscape falls outside the EMBA. Woodside has assessed the potential impacts to the Ningaloo Coast World Heritage Area and where appropriate included controls in Section 6.9 of the EP.
(5) Environmental significance of the marine environment where the activity is being conducted.	**(5)** Potential impacts to cultural heritage and the marine environment are considered in the EP with guidance from Woodside's Environment and Biodiversity Policy as well as assessments that review physical environmental characteristics, habitats, biological communities, protected species and protected places.	**(5)** Potential impacts to cultural values are assessed and managed with relevant environmental controls and in accordance with applicable Commonwealth legislation.	**(5)** The environmental significance of the marine environment is described in Section 4. Woodside has assessed the potential impacts on the environment and where appropriate included controls in Sections 6.8 and 6.9 of the EP.
(6) Potential indirect impacts on the environment and World Heritage listed areas due to uncertainty of when the wellhead infrastructure will be cut and recovered.	**(6)** Woodside disagrees with SOS and [Individual 1]'s assertion about uncertainty of timing. Consultation information provided during consultation includes details of when the wellhead infrastructure will be cut and recovered.	**(6)** As detailed in the Summary Information Sheet provided to SOS and [Individual 1], the commencement of activities is expected in March 2026, with planned completion by December 2027. Allowance for additional contingency timing is also considered in the EP. If, during the plug and abandonment activities, it becomes technically unfeasible to recover the wellheads to the Mobile Offshore Drilling Unit	**(6)** Information about the timing of when the wellhead infrastructure will be cut and recovered is in Section 3.5 Information about World Heritage listed areas is in Section 4.9. Woodside has assessed the potential impacts on the environment and where appropriate included controls in Sections 6.8 and 6.9 of the EP.

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		(MODU), wellheads will be temporarily placed on the seabed with the aim of recovery by no later than the end of Q2 2029.	
(7) Concerns around the perceived lack of assessment of cumulative impacts. Woodside has understated risks to the environment and marine fauna.	**(7)** Woodside disagrees with the assertion that there has been a lack of assessment of cumulative impacts of the activities on the marine environment and cultural heritage. Potential risks and impacts have been assessed in the EP with appropriate control measures put in place.	**(7)** Cumulative impacts from concurrent operations have been assessed as possible in relation to fisheries, light emissions, acoustic emissions, and routine and non-routine discharges but are expected to be temporary and localised. Cumulative impacts have been considered in accordance with relevant regulatory requirements.	**(7)** Cumulative impacts on the marine environment and cultural heritage are assessed in Section 6.8.
(8) Lack of discussion or disclosure of financial assurance relating to unplanned events and monitoring costs.	**(8)** A financial assurance process has been completed for this activity.	**(8)** Woodside's financial assurance process is consistent with the OPGGS(E) Regulations, NOPSEMA assesses financial assurance, however this information is not included in the EP.	**(8)** No action required.
(9) Woodside should implement the recommendations from the *Best Practice Regulatory Reform for Plugging and Permanent Abandonment of Offshore Petroleum Wells in Australia.*	**(9)** Woodside's plug and abandonment activities are designed, planned and executed in accordance with the NOPSEMA-accepted Well Operational Management Plan (WOMP) under the OPGGS (Resource Management and Administration) Regulations 2011.	**(9)** Woodside has complied with all requirements. It will consider the report provided by SOS and [Individual 1] and will apply findings Woodside considers are relevant to the EP as appropriate. This would be done through Woodside's Management of Change and Revision Process.	**(9)** Information about Woodside's plug and abandonment activities are in Section 3 of the EP. No other action required.
(10) Cultural values raised relevant to this EP: • [Individual 1] has the totem animals eagle and kangaroo.	**(10)** During consultation on various EPs, Woodside has received substantial information from SOS and [Individual 1] about its cultural values.	**(10)** Woodside confirms this information has been assessed and incorporated into the EP where relevant.	**(10)** Woodside has updated Section 4.9 to record these interests and cultural values and assessed the potential impacts on these and where appropriate

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• [Individual 1] carries the whale dreaming story. • [Individual 1] is connected to the sea, animals and Country through her heart, energy and songlines, all of which are connected and interrelated and cannot be separated. • Places where salt water from the sea and fresh water from the land connect. • Songlines - whales carry important songlines. • The whale Dreaming, and connection between land and sea.			included controls in Sections 6.8 and 6.9 of the EP.
(11) The proposed activity is planned to commence at the beginning of Ningaloo's whale shark season and continue throughout the whale migration season.	**(11)** An environmental assessment has been undertaken in planning this activity with risks analysed and mitigation measures put in place. The EP will include key controls to mitigate a number of potential impacts, including to whale sharks and other marine fauna, based on impact assessments using relevant and available scientific literature.	**(11)** Potential indirect impacts to cultural values and heritage, and the marine environment resulting from planned impacts and/or unplanned risks have been assessed through an environmental impact assessment. Mitigation measures have been adopted to minimise impacts and risks to ALARP and an acceptable level.	**(11)** Protected species including whales and whale sharks have been identified in section 4.6. Relevant controls have been adopted in Sections 6.8 and 6.9.
Woodside has addressed objections and claims, as noted above.	Woodside has assessed the merits of any objection or claim (if any) about the adverse impact of the activity to which the EP relates as required under Regulation 24.	Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8 of this EP).	Based on the engagement to date, no additional measures or controls are required.
Summary Report – Consultation Complete			

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Woodside has discharged its obligations for consultation under regulation 25 of the Environmental Regulations and consultation with SOS and [Individual 1] for the purpose of regulation 25 is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.4 of the EP. Specifically:

Sufficient Information

Sufficient information has been provided because:

- On 11 August 2025, Woodside made the Consultation Information Sheet available on the Woodside website.
- Woodside provided information to SOS and [Individual 1] on 11 August 2025 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.
  - Links to the NOPSEMA Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information, and contact details.
  - Confirmation of the purpose of consultation, what was being sought by Woodside through consultation including understanding the nature of SOS and [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.

Reasonable Period

A reasonable period for consultation in the preparation of the EP has been provided because:

- Woodside commenced consultation on this EP with SOS and [Individual 1] on 11 August 2025 and requested SOS and [Individual 1] provide feedback by 8 September 2025 for the purposes of preparation of the EP in line with Woodside's methodology of a 30-day period for consultation.
- On 6 October 2025, Woodside provided SOS and [Individual 1] with an activity update and extended the date to provide feedback to 20 September 2025.
- Woodside has addressed and responded to SOS and [Individual 1] for three months, demonstrating a "reasonable period" of consultation.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided and Woodside's approach to consultation is appropriate and adapted because:

- Woodside sought direction on SOS and [Individual 1]'s preferred method of consultation. Woodside has complied with SOS and [Individual 1]'s request to correspond with their legal representative.
- Woodside has made information on this EP publicly available for three months. This has included publishing advertisements in national, state and local newspapers including Indigenous newspapers, the Koori Mail (13 August 2025) and National Indigenous Times (26-27 August 2025) advising of the proposed activities and requesting comments or feedback.
- Woodside's initial email about this EP on 11 August 2025:
  - 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 SOS and [Individual 1].

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– Asked SOS and [Individual 1] to advise how it would like Woodside to engage and whether SOS and [Individual 1] required further information.

Outcomes of Consultation

The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- On 8 September 2025, SOS emailed Woodside a submission which raised objections or claims about the adverse impact of the activity to which this EP relates. Woodside responded to this feedback on 28 October 2025.

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 the EP).

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5. TABLE 3: ENGAGEMENT REPORT WITH PERSONS OR ORGANISATIONS ASSESSED AS NOT RELEVANT

The black numbering **(N)** in the 'Summary of information provided and record of consultation for this EP' in Table 3 denotes an item raised by a stakeholder. The green numbering **(N)** in this section denotes Woodside's response to that issue.

5.1 Commonwealth and WA State Government departments or agencies – environment

5.1.1 Department of Water and Environmental Regulations (DWER)

Summary of information provided and record of consultation for this EP:

- On 11 August 2025, Woodside emailed DWER advising of the proposed activity (Record of Consultation, reference 6.1.52) and provided a Consultation Information Sheet and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 5 September 2025, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.45).
- On 7 October 2025, Woodside emailed the DWER advising of an activity update regarding the wellhead cut location (Record of Consultation, reference 6.3.3) and provided an updated Consultation Information Sheet.
- On 14 October 2025, as no response had been received, Woodside proactively sent a follow-up email (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 about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8 of the EP).	No additional measures or controls are required.
Summary Report – Consultation Complete			
While DWER is not a relevant person under regulation 25 of the Environment Regulations, Woodside considers it has still provided sufficient information and a reasonable period outside of regulatory requirements for DWER to provide feedback during the consultation process.			

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5.2 Commonwealth and WA State Government departments or agencies – marine

5.2.1 Australian Communications and Media Authority (ACMA)

Summary of information provided and record of consultation for this EP:

- On 21 August 2025, Woodside emailed ACMA advising of the proposed activity (Record of Consultation, reference 6.1.10) and provided a Consultation Information Sheet, a submarine communication cable map, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 5 September 2025, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.2).
- On 7 October 2025, Woodside emailed the ACMA advising of an activity update regarding the wellhead cut location (Record of Consultation, reference 6.3.3) and provided an updated Consultation Information Sheet.
- On 14 October 2025, as no response had been received, Woodside proactively sent a follow-up email (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 about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8 of the EP).	Communications infrastructure located in the vicinity of the Operational Area/s is set out in Section 4.9.6 of the EP. No additional measures or controls are required.

Summary Report – Consultation Complete

While DWER is not a relevant person under regulation 25 of the Environment Regulations, Woodside considers it has still provided sufficient information and a reasonable period outside of regulatory requirements for ASBTIA to provide feedback during the consultation process.

5.1 Commonwealth commercial fisheries and peak representative bodies

5.1.1 Australian Southern Bluefin Tuna Industry Association (ASBTIA)

Summary of information provided and record of consultation for this EP:

- On 19 August 2025, Woodside emailed the ASBTIA advising of the proposed activity (Record of Consultation, reference 6.1.40) and 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 5 September 2025, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.46).
- On 7 October 2025, Woodside emailed the ASBTIA advising of an activity update regarding the wellhead cut location (Record of Consultation, reference 6.3.3) and provided an updated Consultation Information Sheet.
- On 14 October 2025, as no response had been received, Woodside proactively sent a follow-up email (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 about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8 of the EP).	Woodside has addressed maritime security-related issues in Section 7 of the EP based on previous offshore activities. No additional measures or controls are required.
Summary Report – Consultation Complete			
While ASBTIA 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 ASBTIA to provide feedback during the consultation process.			

5.1.2 Tuna Australia

Summary of information provided and record of consultation for this EP:

- On 19 August 2025, Woodside emailed the Tuna Australia advising of the proposed activity (Record of Consultation, reference 6.1.40) and provided a Consultation Information Sheet and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 5 September 2025, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.46).
- On 5 September 2025, Tuna Australia emailed (SI Report A, reference 2.3.1) to clarify the date feedback was due by.
- On 9 September 2025, Woodside replied (SI Report A, reference 2.3.2) to Tuna Australia to clarify the date feedback was requested to be provided by.
- On 22 October 2025, Tuna Australia sent an email to Woodside (SI Report A, reference 2.3.3) and:
  - **(1)** Raised concerns about potential leakage from abandoned wells and recommended post-abandonment integrity monitoring including ROV inspections and methane detection.
  - **(2)** Requested examples of offshore leakage incidents, associated remediation, and compensation frameworks.

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  - **(3)** Stated that lack of activity timing made it difficult for fishers to assess impacts and recommended improved scheduling and notification practices.
  - **(4)** Requested clearer commitments on navigational safety including vessel tracking and coordination with fishers.
  - **(5)** Reiterated its offer to assist Woodside with consultation and encouraged collaboration with the fishing sector.
- On 3 October 2025, Woodside replied to Tuna Australia (SI Report A, reference 2.3.4) and:
  - **(1)** responded that all four wells were drilled for exploration or appraisal between 2007 and 2011, were never commissioned for production, and therefore posed no risk of long-term leakage requiring post-abandonment monitoring.
  - **(2)** reiterated that the wells had never contained hydrocarbons and therefore did not present leakage risk and did not provide examples or frameworks.
  - **(3)** committed to including activity notifications to relevant fisheries in the EP, including advanced scheduling, 30-day outlooks, weekly updates, and 48-hour change notifications.
  - **(4)** stated that the EP included commitments to comply with Marine Orders 21, 27, and 30; notify AFMA, DPIRD, and AHO; maintain a public interactive map; operate AIS on project vessels; and mark remaining infrastructure on navigational charts.
  - **(5)** acknowledged previous discussions with Tuna Australia had not led to a formal agreement, expressed willingness to re-engage in good faith, and welcomed a meeting to explore a collaborative arrangement similar to its engagement with WAFIC.
- On 7 October 2025, Woodside emailed the Tuna Australia advising of an activity update regarding the wellhead cut location (Record of Consultation, reference 6.3.3) and provided an updated Consultation Information Sheet.
- On 9 October 2025, Tuna Australia sent an email to Woodside (SI Report A, reference 2.3.5) and:
  - **(1)** Asked whether Woodside's statement that capped wells contained no hydrocarbons referred to the absence of hydrocarbons in the reservoir or to a lack of pressure in the reservoir.
  - **(5)** Provided a copy of Tuna Australia's Industry Statement and consulting services contract and requested confirmation on proceeding with the consulting services agreement.
- On 21 October 2025, Woodside sent an email to Tuna Australia (SI Report A, reference 2.3.6) and:
  - **(1)** Clarified that the wells were exploration only, carried hydrocarbon risk due to reservoir connection, and would be considered permanently abandoned following P&A activities, with no ongoing monitoring required under OPGGS regulations.
  - **(5)** Advised that 2025 EP consultation had concluded and proposed a meeting in early 2026 to discuss future EPs and potential agreement options.
- On 21 October 2025, Tuna Australia sent an email to Woodside (SI Report A, reference 2.3.7) and:
  - **(1)** Followed up on a previous query regarding the presence of hydrocarbons in capped wells
  - **(5)** Stated that collaboration remained relevant given two active consultations with October deadlines, and noted that partnership would support regulatory obligations and ensure stakeholder views were effectively represented.
- **(1, 5)** On 21 October, Woodside sent an email to Tuna Australia (SI Report A, reference 2.3.8) to address the cross over of emails and advised an email sent 21 October at 1.25pm answers Tuna Australia's questions and offered further assistance should it be required.

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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) Raised concerns about leakage from abandoned wells and recommended post-abandonment integrity monitoring	**(1)** Woodside noted Tuna Australia's concerns regarding leakage	**(1)** Woodside clarified that the wells were not used for production and therefore do not contain hydrocarbons	**(1)** Not required.
(2) Requested examples of offshore leakage incidents, associated remediation, and compensation frameworks.	**(2)** Woodside noted Tuna Australia's request for information regarding remediation of previous leakage incidents	**(2)** Woodside reiterated that there was no risk of long term leakage as the wells were only used for exploration	**(2)** Section 6.9.3 of the EP explains the hydrocarbon content of the wells.
(3) Stated that lack of activity timing made it difficult for fishers to assess impacts and recommended improved scheduling and notification practices.	**(3)** Woodside noted Tuna Australia's concern regarding specific timing of activities	**(3)** Woodside committed to including activity notifications to relevant fisheries in the EP	**(3)** Woodside will provide notifications as set out in PS 1.2 of EP and Section 7.10, table 7-5 of this EP.
(4) Requested clearer commitments on navigational safety including vessel tracking and coordination with fishers.	**(4)** Woodside noted Tuna Australia's request for commitments on navigational safety including vessel tracking and coordination with fishers.	**(4)** Woodside clarified stated the EP included commitments to comply with Marine Orders 21, 27, and 30; notify stakeholders; maintain a public interactive map; operate AIS on project vessels; and mark remaining infrastructure on navigational charts.	**(4)** Woodside will provide notifications as set out in PS 1.6 of EP and Section 7.10, table 7-5 of this EP. Woodside will maintain a public activity map as defined in C 1.5 of the EP Vessels will operate AIS as per C 1.6.
(5) Reiterated its offer to assist Woodside with consultation and encouraged collaboration with the fishing sector.	**(5)** Woodside noted Tuna Australia's offer to enter into a consultation agreement.	**(5)** Woodside advised that consultation for 2025 was now complete and offered to meet in 2026 to discuss future EP consultation.	**(5)** Not required

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While feedback has been received, there were no objections or claims.	Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24.	Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should further feedback be received, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8 of the EP).	No additional controls or measures are required.
Summary Report – Consultation Complete			
While Southern Bluefin Tuna Fishery is not a relevant person under regulation 25 of the Environment Regulations, Woodside considers it has still provided sufficient information and a reasonable period outside of regulatory requirements for Southern Bluefin Tuna Fishery to provide feedback during the consultation process.			

5.1.3 Southern Bluefin Tuna Fishery

Summary of information provided and record of consultation for this EP:

- On 19 August 2025, Woodside emailed the Southern Bluefin Tuna Fishery advising of the proposed activity (Record of Consultation, reference 6.1.40) and provided a Consultation Information Sheet and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 5 September 2025, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.42).
- On 7 October 2025, Woodside emailed the Southern Bluefin Tuna Fishery advising of an activity update regarding the wellhead cut location (Record of Consultation, reference 6.3.3) and provided an updated Consultation Information Sheet.
- On 14 October 2025, as no response had been received, Woodside proactively sent a follow-up email (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 about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8 of the EP).	No additional measures or controls are required.

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Summary Report – Consultation Complete
While Southern Bluefin Tuna Fishery is not a relevant person under regulation 25 of the Environment Regulations, Woodside considers it has still provided sufficient information and a reasonable period outside of regulatory requirements for Southern Bluefin Tuna Fishery to provide feedback during the consultation process.

5.1.4 Western Tuna and Billfish Fishery

Summary of information provided and record of consultation for this EP:

- On 19 August 2025, Woodside emailed the Western Tuna and Billfish Fishery advising of the proposed activity (Record of Consultation, reference 6.1.40) and provided a Consultation Information Sheet and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 5 September 2025, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.42).
- On 7 October 2025, Woodside emailed the Western Tuna and Billfish Fishery advising of an activity update regarding the wellhead cut location (Record of Consultation, reference 6.3.3) and provided an updated Consultation Information Sheet.
- On 14 October 2025, as no response had been received, Woodside proactively sent a follow-up email (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 about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8 of the EP).	No additional measures or controls are required.

Summary Report – Consultation Complete
While Western Tuna and Billfish Fishery is not a relevant person under regulation 25 of the Environment Regulations, Woodside considers it has still provided sufficient information and a reasonable period outside of regulatory requirements for ASBTIA to provide feedback during the consultation process.

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5.1.5 Western Skipjack Fishery

Summary of information provided and record of consultation for this EP:

- On 19 August 2025, Woodside emailed the Western Skipjack Fishery advising of the proposed activity (Record of Consultation, reference 6.1.40) and provided a Consultation Information Sheet and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 5 September 2025, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.42).
- On 7 October 2025, Woodside emailed the Western Skipjack Fishery advising of an activity update regarding the wellhead cut location (Record of Consultation, reference 6.3.3) and provided an updated Consultation Information Sheet.
- On 14 October 2025, as no response had been received, Woodside proactively sent a follow-up email (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 about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8 of the EP).	No additional measures or controls are required.
Summary Report – Consultation Complete			
While Western Skipjack Fishery is not a relevant person under regulation 25 of the Environment Regulations, Woodside considers it has still provided sufficient information and a reasonable period outside of regulatory requirements for Western Skipjack Fishery to provide feedback during the consultation process.			

5.2 Other non-government groups or organisations (NGOs) or individuals

5.2.1 Australian Conservation Foundation (ACF)

Summary of information provided and record of consultation for this EP:

- On 11 August 2025, Woodside emailed the ACF advising of the proposed activity (Record of Consultation, reference 6.1.30) and 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 22 August 2025, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.17).
- On 7 October 2025, Woodside emailed the ACF advising of an activity update regarding the wellhead cut location (Record of Consultation, reference 6.3.3) and provided an updated Consultation Information Sheet.
- On 14 October 2025, as no response had been received, Woodside proactively sent a follow-up email (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 about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8 of the EP).	No additional measures or controls are required.

Summary Report – Consultation Complete

While ACF is not a relevant person under regulation 25 of the Environment Regulations, Woodside considers it has still provided sufficient information and a reasonable period outside of regulatory requirements for ACF to provide feedback during the consultation process.

5.2.2 Australian Marine Conservation Society (AMCS)

Summary of information provided and record of consultation for this EP:

- On 11 August 2025, Woodside emailed the AMCS advising of the proposed activity (Record of Consultation, reference 6.1.31) and provided a Consultation Information Sheet and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 22 August 2025, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.18).
- On 7 October 2025, Woodside emailed the AMCS advising of an activity update regarding the wellhead cut location (Record of Consultation, reference 6.3.3) and provided an updated Consultation Information Sheet.
- On 14 October 2025, as no response had been received, Woodside proactively sent a follow-up email (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 about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the	No additional measures or controls are required.

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		EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8 of the EP).	
Summary Report – Consultation Complete			
While AMCS is not a relevant person under regulation 25 of the Environment Regulations, Woodside considers it has still provided sufficient information and a reasonable period outside of regulatory requirements for AMCS to provide feedback during the consultation process.			

5.2.3 Conservation Council of Western Australia (CCWA)

Summary of information provided and record of consultation for this EP:

- On 11 August 2025, Woodside emailed the CCWA advising of the proposed activity (Record of Consultation, reference 6.1.32) and provided a Consultation Information Sheet and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 22 August 2025, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.19).
- On 7 October 2025, Woodside emailed the CCWA advising of an activity update regarding the wellhead cut location (Record of Consultation, reference 6.3.3) and provided an updated Consultation Information Sheet.
- On 14 October 2025, as no response had been received, Woodside proactively sent a follow-up email (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 about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8 of the EP).	No additional measures or controls are required.
Summary Report – Consultation Complete			
While CCWA is not a relevant person under regulation 25 of the Environment Regulations, Woodside considers it has still provided sufficient information and a reasonable period outside of regulatory requirements for CCWA to provide feedback during the consultation process.			

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5.2.4 Greenpeace Australia Pacific (GAP)

Summary of information provided and record of consultation for this EP:

- On 11 August 2025, Woodside emailed the GAP advising of the proposed activity (Record of Consultation, reference 6.1.33) and provided a Consultation Information Sheet and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 22 August 2025, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.20).
- On 7 October 2025, Woodside emailed the GAP advising of an activity update regarding the wellhead cut location (Record of Consultation, reference 6.3.3) and provided an updated Consultation Information Sheet.
- On 14 October 2025, as no response had been received, Woodside proactively sent a follow-up email (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 about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8 of the EP).	No additional measures or controls are required.

Summary Report – Consultation Complete

While GAP is not a relevant person under regulation 25 of the Environment Regulations, Woodside considers it has still provided sufficient information and a reasonable period outside of regulatory requirements for GAP to provide feedback during the consultation process.

5.2.5 Australasian Centre for Corporate Responsibility (ACCR)

Summary of information provided and record of consultation for this EP:

- On 11 August 2025, Woodside emailed the ACCR advising of the proposed activity (Record of Consultation, reference 6.1.34) and provided a Consultation Information Sheet and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 22 August 2025, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.21).
- On 7 October 2025, Woodside emailed the ACCR advising of an activity update regarding the wellhead cut location (Record of Consultation, reference 6.3.3) and provided an updated Consultation Information Sheet.
- On 14 October 2025, as no response had been received, Woodside proactively sent a follow-up email (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 about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8 of the EP).	No additional measures or controls are required.
Summary Report – Consultation Complete			
While ACCR is not a relevant person under regulation 25 of the Environment Regulations, Woodside considers it has still provided sufficient information and a reasonable period outside of regulatory requirements for ACCR to provide feedback during the consultation process.			

5.2.6 Maritime Union of Australia (MUA)

Summary of information provided and record of consultation for this EP:

- On 11 August 2025, Woodside emailed the MUA advising of the proposed activity (Record of Consultation, reference 6.1.37) and provided a Consultation Information Sheet and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 22 August 2025, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.23).
- On 7 October 2025, Woodside emailed the MUA advising of an activity update regarding the wellhead cut location (Record of Consultation, reference 6.3.3) and provided an updated Consultation Information Sheet.
- On 14 October 2025, as no response had been received, Woodside proactively sent a follow-up email (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 about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8 of the EP).	No additional measures or controls are required.

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Summary Report – Consultation Complete
While MUA is not a relevant person under regulation 25 of the Environment Regulations, Woodside considers it has still provided sufficient information and a reasonable period outside of regulatory requirements for MUA to provide feedback during the consultation process.

5.2.7 Vocus

Summary of information provided and record of consultation for this EP:

- On 21 August 2025, Woodside emailed Vocus advising of the proposed activity (Record of Consultation, reference 6.1.21) and provided a Consultation Information Sheet and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 5 September 2025, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.48).
- On 7 October 2025, Woodside emailed Vocus advising of an activity update regarding the wellhead cut location (Record of Consultation, reference 6.3.3) and provided an updated Consultation Information Sheet.
- **(1)** On 7 October 2025, Vocus emailed Woodside and (SI Report, reference 5.1.1) advised it had no objections
- **(1)** On 29 October 2025, Woodside responded to Vocus (SI Report, reference 5.1.2) via email and thanked them for their feedback, noting no objections.

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) Vocus advised it had no objections to the planned activities.	**(1)** Woodside notes that InCapture has no objections to the planned activities.	**(1)** Woodside acknowledged that InCapture had no objections to the planned activities.	**(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 of the EP).	No additional controls or measures are required.
Summary Report – Consultation Complete			

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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.

5.2.8 Telstra

Summary of information provided and record of consultation for this EP:

- On 21 August 2025, Woodside emailed Telstra advising of the proposed activity (Record of Consultation, reference 6.1.21) and provided a Consultation Information Sheet and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 5 September 2025, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.47).
- **(1)** On 8 September 2025, Telstra emailed Woodside (SI Report, reference 5.2.1) and stated that geotechnical survey activities could pose risks to Telstra's subsea network cables and requested that Telstra be informed if activities were planned near subsea cables.
- **(1)** On 11 September 2025, Telstra emailed Woodside (SI Report, reference 5.2.2) and confirmed there are no planned Geotechnical Survey activities included in this EP and no identification of Telstra subsea cable infrastructure within the Operational Area or EMBA.
- On 7 October 2025, Woodside emailed Telstra advising of an activity update regarding the wellhead cut location (Record of Consultation, reference 6.3.3) and provided an updated Consultation Information Sheet.
- On 14 October 2025, as no response had been received, Woodside proactively sent a follow-up email (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
(1) Stated that geotechnical survey activities could pose risks to Telstra's subsea network cables.	**(1)** Woodside noted Telstra's feedback in relation to geotechnical surveys.	**(1)** Woodside confirmed no planned Geotechnical Survey activities were included in this EP	**(1)** Not required.
While feedback has been received, there were no objections or claims.	Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24.	Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should further feedback be received, 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 controls or measures are required.

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Summary Report – Consultation Complete
While Telstra 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 Telstra 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
August 2025

Julimar Brunello Plug and Abandonment Environment Plan

Northern Carnarvon Sub-Basin, North-West Australia

Activity Overview

Woodside proposes to undertake activities to permanently plug and abandon (P&A) a number of subsea exploration wells in permit area WA-49-L, including:

- Permanent P&A of three wells using a Mobile Offshore Drilling Unit (MODU).
- Remediation (i.e. removal or isolation) of Non-Water-Based-Mud (NWBM) in the annulus of one additional well.
- Vessel-based preparation and support activities (e.g. wellhead cleaning and inspections, pre-laying of moorings and blowout preventer (BOP) tethering equipment, recovery of moorings and tethering equipment).
- Cutting and recovery of wellhead infrastructure at or below the mudline following P&A or recovery by vessel at a later date.

Location

- The wells are within Commonwealth waters in the Northern Carnarvon Sub-basin, approximately 185 km west north-west of Karratha (**Figure 1**).

Water depth

- The wells are in water depths ranging from approximately 135 m to 170 m.
- The depths of the mooring spread around each well will range from approximately 120 m to 210 m.

Timings and Duration

- Wellhead preparatory activities, including cleaning, inspections, wellhead testing: approximately 1–7 days per well. Earliest commencement in March 2026.
- MODU preparation and support activities, including pre-lay of MODU moorings and anchor hold testing: approximately 5–10 days per well. Earliest commencement in March 2026.
- P&A activities including wellhead removal: approximately 10–60 days per well (up to 180 days total). Earliest commencement in April 2026, currently planned to be completed by December 2027.
- NWBD remediation: 2–20 days. Earliest commencement in April 2026, currently planned to be completed by December 2027.

Joint Venture

- Woodside is operator on behalf of the Julimar joint venture participants.
- The participants are Woodside Energy Julimar Pty Ltd and KUFPEC Australia (Julimar) 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 be consulted and provide feedback.

Woodside consults 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, and that the environmental impacts and risks of the activity are reduced to as low as reasonably practicable (ALARP) and to an acceptable level.

If you are an individual, organisation or community group and believe you may be affected by the activities under this EP, we would like your feedback by **8 September 2025**.

consultation@feedback.woodside.com
Toll free: 1800 442 977
woodside.com

A summary of the proposed activity and location is provided in **Tables 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 Julimar-Brunello Plug and Abandonment Environment Plan | August 2025

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Table 1 – Activity and Location Summary

Julimar-Brunello Plug and Abandonment Environment Plan	
Activity details	• P&A of three Julimar-Brunello subsea wells: Julimar East-1, Brunello-1 ST1, and Brulimar-1. • Remediation, removal, or isolation of NWBM in the annulus of well: Balnaves Deep-1. • Removal of four wellheads, which may be recovered following P&A or temporarily placed on mud mats on the seabed for later recovery. • Wellhead preparatory activities (inspections, cleaning, and wellhead testing). • MODU preparation and support activities (pre-lay of moorings, anchor hold testing, removal of moorings).
Permit Areas	WA-49-L, MODU moorings extending into WA-34-L (Woodside operated title) and vacant anchorage.
Infrastructure	• Three subsea Exploration Temporarily Abandoned (ETA) wells. • One well requiring NWBM remediation (reservoir already accepted as permanently abandoned).
Vessels	• MODU with combined dynamic positioning (DP) and mooring capability (**Figure 2**). • Offshore support vessels (typically a multi-purpose support vessel (MPSV), light construction vessel (LCV), Inspection, Maintenance and Repair (IMR) Vessel, or Anchor Handling Tug Support Vessel (AHTSV). • General supply vessels including Infield Support Vessel (ISV) or Platform Supply Vessel (PSV).
Operational area and exclusion zones	• The Operational Area is defined by a 4000 m radius around each well to allow a moored MODU to undertake P&A activities. This includes a 1500 m radius around each well for non-moored activities and a 1000 m buffer around subsea infrastructure for IMR vessel-based activities. A temporary 500 m exclusion zone will be implemented to manage vessel movements around the MODU during permanent plugging and NWBM remediation activities.
Communication with mariners	• Marine users are permitted to use the Operational Area but should take care when entering. Marine users must remain clear of the 500 m temporary exclusion zone when in place.
Distance to nearest marine park/nature reserve	• Montebello Marine Park - Multiple Use Zone (Cth) - 3 km east of the Operational Area. • Montebello Islands Marine Park (WA) - 35 km southeast of the Operational Area. • Barrow Island Marine Park (WA) - 69 km southeast of the Operational Area.

Table 2 – Approximate locations of key infrastructure within the scope of the Julimar-Brunello P&A EP

Structure	Water Depth (m)	Latitude	Longitude	Titles
Julimar East-1	~171	20°06'23.21"S	115°05'07.97"E	WA-49-L
Brunello-1 ST 1	~151	20°03'16.247"S	115°10'25.273"E	WA-49-L
Brulimar-1	~171	20°00'18.265"S	115°11'04.989"E	WA-49-L
Balnaves Deep-1	~135	20°04'58.213"S	115°10'34.192"E	WA-49-L

Activity Location

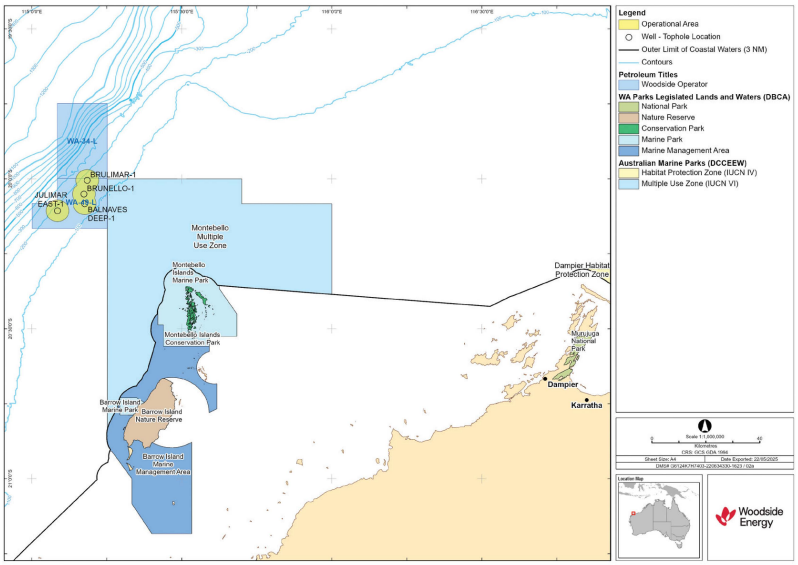

Figure 1. Location of the activity, including Julimar-Brunello Operational Area and nearby infrastructure

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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 modelling scenarios that inform the EMBA are loss of well containment, an unplanned release on NWBM, and vessel collision. The EMBA is depicted in Figure 3.

The EMBA does not represent the extent of the predicted impact of a highly unlikely hydrocarbon release. Rather, the EMBA represents the merged area of many possible paths that a highly unlikely hydrocarbon release could travel, which depends on the weather and ocean conditions at the time of a release. This means that in the highly unlikely event that a hydrocarbon release does occur, the whole EMBA 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**.

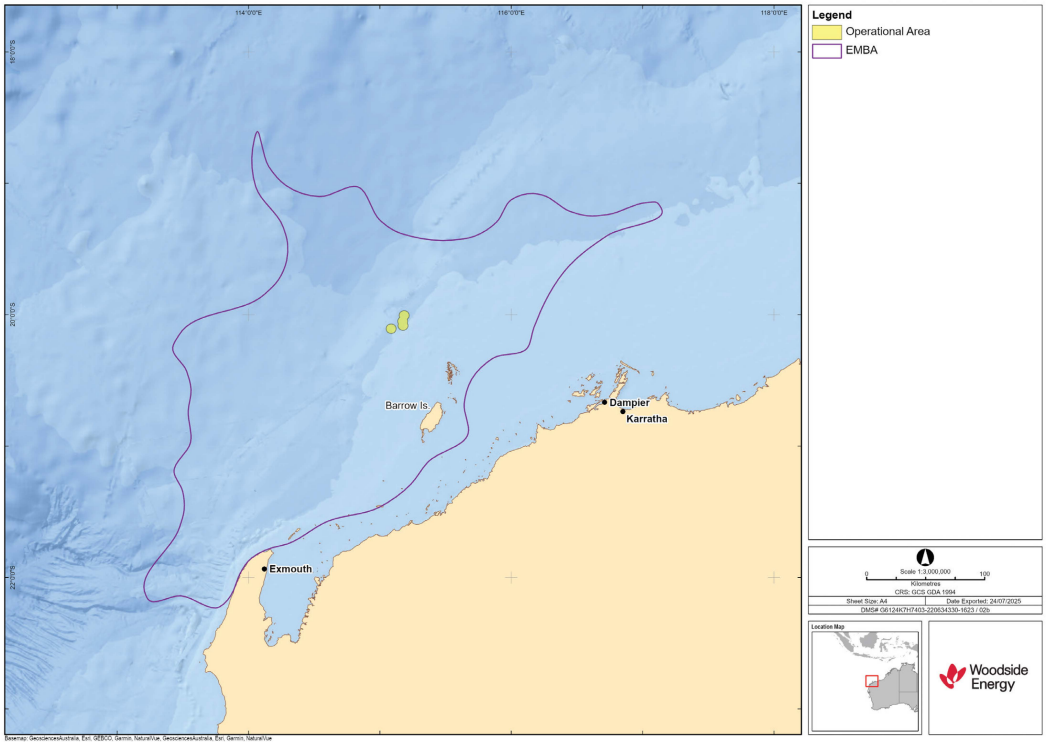

Figure 3. Environment that May Be Affected (EMBA) by the Julimar-Brunello P&A EP.

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Impacts/Risks, and Mitigation and/or Management Measures

Woodside has 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 we seek your feedback to inform our decision-making.

Table 3 – Summary of key impacts and risks and proposed management measures*

Potential 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***	• Physical presence of the MODU and subsea wells as well as offshore support vessels.	• Localised impact with no lasting effect arising from: – Subsea wells and equipment with the potential to interact with marine users such as commercial fisheries where fishing methods are at or close to the seabed. – Displacement or exclusion of other marine users when the MODU or vessels are in the field.	• Vessels adhere to regulatory requirements for navigational safety. • Notify Australian Fisheries Management Authority and the Department of Primary Industries and Regional Development at least 10 days prior to commencement and upon completion of activities. • Notify the Australia Hydraulic Office no less than four weeks prior to commencement of activities. • Notify AMSA at least 24 – 48 hours prior to commencement of vessel movement and activities. • Notify Department of Defence of activities and movements no less than five weeks before the scheduled activity commencement date. • Consult with relevant persons so they are informed of the proposed activities.
Physical Presence: ***Disturbance to Seabed***	• Seabed disturbance may result from the following activities: – Installation and recovery of MODU mooring chains and anchors; and BOP tethering equipment. – Presence of subsea infrastructure. – Wellhead cleaning and preparation activities. – Cutting and removal of wellheads.	• Localised impact with high environmental recovery. Impact to seabed arising from: – Localised modification of seabed habitat within the Operational Area. – Localised change in habitat, water quality, and sediment quality, which may affect fauna. • Indirect disturbance from suspended sediment and sediment deposition due to interactions with the seabed.	• Support vessels used for IMR activities will be dynamic positioning capable (vessels will not anchor). • Project-specific MODU Mooring Design Analysis. • Comply with regulatory requirements for Underwater Cultural Heritage (UCH). • Manage unexpected finds of potential UCH sites/features, including First Nations UCH, in accordance with Woodside's Unexpected Finds Procedure. • Relevant personnel will be trained on the potential to encounter UCH and their obligation to follow the Unexpected Finds Procedure. • Report any potential UCH finds to relevant stakeholders and authorities in accordance with the Unexpected Finds Procedure, Underwater Cultural Heritage Act 2018 and the Aboriginal and Torres Strait Islander Heritage Protection (ATSIHP) Act 1984. • An ROV as-left survey is undertaken at the end of activity to confirm all temporary equipment has been removed.
Acoustic Emissions: ***Generation of Noise from Project Vessels, MODU, Mechanical Equipment and Helicopter Operations***	• Noise generated in the Operation Area from: – MODU and support vessel thruster engines, propellers. – Helicopters. – Subsea cutting tools. – Positioning equipment. – P&A operations activities.	• Localised minor impact arising from: – Behavioural changes to marine fauna around MODU and support vessels.	• Project vessels comply with *EPBC Regulations 2000 – Part 8 Division 8.1 Interacting with cetaceans.* • Project vessels will not travel greater than 6 knots within 300 m of a cetacean. • If the cetacean shows signs of being disturbed, project vessels will immediately withdraw from the caution zone at a constant speed of less than 6 knots. • Stop or deviate from course if pygmy blue whale (or large unidentified whale) is observed during entry of a hybrid/DP MODU and petroleum industry vessel to the Operational Area. • Vessels will not travel greater than 6 knots within 300 m of a turtle (caution zone). • If the turtle shows signs of being disturbed, vessels will immediately withdraw from the caution zone at a constant speed of less than 6 knots (with the exception of a moored MODU). • Vessels will not travel greater than 6 knots within 250 m of a whale shark and not approach closer than 30 m of a whale shark. • Environmental Induction of all relevant vessel crew.

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Potential Impact/Risk	Description of Source of Impact/Risk	Description of Impact/Risk	Proposed Mitigation and/or Management Measure
Routine Light Emissions: *MODU, Project Vessels, and Flaring*	• External light emissions from MODU and project vessels and submersible equipment. • Light emissions from MODU operations - flaring.	• Localised impact with no lasting effect arising from: – Change in ambient light resulting in change in fauna behaviour.	• Lighting will be limited to the minimum required for navigational and safety requirements, with the exception of emergency events. • Implementation of appropriate management measures according to best practice lighting design as described in the National Light Pollution Guidelines for Wildlife Including Marine Turtles, Seabirds and Migratory Shorebirds. • Implementation of Woodside Offshore Seabird Management Plan. • Environmental Induction of all relevant marine crew. • Flaring / venting, if required, is restricted to a duration necessary to perform the activity for well kill.
Routine and Non-routine Atmospheric and Greenhouse Gas (GHG) Emissions	• Atmospheric and GHG emissions associated with flaring or cold venting, power generation, and fuel combustion.	• Localised impact with no lasting effect arising from: – Localised reduction in air quality in the immediate vicinity. – Contribution to global GHG emissions.	• Comply with regulatory requirements relating to GHG emissions and reporting. • Vessels comply with Marine Orders for pollution prevention to air.
Routine and Non-routine Discharges	• Routine discharge of sewage, grey water and putrescible wastes to marine environment from MODU and project vessels. • Routine discharge of deck and bilge water to marine environment from MODU and project vessels. • Routine discharge of brine and cooling water.	• Localised impact with no lasting effect arising from: – Change in marine water quality, which may affect fauna.	• MODU and support vessels comply with Marine Orders to prevent pollution events. • Assessment of chemicals used following Woodside's Chemical Selection and Assessment Environment Guideline.
	• Routine and non-routine drilling discharges such as: NWBM, swarf, cements, cuttings, drilling chemicals and bulk products during subsea well P&A and NWBD remediation activities.	• Localised impact with no lasting effect arising from: – Temporary reduction in water quality. – Sediment deposition. – Potential contamination and toxicity effects to benthic and in-water biota.	• Chemicals selected with the lowest practicable environmental impacts subject to technical constraints and approved through the Woodside chemical assessment process. • Options for use of excess bulk cement, bentonite and barite will be managed as per Woodside's Management process for excess bulk product. • Displacement, brine, intervention, or returned well fluids contaminated with hydrocarbons will be treated prior to discharge or contained. If discharge specification cannot be met the fluid will be returned to shore.

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Potential Impact/Risk	Description of Source of Impact/Risk	Description of Impact/Risk	Proposed Mitigation and/or Management Measure
Unplanned events (accidents / incidents)			
Unplanned Hydrocarbon Release: ***Loss of Well Containment During P&A***	• Loss of condensate oil to marine environment due to loss of well containment.	• Potential major level impact with moderate recovery arising from: – Contact with sensitive nearshore areas of offshore islands and coastal shorelines. – Reduction in water and sediment quality. – Disruption to marine fauna including protected species. – Potential archaeological and intangible cultural heritage damage.	**Preventative:** • OPGGS (Resource Management and Administration) Regulations 2011: accepted Well Operations Management Plan (WOMP) which describes the well integrity outcomes, control measures and performance criteria that will be used to demonstrate how the risk of loss of well integrity is managed to (ALARP) including the well design and barriers to be used to prevent a loss of well integrity, which aligns with industry guidance and good practice. • Subsea Blow Out Preventer (BOP) installed, and function tested during permanent plugging operations. • Subsea Well Control Package (WCP), if installed, will be function tested during well intervention activities. The WCP shall meet the Woodside Well Control Standard and the Woodside MODU Deployed Subsea Installation and Workover Equipment Standard. • Maintain well barrier envelope to contain reservoir fluids within the well in compliance with Woodside Well Barrier Standard. **Spill response arrangements:** • In the event of a spill, emergency response activities will be implemented in accordance with the Oil Pollution Emergency Plan (OPEP). • Arrangements supporting the activities in the OPEP will be tested to ensure the OPEP can be implemented as planned.
Unplanned Hydrocarbon Release: ***Vessel Collision***	• Loss of hydrocarbons to marine environment due to a vessel collision (e.g. support vessels or other marine users).	• Potential minor level impact with high recovery arising from: – Contact with sensitive nearshore areas of offshore islands and coastal shorelines. – Reduction in water quality. – Disruption to marine fauna including protected species. – Interference with or displacement of other marine users including activities of other regional petroleum activities.	**Preventative:** • Project vessels comply with Marine Orders for safe vessel operations. • Establishment of a 500 m temporary exclusion zone around MODU/infrastructure removal vessel and communicated to marine users. • Support vessel on standby as per the MODU safety case during the Petroleum Activity. **Spill response arrangements:** • In the event of a spill, emergency response activities are implemented in accordance with the Oil Pollution Emergency Plan (OPEP). • Arrangements supporting the OPEP will be tested to ensure the OPEP can be implemented as planned.
Unplanned Hydrocarbon or Chemical Release: ***Hydrocarbon Release during Bunkering/ Refuelling and Chemical Transfer, Storage and Use***	• Loss of hydrocarbons to marine environment from bunkering/refuelling.	• Potential minor level impact with high recovery arising from: – Reduction in water quality. – Disruption to marine fauna. – Archaeological and intangible cultural heritage damage.	**Preventative:** • Comply with Marine Orders to prevent pollution events. • Bunkering equipment controls including integrity testing and certification of bulk transfer hoses, dry break couplings and floatation installed on fuel hoses. • Contractor procedures include requirements to be implemented during bunkering/ refuelling operations. • Liquid chemical and fuel storage areas are bunded or secondarily contained when they are not being handled/moved temporarily. **Spill response arrangements:** • In the event of a spill, emergency response activities are implemented in accordance with the Oil Pollution Emergency Plan (OPEP) or Shipboard Oil Pollution Emergency Plan (SOPEP).

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Potential Impact/Risk	Description of Source of Impact/Risk	Description of Impact/Risk	Proposed Mitigation and/or Management Measure
Unplanned Discharges: ***Deck and Subsea Spills***	• Discharge of chemicals and hydrocarbons from MODU, project vessels and submersible equipment.	• Potential localised impact with no lasting effect arising from: – Reduction in water quality. – Disruption to marine fauna.	**Preventative:** • Liquid chemical and fuel storage areas are bunded or secondarily contained when they are not being handled/moved temporarily. • MODU and project vessels have a self-containing hydraulic oil drip tray management system. **Spill response arrangements:** • In the event of a spill, emergency response activities are implemented in accordance with the Oil Pollution Emergency Plan (OPEP) or Shipboard Oil Pollution Emergency Plan (SOPEP). • Spill kits positioned in high-risk locations around the MODU and project vessels (near potential spill points such as transfer stations).
Unplanned Discharges: ***Loss of Solid Hazardous and Non-hazardous Wastes (including dropped objects)***	• Accidental loss of hazardous or non- hazardous wastes to the marine environment (excludes sewage, grey water, putrescible waste and bilge water). • Dropped objects resulting in the disturbance of benthic habitat. • Inappropriate disposal of waste generated from infrastructure removal.	• Potential localised impact with no lasting effect arising from: – Reduction in water and sediment quality. – Disruption to marine fauna.	**Preventative:** • Project vessels compliant with Marine Orders for safe vessel operation and to prevent pollution events. • Implement waste management procedures which provide for safe handling and transportation, segregation and storage and appropriate classification of waste generated. • Work procedures in place for the MODU and project vessel lifts, bulk transfers, and cargo loading. **Mitigating:** • Lost waste or dropped objects will be recovered, where safe and practicable.
Unplanned Discharges: ***Drilling and Well Fluids***	• Accidental discharge of WBM or NWBM to the marine environment due to failure of slip joint packers, bulk transfer hose/fitting, emergency disconnect system or from routine MODU operations.	• Potential minor impact with high recovery arising from: – Localised reduction in water quality.	**Preventative:** • Comply with Marine Order 91 – Marine pollution prevention – oil (as appropriate to vessel class). • Where there is potential for loss of primary containment of oil and chemicals on the project vessels, deck drainage must be collected via a deck drainage water management system. • Procedures in place for managing drilling fluid transfers onto, around, and or the MODU.
Physical Presence: ***Introduction of Invasive Marine Species (IMS)***	• Vessels and submersible equipment have the potential to introduce IMS to the Operational Area through marine biofouling (containing IMS), as well as within high-risk ballast water exchange.	• Potential moderate impact with moderate recovery impact arising from: – Introduction and establishment of IMS in the Operational Area.	**Preventative:** • Ballast water and biofouling will be managed according to the Australian Ballast Water Management Requirements and the Australian Biofouling Management Requirements, as applicable. • Internationally sourced project vessels will manage their biosecurity risk associated with biofouling as specified in the Australian Biofouling Management Requirements. • Woodside's IMS risk assessment process will be applied to project vessels and relevant immersible equipment undertaking the Petroleum Activity.

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Potential Impact/Risk	Description of Source of Impact/Risk	Description of Impact/Risk	Proposed Mitigation and/or Management Measure
Unplanned Physical Presence: ***Interaction with Marine Fauna***	• Accidental collision between project vessels/MODU and protected marine fauna.	• Potential minor impact with high recovery arising from: – Injury or death to marine fauna (single individual) including protected species.	**Preventative:** • Project vessels comply with EPBC Regulations 2000 – Part 8 Division 8.1 Interacting with cetaceans. • Project vessels will not travel greater than 6 knots within 300 m of a cetacean. • Stop or deviate from course if pygmy blue whale (or large unidentified whale) is observed during entry of a hybrid/DP MODU and petroleum industry vessel to the Operational Area. • Vessels will not travel greater than 6 knots within 300m of a turtle (caution zone). • Environmental Induction of all relevant vessel crew.
Unplanned Physical Presence: ***Disturbance to Seabed***	• Loss of station-keeping of MODU leading to seabed disturbance.	• Potential localised impact with high recovery arising from: – Localised disturbance to benthic habitat (fish, benthic communities, Key Ecological Features).	**Preventative:** • Specifications and requirements for station-keeping equipment (mooring systems) require that: – Systems are tested and inspected in accordance with API RP 2I. – Systems have sufficient capability such that a failure of any single component will not cause progressive failure of the remaining anchoring arrangement. – Mooring system is tested to recommended tension as per API RP 2SK. **Mitigating:** • • MODU tracking equipment operational when the MODU is unmanned.
	• Dropped objects (including wellhead).	• Potential localised impact with high recovery arising from: – Reduction in water and sediment quality. – Disruption to marine fauna.	**Preventative:** • Refer to Unplanned Discharges: *loss of solid hazardous and non-hazardous wastes (including dropped objects)* for controls

**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 proposed petroleum activities.

If you would like to comment on the proposed activities outlined in this information sheet, please provide feedback to Woodside by **8 September 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 consultation 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 EP for the proposed activity, which will be submitted to NOPSEMA for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth)* and support other regulatory processes associated with the planned activities (which may or may not be required to be kept confidential).

Personal information collected in the course of consultation will be handled in accordance with Woodside's Environment Plan Privacy Collection Notice. To understand how personal information will be handled, please visit:
woodside.com/what-we-do/consultation-activities

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6.1.2 Summary Information sheet

Woodside Energy

Summary Consultation Information Sheet
August 2025

Julimar Brunello Plug and Abandonment Environment Plan
(Commonwealth Waters)

Woodside Energy recognises Aboriginal and Torres Strait Islander peoples as Australia's First Peoples. We acknowledge their connection to land, waters and the environment and pay our respects to ancestors and Elders, past and present. We extend this recognition and respect to First Nations peoples and communities around the world.

Have Your Say

We want to talk, share ideas, and yarn with local community who have a deep connection to the land and sea. Your knowledge helps us do our work better!

We want to understand the environments we want to work in. We want to work in a way which manages the environmental impacts and risks of the activities appropriately. By working together, we want to help protect cultural heritage and keep the Land and Sea Country healthy.

We welcome feedback from 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 **8 September 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

Woodside proposes to undertake the following activities in subsea exploration wells in permit area WA-49-L:

- Permanent plug and abandon (P&A) of three wells using a Mobile Offshore Drilling Unit (MODU).
- Removal or isolation of Non-Water-Based-Mud (NWBM) in one additional well.
- Vessel-based preparation and support activities such as wellhead cleaning and inspections, pre-laying and recovery of moorings and tethering equipment.
- Cutting and recovery of wellhead infrastructure at or below the mudline following P&A or recovery by vessel at a later date.

Location

- Northern Carnarvon Sub-basin, in Commonwealth waters approximately 185 km west north-west of Karratha **(Figure 1)**.

Water Depth

- The wells are in water depths ranging from approximately 135 m to 170 m.
- The depths of the mooring spread around each well will range from approximately 120 m to 210 m.

Timing and Duration

- Wellhead preparatory activities: approximately 1-7 days per well. Earliest start March 2026.
- MODU preparation and support activities: approximately 5-10 days per well. Earliest start March 2026.
- P&A activities including wellhead removal: approximately 10-60 days per well (up to 180 days total). Earliest start April 2026.
- NWBD remediation: 2-20 days. Earliest start April 2026. Planned completion December 2027.

Joint Venture

- Woodside is operator on behalf of the Julimar joint venture participants.
- Participants are Woodside Energy Julimar Pty Ltd and KUFPEC Australia (Julimar) Pty Ltd.

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Activity Location

The EP explains how Woodside will manage environmental risks and impacts while carrying out our activities. These plans help us conduct operations safely and responsibly, with respect for the environment and cultural heritage. The location where the work will be done is known as the Operational Area (**Figure 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.

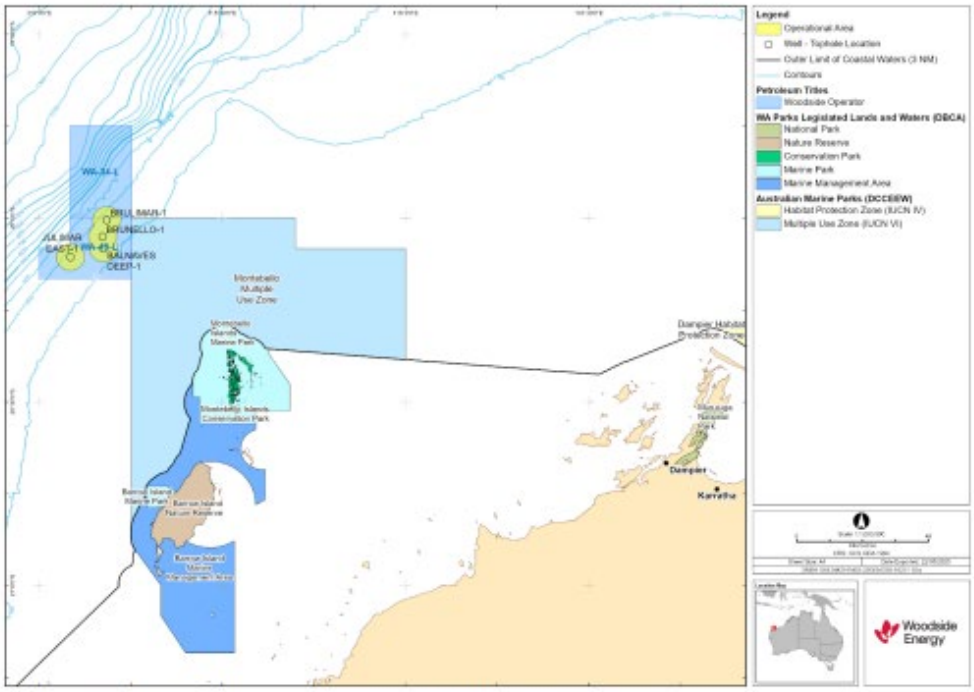

Figure 1: Location of the activity, including Julimar Brunello Operational Area and nearby infrastructure

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 loss of well containment and 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.

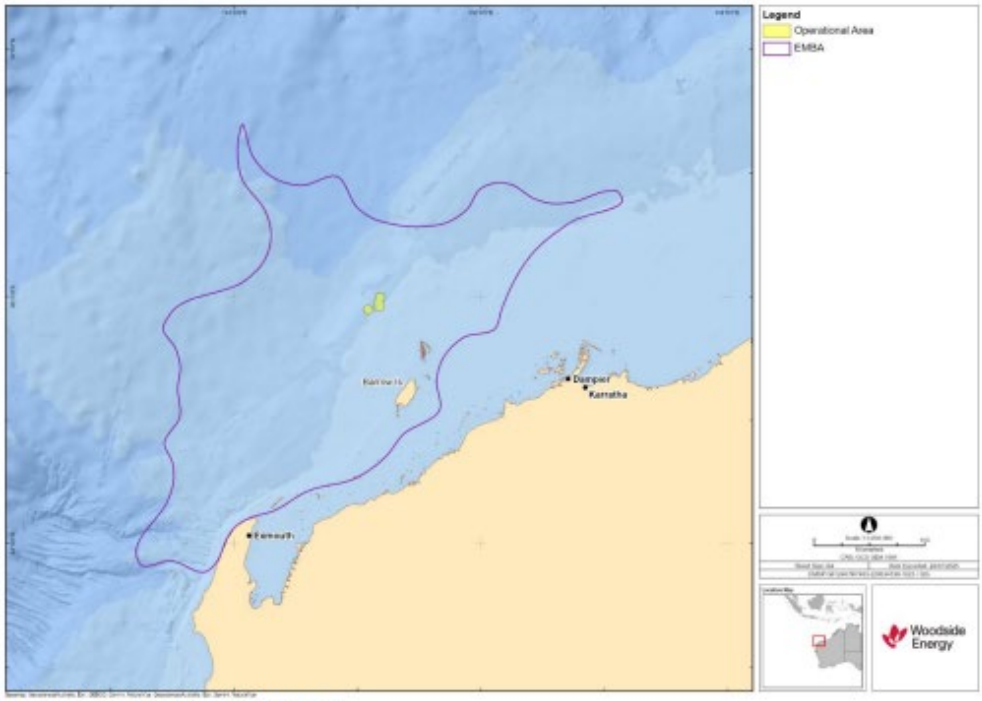

Figure 2: Environment that May Be Affected (EMBA) map

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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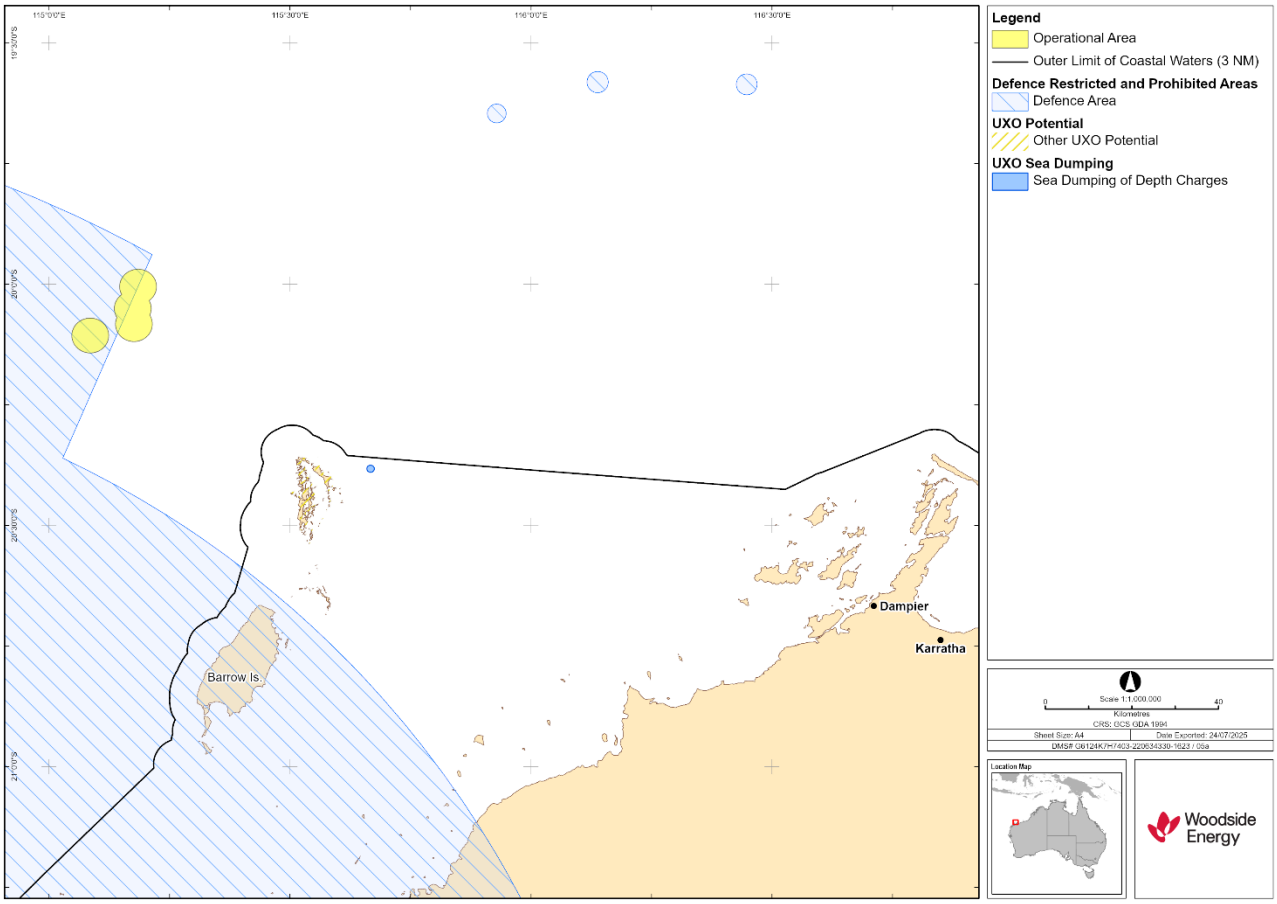
6.1.3 Defence zones map



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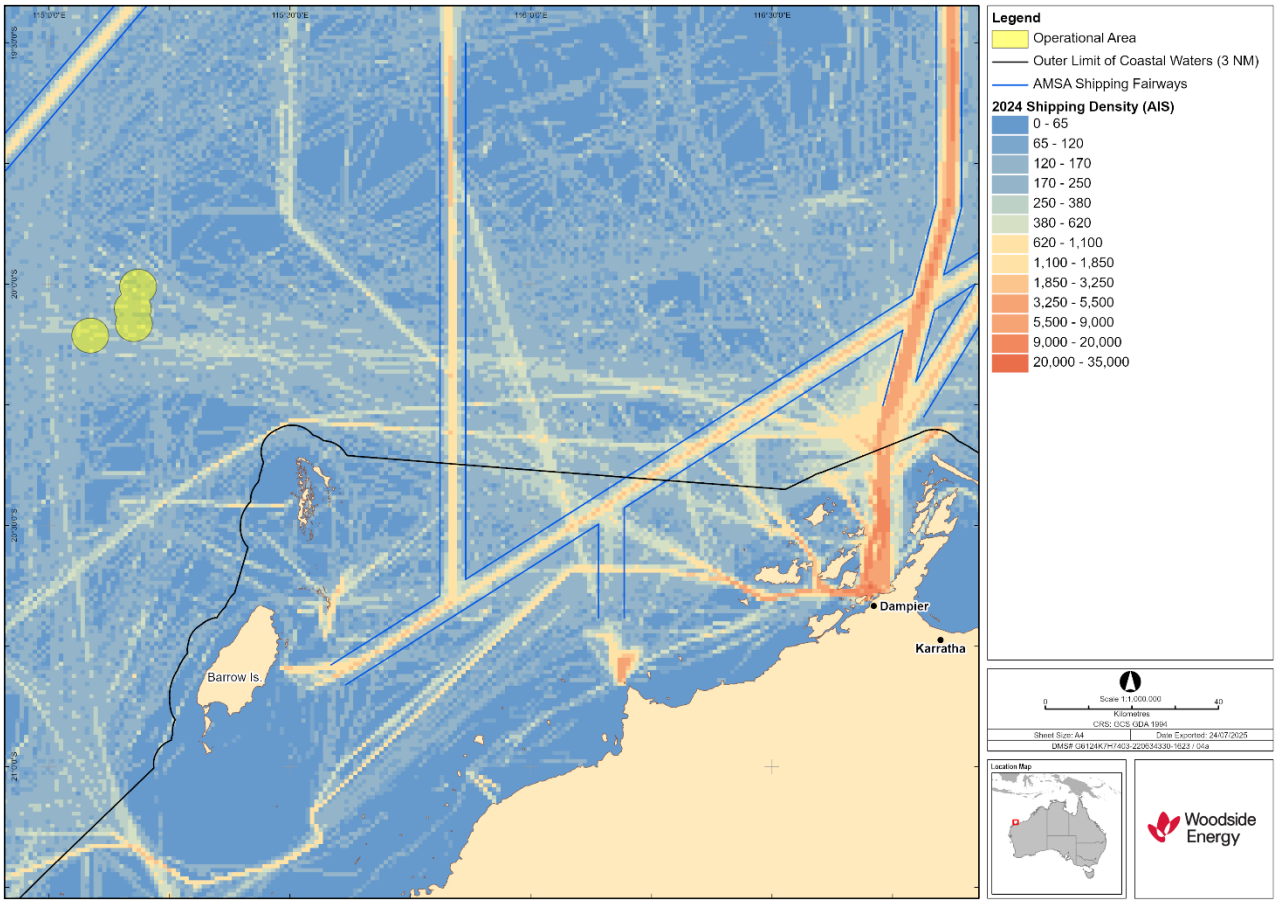
6.1.4 Vessel density map



6.1.5 Shipwrecks

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Julimar-Brunello P&A EP
EMBA and Accumulated Shoreline — Australia National Shipwrecks overlap

Vessel Name	Vessel Type	Year Lost	Location Lost	Latitude	Longitude
Agnes	Sailing vessel	1893	Exmouth Gulf	-21.75	114.0833333
Beatrice	Sailing vessel	1899	Off North-West Cape	-21.61666667	113.9833333
Bell	Sailing vessel	1893	Exmouth	-21.75	114.0833333
Curlew	Sailing vessel	1911	At Onslow, Monte Bellos Group	-20	115.1666667
Elizabeth	Sailing vessel	1893	Exmouth Gulf	-21.75	114.0833333
Ellen	Sailing vessel	1893	Exmouth Gulf	-21.75	114.0833333
Florence	Sailing vessel	1893	Exmouth Gulf	-21.75	114.0833333
Gem	Sailing vessel	1893	North West Cape	-21.61666667	113.9833333
Kapala	Unknown	1964	Exmouth Gulf	-21.75	114.0833333
Lady Ann	Sailing vessel	1982	24 miles north of NW Cape	-21.4	114.2
Lamareaux	Sailing vessel	1893	Exmouth Gulf	-21.75	114.0833333
Leave	Sailing vessel	1893	Exmouth Gulf	-21.75	114.0833333
Lily Of The Lake	Sailing vessel	1875	Exmouth Gulf	-21.75	114.0833333
Mabel	Sailing vessel	1893	Exmouth Gulf	-21.75	114.0833333
Maratta	Unknown	1905		-20.72783333	115.4261167
Marietta	Unknown	1905	Barrow Island	-20	115.1666667
Marutta	Unknown	1905		-20.72783333	115.4261667
McCormack		1989	N.E. tip of Eaglehawk Island West of Dampier,	-20.13666667	115.9533333
McDermott Derrick Barge No 20	Barge	1989	N.E. tip of Eaglehawk Island, Dampier Archipelago	-20.13666667	115.9533333
Nellie	Sailing vessel	1893	Exmouth Gulf	-21.75	114.0833333
Olive	Sailing vessel	1893	Exmouth Gulf	-21.75	114.0833333
Parks Lugger	Sailing vessel		Hermite Island. Montebello Islands	-20.477082	115.528518
Pearl	Sailing vessel	1896	Exmouth Gulf, Meda Creek	-21.75	114.0833333
Perentie	Unknown	1976	Barrow Island	-20.72783333	115.4261667
Plym HMS	Frigate	1952		-20.40346667	115.5658333
Ruby	Sailing vessel	1893	Exmouth Gulf	-21.75	114.0833333
Sea Queen	Sailing vessel	1893	Exmouth Gulf	-21.75	114.0833333
Smuggler	Sailing vessel	1893	Exmouth Gulf	-21.75	114.0833333
Tanami	Sailing vessel		Trial Rocks	-20.28333	115.36666
Trial	Sailing vessel	1622	Trial Rocks	-20.28598333	115.3752333
Tropic Queen		1975		-20.43333333	115.5008333
Unidentified Lugger	Unknown	1893	Exmouth Gulf	-21.75	114.0833333
Veronica	Sailing vessel	1928	Sunday Island, Exmouth Gulf	-21.68333333	114.3833333
Vianen	Sailing vessel	1628	Barrow Island Area	-20	115.1666667
Wild Wave	Sailing vessel	1875	Exmouth Gulf	-21.75	114.0833333
Wild Wave (China)	Sailing vessel	1873	Monte Bello Island	-20	115.1666667

Julimar-Brunello P&A EP
EMBA and accumulated shoreline — Western Australia State shipwrecks overlap

Vessel Name	Vessel Type	When Lost	Where Lost	Latitude	Longitude
Trial	Ship	1622/05/24	Trial Rocks	20°17.159	115°22.514
Curlew	Lugger	7/02/1911	At Onslow, Monte Bellos Group	20°00	115°10
Experimental shell pool	Other		North Delta Island, Monte Bello Islands	20°25.910546	115°32.605015
Lady Ann	Ship (non-sail)	18/09/1982	24 miles north of NW Cape	21°24	114°12
Maratta		1905		20°43.67	115°25.567
Marietta		8/02/1905	Barrow Island	20°00	115°10
Marutta		1905		20°43.67	115°25.57
McCormack	Barge	1989/10/00	N.E. tip of Eaglehawk Island West of Dampier, Dampier Archipelago	20°08.200	115°57.200
McDermott Derrick Barge No 20	Barge	20/10/1989	N.E. tip of Eaglehawk Island, Dampier Archipelago	20°08.200	115°57.200
Parks Lugger		unknown	Hermite Island. Montebello Islands	20°28.62492	115°31.71108
Perentie		8/11/1976	Barrow Island	20°43.67	115°25.57
Plym HMS	Warship	17808	Trimouille Island Island	20°24.208	115°33.950
Tantabiddi Lagoon Admiralty anchor			Tantabiddi Lagoon	21 54.843	113 57.779
Tropic Queen		9/04/1975		20°26	115°30.05
Vianen	Ship	1628/01/25	Barrow Island Area	20°00	115°10
Wild Wave (China)	Brig	1873/08/30	Monte Bello Island	20°00	115°10

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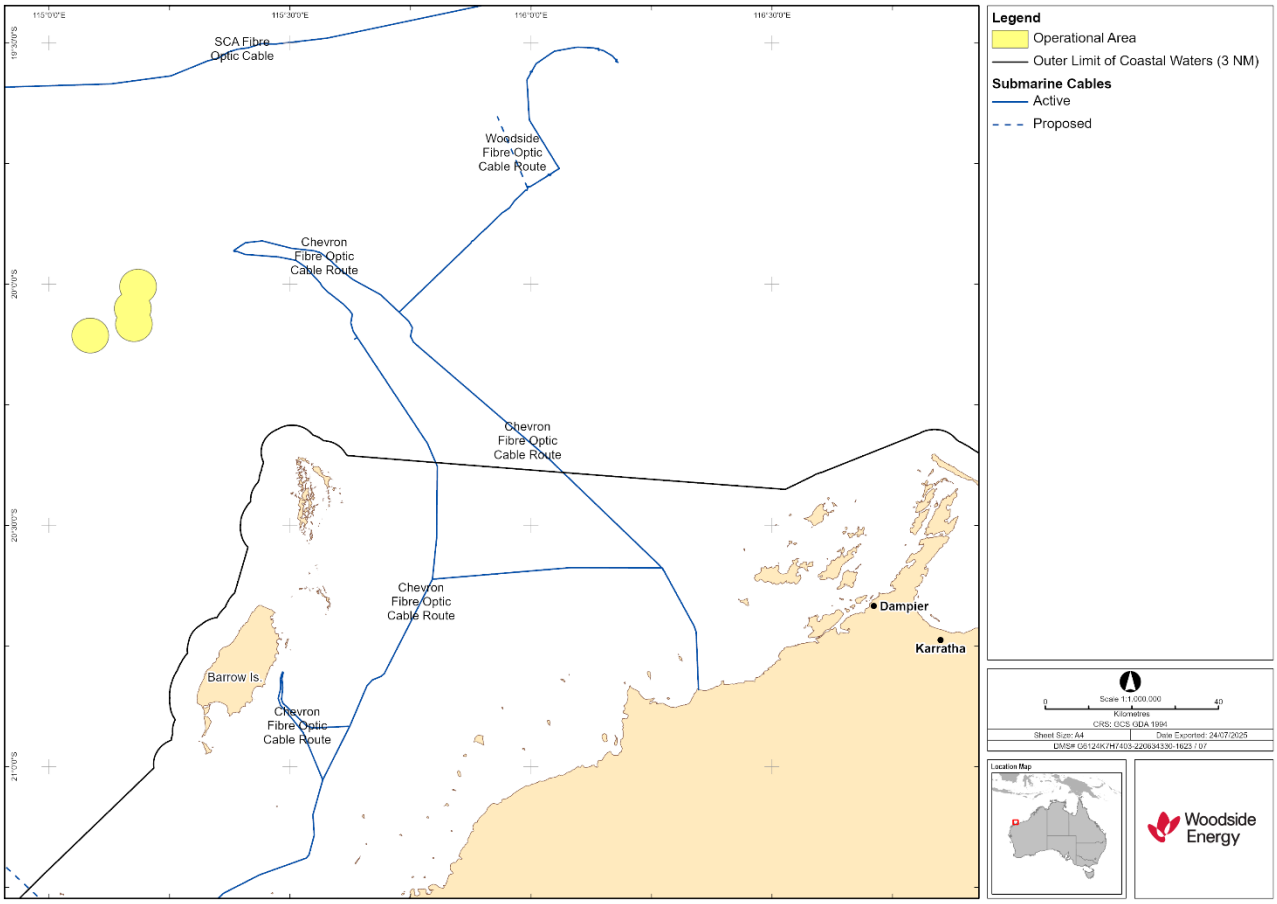
6.1.6 Submarine communication cables map



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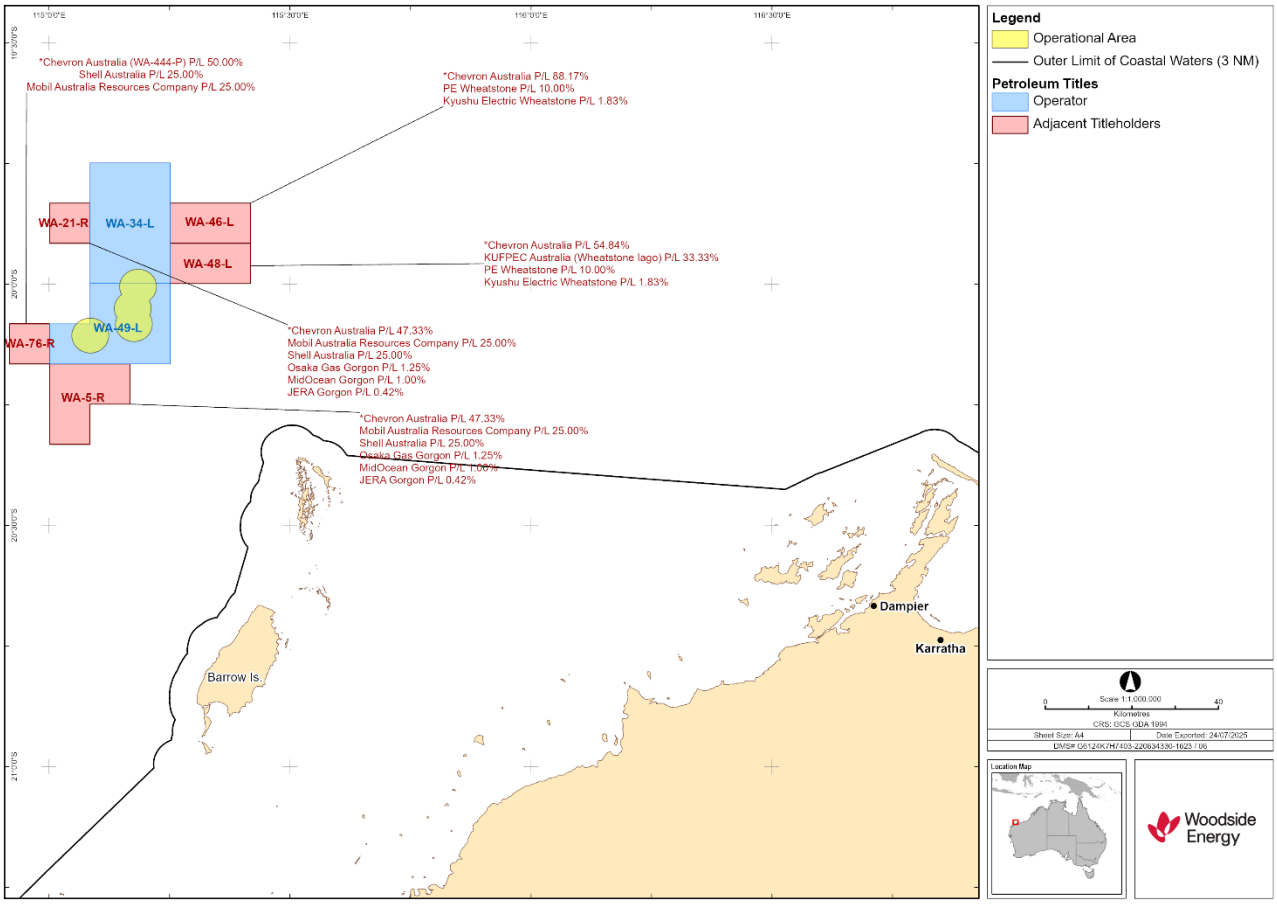
6.1.7 Adjacent titleholders and Operational Area map



6.1.8 Email sent to Titleholders – 11 August 2025

- Beagle No. 1
- Carbon CQ
- InCapture
- INPEX Alpha
- JX Nippon O&G Exploration (Australia)
- KATO Energy
- KUFPEC
- Kyushu Electric Wheatstone
- Melbana Exploration
- Mobil Australia Resources Company
- OMV Australia
- Pelsart Resources NL
- PE Wheatstone
- Santos

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- Shell Australia
- SK Earthon Australia
- Skye Resources
- Tanami Energy
- Western Gas

Woodside is planning to submit the Julimar-Brunello Plug and Abandonment (P&A) Environment Plan (EP) and other info as relevant. The Julimar-Brunello license is in Permit Title WA-49-L, with moorings potentially extending into WA-34-L, located in Commonwealth waters in the Northern Carnarvon Sub-basin, approximately 185 km west north-west of Karratha, Western Australia.

We are seeking feedback from relevant persons whose functions, interests or activities may be affected by the proposed activity. If you would like to comment on the proposed activity, please provide feedback to Woodside by 8 September 2025 using the details below.

Overview

Woodside proposes to undertake permanent P&A for four subsea exploration wells in the Julimar-Brunello licence. The wells underwent Exploration Temporary Abandonment (ETA) following exploration activities, however, the temporary abandonment methodology conducted does not align to the current legislative requirements and regulatory expectations for permanent abandonment, driving the need for further P&A activities, including:

- Permanent P&A of three wells using a Mobile Offshore Drilling Unit (MODU).
- Remediation and/or isolation of Synthetic Based Mud (SBM) in the annulus of an additional well.
- Vessel-based inspection, maintenance and repair (IMR) activities.
- Removal and recovery of well infrastructure below the mudline.

Consultation information

A Consultation Information Sheet is attached, which provides additional background on the proposed activities including summaries of key impacts and risks and associated management measures. This is also available on our website.

Activity and location summary

Julimar-Brunello P&A EP	
Activity details	Activities include: • Permanent P&A of three Julimar-Brunello ETA wells: Julimar East-1, Brunello-1 ST 1 and Brulimar-1. • Remediation and/or isolation of SBM in the annulus of Balnaves Deep-1. • Removal of four wellheads, which may be recovered following P&A or temporarily placed on the seabed for later recovery. • Preparation and support activities (inspections, cleaning, pre-laying and recovery of moorings). • IMR activities.
Titles	WA-49-L, MODU moorings for Brulimar-1 may extend into WA-34-L (Woodside-operated title)

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Location	Barrow sub-basin
Water depth	~135 m to ~ 170 m
Timing	• Preparatory (IMR) activities: approximately 1–7 days per wellhead. Earliest commencement March 2026. • Preparation and support activities: approximately 5–10 days per site. Earliest commencement March 2026. • P&A activities: approximately 10–45 days per well (up to 180 days total). Earliest commencement April 2026, to be completed by December 2027. • SBM removal and/or isolation activity: 2–20 days. Earliest commencement April 2026, to be completed by December 2027. • Potential wellhead removal: commence any time after P&A activities completed.
Duration	• The EP will be in effect for a period of 5 years. • Operation will occur on a 24/7 basis during P&A and preparation activities. • IMR activities take place as required.
Infrastructure	Key infrastructure includes, but is not limited to: • Julimar East-1 • Brunello-1 ST 1 • Brulimar-1 • Balnaves Deep-1
Vessels	Key vessels include, but are not limited to: • MODU with combined dynamic positioning (DP) and mooring capability • Offshore support vessels (IMR vessel or anchor-handling tug supply vessel (AHTSV) • General support vessels (Infield support vessels (ISV) or platform supply vessels (PSV)) • Remotely Operated Vehicles (ROV) • Helicopters
Operational Area and exclusion zones	The location of infrastructure is marked on nautical charts. The Operational Area and exclusion zones include: • A 4000 m radius around each well to allow a moored MODU to undertake plugging for abandonment activities. • A 1500 m radius around each well for non-moored activities and 1000 m buffer around subsea infrastructure to allow for IMR activities.

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	• A temporary 500 m exclusion zone to manage vessel movements around the MODU during P&A and SBM activities.

Environment that May Be Affected (EMBA)

The EMBA is the largest geographic area where an unplanned event could potentially have an environmental consequence. The broadest extent of the EMBA takes into consideration planned activities and unplanned events. The EMBA has been developed combining numerous modelling outputs based on highly unlikely releases of hydrocarbons to the environment. The modelling scenarios that inform the EMBA are loss of well containment during P&A, vessel collision, and SBM planned release.

The EMBA does not represent the extent of the predicted impact of a highly unlikely hydrocarbon release. Rather, the EMBA represents the merged area of many possible paths that a highly unlikely hydrocarbon release could travel, which depends on the weather and ocean conditions at the time of a release. This means that in the highly unlikely event that a hydrocarbon release does occur, the whole EMBA will not be affected. The specific and minimal part of the EMBA that is affected will only be known if there is a release.

Feedback

If you have feedback specific to the proposed activities, we welcome your feedback via email at consultation@feedback.woodside.com, via phone call at 1800 442 977 or via the feedback form on our website by **8 September 2025.** Alternatively, Woodside is willing to consider and accept your feedback via a means which suits you.

Your feedback and our response will be included in our EP, which will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023* (Cth). Your feedback may also be used to support other regulatory processes associated with the planned activities (which may or may not be confidential).

You may request that particular information you provide during consultation not be published in the EP made available on the NOPSEMA website. Please let us know if you request that particular information not be published, and we will make your request known to NOPSEMA.

NOPSEMA has published the brochure *Consultation on offshore petroleum environment plans – Information for the Community* to help community members understand consultation requirements for Commonwealth EPs and how to participate in consultation.

Personal information collected in the course of consultation will be handled in accordance with Woodside's Environment Plan Privacy Collection Notice. To understand how personal information will be handled, please visit our website.

Regards,

Woodside Energy Consultation

6.1.9 Email sent to Australian Border Force (ABF) – 11 August 2025

Woodside is planning to submit the Julimar-Brunello Plug and Abandonment (P&A) Environment Plan (EP) and other info as relevant. The Julimar-Brunello license is in Permit Title WA-49-L, with moorings potentially extending into WA-34-L, located in Commonwealth waters in the Northern Carnarvon Sub-basin, approximately 185 km west north-west of Karratha, Western Australia.

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Overview

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Woodside proposes to undertake permanent P&A for four subsea exploration wells in the Julimar-Brunello licence. The wells underwent Exploration Temporary Abandonment (ETA) following exploration activities, however, the temporary abandonment methodology conducted does not align to the current legislative requirements and regulatory expectations for permanent abandonment, driving the need for further P&A activities, including:

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- Removal and recovery of well infrastructure below the mudline.

Consultation information

A Consultation Information Sheet is attached, which provides additional background on the proposed activities including summaries of key impacts and risks and associated management measures. This is also available on our website.

Activity and location summary

Julimar-Brunello P&A EP	
Activity details	Activities include: • Permanent P&A of three Julimar-Brunello ETA wells: Julimar East-1, Brunello-1 ST 1 and Brulimar-1. • Remediation and/or isolation of SBM in the annulus of Balnaves Deep-1. • Removal of four wellheads, which may be recovered following P&A or temporarily placed on the seabed for later recovery. • Preparation and support activities (inspections, cleaning, pre-laying and recovery of moorings). • IMR activities.
Titles	WA-49-L, MODU moorings for Brulimar-1 may extend into WA-34-L (Woodside-operated title)
Location	Barrow sub-basin
Water depth	~135 m to ~ 170 m
Timing	• Preparatory (IMR) activities: approximately 1–7 days per wellhead. Earliest commencement March 2026. • Preparation and support activities: approximately 5–10 days per site. Earliest commencement March 2026. • P&A activities: approximately 10–45 days per well (up to 180 days total). Earliest commencement April 2026, to be completed by December 2027. • SBM removal and/or isolation activity: 2–20 days. Earliest commencement April 2026, to be completed by December 2027. • Potential wellhead removal: commence any time after P&A activities completed.

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Duration	• The EP will be in effect for a period of 5 years. • Operation will occur on a 24/7 basis during P&A and preparation activities. • IMR activities take place as required.
Infrastructure	Key infrastructure includes, but is not limited to: • Julimar East-1 • Brunello-1 ST 1 • Brulimar-1 • Balnaves Deep-1
Vessels	Key vessels include, but are not limited to: • MODU with combined dynamic positioning (DP) and mooring capability • Offshore support vessels (IMR vessel or anchor-handling tug supply vessel (AHTSV) • General support vessels (Infield support vessels (ISV) or platform supply vessels (PSV)) • Remotely Operated Vehicles (ROV) • Helicopters
Operational Area and exclusion zones	The location of infrastructure is marked on nautical charts. The Operational Area and exclusion zones include: • A 4000 m radius around each well to allow a moored MODU to undertake plugging for abandonment activities. • A 1500 m radius around each well for non-moored activities and 1000 m buffer around subsea infrastructure to allow for IMR activities. • A temporary 500 m exclusion zone to manage vessel movements around the MODU during P&A and SBM activities.

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our website by **8 September 2025.** Alternatively, Woodside is willing to consider and accept your feedback via a means which suits you.

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Regards,

Woodside Energy Consultation

6.1.10 Email sent to Australian Communications and Media Authority (ACMA) – 11 August 2025

Woodside is planning to submit the Julimar-Brunello Plug and Abandonment (P&A) Environment Plan (EP) and other info as relevant. The Julimar-Brunello license is in Permit Title WA-49-L, with moorings potentially extending into WA-34-L, located in Commonwealth waters in the Northern Carnarvon Sub-basin, approximately 185 km west north-west of Karratha, Western Australia.

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Overview

Woodside proposes to undertake permanent P&A for four subsea exploration wells in the Julimar-Brunello licence. The wells underwent Exploration Temporary Abandonment (ETA) following exploration activities, however, the temporary abandonment methodology conducted does not align to the current legislative requirements and regulatory expectations for permanent abandonment, driving the need for further P&A activities, including:

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Consultation information

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Activity and location summary

Julimar-Brunello P&A EP

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Activity details	Activities include: • Permanent P&A of three Julimar-Brunello ETA wells: Julimar East-1, Brunello-1 ST 1 and Brulimar-1. • Remediation and/or isolation of SBM in the annulus of Balnaves Deep-1. • Removal of four wellheads, which may be recovered following P&A or temporarily placed on the seabed for later recovery. • Preparation and support activities (inspections, cleaning, pre-laying and recovery of moorings). • IMR activities.
Titles	WA-49-L, MODU moorings for Brulimar-1 may extend into WA-34-L (Woodside-operated title)
Location	Barrow sub-basin
Water depth	~135 m to ~ 170 m
Timing	• Preparatory (IMR) activities: approximately 1–7 days per wellhead. Earliest commencement March 2026. • Preparation and support activities: approximately 5–10 days per site. Earliest commencement March 2026. • P&A activities: approximately 10–45 days per well (up to 180 days total). Earliest commencement April 2026, to be completed by December 2027. • SBM removal and/or isolation activity: 2–20 days. Earliest commencement April 2026, to be completed by December 2027. • Potential wellhead removal: commence any time after P&A activities completed.
Duration	• The EP will be in effect for a period of 5 years. • Operation will occur on a 24/7 basis during P&A and preparation activities. • IMR activities take place as required.
Infrastructure	Key infrastructure includes, but is not limited to: • Julimar East-1 • Brunello-1 ST 1 • Brulimar-1 • Balnaves Deep-1

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Vessels	Key vessels include, but are not limited to: • MODU with combined dynamic positioning (DP) and mooring capability • Offshore support vessels (IMR vessel or anchor-handling tug supply vessel (AHTSV) • General support vessels (Infield support vessels (ISV) or platform supply vessels (PSV)) • Remotely Operated Vehicles (ROV) • Helicopters
Operational Area and exclusion zones	The location of infrastructure is marked on nautical charts. The Operational Area and exclusion zones include: • A 4000 m radius around each well to allow a moored MODU to undertake plugging for abandonment activities. • A 1500 m radius around each well for non-moored activities and 1000 m buffer around subsea infrastructure to allow for IMR activities. • A temporary 500 m exclusion zone to manage vessel movements around the MODU during P&A and SBM activities.

Environment that May Be Affected (EMBA)

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Feedback

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Regards,

Woodside Energy Consultation

6.1.11 Email sent to Australian Fisheries Management Authority (AFMA) – 11 August 2025

Woodside is planning to submit the Julimar-Brunello Plug and Abandonment (P&A) Environment Plan (EP) and other info as relevant. The Julimar-Brunello license is in Permit Title WA-49-L, with moorings potentially extending into WA-34-L, located in Commonwealth waters in the Northern Carnarvon Sub-basin, approximately 185 km west north-west of Karratha, Western Australia.

We are seeking feedback from relevant persons whose functions, interests or activities may be affected by the proposed activity. If you would like to comment on the proposed activity, please provide feedback to Woodside by 8 September 2025 using the details below.

Overview

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- Removal and recovery of well infrastructure below the mudline.

Consultation information

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Activity and location summary

Julimar-Brunello P&A EP	
Activity details	Activities include: • Permanent P&A of three Julimar-Brunello ETA wells: Julimar East-1, Brunello-1 ST 1 and Brulimar-1. • Remediation and/or isolation of SBM in the annulus of Balnaves Deep-1. • Removal of four wellheads, which may be recovered following P&A or temporarily placed on the seabed for later recovery. • Preparation and support activities (inspections, cleaning, pre-laying and recovery of moorings). • IMR activities.

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Titles	WA-49-L, MODU moorings for Brulimar-1 may extend into WA-34-L (Woodside-operated title)
Location	Barrow sub-basin
Water depth	~135 m to ~ 170 m
Timing	• Preparatory (IMR) activities: approximately 1–7 days per wellhead. Earliest commencement March 2026. • Preparation and support activities: approximately 5–10 days per site. Earliest commencement March 2026. • P&A activities: approximately 10–45 days per well (up to 180 days total). Earliest commencement April 2026, to be completed by December 2027. • SBM removal and/or isolation activity: 2–20 days. Earliest commencement April 2026, to be completed by December 2027. • Potential wellhead removal: commence any time after P&A activities completed.
Duration	• The EP will be in effect for a period of 5 years. • Operation will occur on a 24/7 basis during P&A and preparation activities. • IMR activities take place as required.
Infrastructure	Key infrastructure includes, but is not limited to: • Julimar East-1 • Brunello-1 ST 1 • Brulimar-1 • Balnaves Deep-1
Vessels	Key vessels include, but are not limited to: • MODU with combined dynamic positioning (DP) and mooring capability • Offshore support vessels (IMR vessel or anchor-handling tug supply vessel (AHTSV) • General support vessels (Infield support vessels (ISV) or platform supply vessels (PSV)) • Remotely Operated Vehicles (ROV) • Helicopters
Operational Area and exclusion zones	The location of infrastructure is marked on nautical charts. The Operational Area and exclusion zones include: • A 4000 m radius around each well to allow a moored MODU to undertake plugging for abandonment activities.

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	• A 1500 m radius around each well for non-moored activities and 1000 m buffer around subsea infrastructure to allow for IMR activities. • A temporary 500 m exclusion zone to manage vessel movements around the MODU during P&A and SBM activities.

Environment that May Be Affected (EMBA)

The EMBA is the largest geographic area where an unplanned event could potentially have an environmental consequence. The broadest extent of the EMBA takes into consideration planned activities and unplanned events. The EMBA has been developed combining numerous modelling outputs based on highly unlikely releases of hydrocarbons to the environment. The modelling scenarios that inform the EMBA are loss of well containment during P&A, vessel collision, and SBM planned release.

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.

Commonwealth fisheries

Commonwealth fisheries active in the Operational Area:

- None

Commonwealth fisheries active in the EMBA:

- North West Slope Trawl Fishery
- Western Deepwater Trawl Fishery

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.

Notifications

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 via email at consultation@feedback.woodside.com, via phone call at 1800 442 977 or via the feedback form on our website by **8 September 2025.** Alternatively, Woodside is willing to consider and accept your feedback via a means which suits you.

Your feedback and our response will be included in our EP, which will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023* (Cth). Your feedback may also be used to support other regulatory processes associated with the planned activities (which may or may not be confidential).

You may request that particular information you provide during consultation not be published in the EP made available on the NOPSEMA website. Please let us know if you request that particular information not be published, and we will make your request known to NOPSEMA.

NOPSEMA has published the brochure *Consultation on offshore petroleum environment plans – Information for the Community* to help community members understand consultation requirements for Commonwealth EPs and how to participate in consultation.

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Regards,

Woodside Energy Consultation

6.1.12 Email sent to Australian Hydrographic Office (AHO) – 11 August 2025

Woodside is planning to submit the Julimar-Brunello Plug and Abandonment (P&A) Environment Plan (EP) and other info as relevant. The Julimar-Brunello license is in Permit Title WA-49-L, with moorings potentially extending into WA-34-L, located in Commonwealth waters in the Northern Carnarvon Sub-basin, approximately 185 km west north-west of Karratha, Western Australia.

We are seeking feedback from relevant persons whose functions, interests or activities may be affected by the proposed activity. If you would like to comment on the proposed activity, please provide feedback to Woodside by 8 September 2025 using the details below.

Overview

Woodside proposes to undertake permanent P&A for four subsea exploration wells in the Julimar-Brunello licence. The wells underwent Exploration Temporary Abandonment (ETA) following exploration activities, however, the temporary abandonment methodology conducted does not align to the current legislative requirements and regulatory expectations for permanent abandonment, driving the need for further P&A activities, including:

- Permanent P&A of three wells using a Mobile Offshore Drilling Unit (MODU).
- Remediation and/or isolation of Synthetic Based Mud (SBM) in the annulus of an additional well.
- Vessel-based inspection, maintenance and repair (IMR) activities.
- Removal and recovery of well infrastructure below the mudline.

Consultation information

A Consultation Information Sheet is attached, which provides additional background on the proposed activities including summaries of key impacts and risks and associated management measures. This is also available on our website.

Please also find attached a vessel density map and GIS Shape Files.

Activity and location summary

Julimar-Brunello P&A EP	
Activity details	Activities include: • Permanent P&A of three Julimar-Brunello ETA wells: Julimar East-1, Brunello-1 ST 1 and Brulimar-1. • Remediation and/or isolation of SBM in the annulus of Balnaves Deep-1. • Removal of four wellheads, which may be recovered following P&A or temporarily placed on the seabed for later recovery. • Preparation and support activities (inspections, cleaning, pre-laying and recovery of moorings). • IMR activities.
Titles	WA-49-L, MODU moorings for Brulimar-1 may extend into WA-34-L (Woodside-operated title)
Location	Barrow sub-basin

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Water depth	~135 m to ~ 170 m
Timing	• Preparatory (IMR) activities: approximately 1–7 days per wellhead. Earliest commencement March 2026. • Preparation and support activities: approximately 5–10 days per site. Earliest commencement March 2026. • P&A activities: approximately 10–45 days per well (up to 180 days total). Earliest commencement April 2026, to be completed by December 2027. • SBM removal and/or isolation activity: 2–20 days. Earliest commencement April 2026, to be completed by December 2027. • Potential wellhead removal: commence any time after P&A activities completed.
Duration	• The EP will be in effect for a period of 5 years. • Operation will occur on a 24/7 basis during P&A and preparation activities. • IMR activities take place as required.
Infrastructure	Key infrastructure includes, but is not limited to: • Julimar East-1 • Brunello-1 ST 1 • Brulimar-1 • Balnaves Deep-1
Vessels	Key vessels include, but are not limited to: • MODU with combined dynamic positioning (DP) and mooring capability • Offshore support vessels (IMR vessel or anchor-handling tug supply vessel (AHTSV) • General support vessels (Infield support vessels (ISV) or platform supply vessels (PSV)) • Remotely Operated Vehicles (ROV) • Helicopters
Operational Area and exclusion zones	The location of infrastructure is marked on nautical charts. The Operational Area and exclusion zones include: • A 4000 m radius around each well to allow a moored MODU to undertake plugging for abandonment activities. • A 1500 m radius around each well for non-moored activities and 1000 m buffer around subsea infrastructure to allow for IMR activities. • A temporary 500 m exclusion zone to manage vessel movements around the MODU during P&A and SBM activities.

Environment that May Be Affected (EMBA)

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Feedback

If you have feedback specific to the proposed activities, we welcome your feedback via email at consultation@feedback.woodside.com, via phone call at 1800 442 977 or via the feedback form on our website by **8 September 2025.** Alternatively, Woodside is willing to consider and accept your feedback via a means which suits you.

Your feedback and our response will be included in our EP, which will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023* (Cth). Your feedback may also be used to support other regulatory processes associated with the planned activities (which may or may not be confidential).

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Regards,

Woodside Energy Consultation

6.1.13 Email sent to Australian Maritime Safety Authority (AMSA) – Marine Safety – 11 August 2025

Woodside is planning to submit the Julimar-Brunello Plug and Abandonment (P&A) Environment Plan (EP) and other info as relevant. The Julimar-Brunello license is in Permit Title WA-49-L, with moorings potentially extending into WA-34-L, located in Commonwealth waters in the Northern Carnarvon Sub-basin, approximately 185 km west north-west of Karratha, Western Australia.

We are seeking feedback from relevant persons whose functions, interests or activities may be affected by the proposed activity. If you would like to comment on the proposed activity, please provide feedback to Woodside by 8 September 2025 using the details below.

Overview

Woodside proposes to undertake permanent P&A for four subsea exploration wells in the Julimar-Brunello licence. The wells underwent Exploration Temporary Abandonment (ETA) following exploration activities, however, the temporary abandonment methodology conducted does not align to the current legislative requirements and regulatory expectations for permanent abandonment, driving the need for further P&A activities, including:

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- Permanent P&A of three wells using a Mobile Offshore Drilling Unit (MODU).
- Remediation and/or isolation of Synthetic Based Mud (SBM) in the annulus of an additional well.
- Vessel-based inspection, maintenance and repair (IMR) activities.
- Removal and recovery of well infrastructure below the mudline.

Consultation information

A Consultation Information Sheet is attached, which provides additional background on the proposed activities including summaries of key impacts and risks and associated management measures. This is also available on our website.

Please also find attached a vessel density map and GIS Shape Files.

Activity and location summary

Julimar-Brunello P&A EP	
Activity details	Activities include: • Permanent P&A of three Julimar-Brunello ETA wells: Julimar East-1, Brunello-1 ST 1 and Brulimar-1. • Remediation and/or isolation of SBM in the annulus of Balnaves Deep-1. • Removal of four wellheads, which may be recovered following P&A or temporarily placed on the seabed for later recovery. • Preparation and support activities (inspections, cleaning, pre-laying and recovery of moorings). • IMR activities.
Titles	WA-49-L, MODU moorings for Brulimar-1 may extend into WA-34-L (Woodside-operated title)
Location	Barrow sub-basin
Water depth	~135 m to ~ 170 m
Timing	• Preparatory (IMR) activities: approximately 1–7 days per wellhead. Earliest commencement March 2026. • Preparation and support activities: approximately 5–10 days per site. Earliest commencement March 2026. • P&A activities: approximately 10–45 days per well (up to 180 days total). Earliest commencement April 2026, to be completed by December 2027. • SBM removal and/or isolation activity: 2–20 days. Earliest commencement April 2026, to be completed by December 2027. • Potential wellhead removal: commence any time after P&A activities completed.
Duration	• The EP will be in effect for a period of 5 years.

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	• Operation will occur on a 24/7 basis during P&A and preparation activities. • IMR activities take place as required.
Infrastructure	Key infrastructure includes, but is not limited to: • Julimar East-1 • Brunello-1 ST 1 • Brulimar-1 • Balnaves Deep-1
Vessels	Key vessels include, but are not limited to: • MODU with combined dynamic positioning (DP) and mooring capability • Offshore support vessels (IMR vessel or anchor-handling tug supply vessel (AHTSV) • General support vessels (Infield support vessels (ISV) or platform supply vessels (PSV)) • Remotely Operated Vehicles (ROV) • Helicopters
Operational Area and exclusion zones	The location of infrastructure is marked on nautical charts. The Operational Area and exclusion zones include: • A 4000 m radius around each well to allow a moored MODU to undertake plugging for abandonment activities. • A 1500 m radius around each well for non-moored activities and 1000 m buffer around subsea infrastructure to allow for IMR activities. • A temporary 500 m exclusion zone to manage vessel movements around the MODU during P&A and SBM activities.

Environment that May Be Affected (EMBA)

The EMBA is the largest geographic area where an unplanned event could potentially have an environmental consequence. The broadest extent of the EMBA takes into consideration planned activities and unplanned events. The EMBA has been developed combining numerous modelling outputs based on highly unlikely releases of hydrocarbons to the environment. The modelling scenarios that inform the EMBA are loss of well containment during P&A, vessel collision, and SBM planned release.

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.

Notifications

Please note that Woodside will:

- Provide updates to both the AHO and AMSA on any material changes to planned activities.

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- Ensure vessels exhibit appropriate lights and shapes to reflect the nature of operations and the obligation to comply with the International Rules for Preventing Collisions at Sea (COLREGS)
- Evaluate and implement adequate anti-collision measures including but not limited to additional warnings and/or lights to attract attention and installation of Automatic Identification System (AIS) units.

Feedback

If you have feedback specific to the proposed activities, we welcome your feedback via email at consultation@feedback.woodside.com, via phone call at 1800 442 977 or via the feedback form on our website by **8 September 2025.** Alternatively, Woodside is willing to consider and accept your feedback via a means which suits you.

Your feedback and our response will be included in our EP, which will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023* (Cth). Your feedback may also be used to support other regulatory processes associated with the planned activities (which may or may not be confidential).

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Regards,

Woodside Energy Consultation

6.1.14 Email sent to Department of Defence (DoD) – 11 August 2025

Woodside is planning to submit the Julimar-Brunello Plug and Abandonment (P&A) Environment Plan (EP) and other info as relevant. The Julimar-Brunello license is in Permit Title WA-49-L, with moorings potentially extending into WA-34-L, located in Commonwealth waters in the Northern Carnarvon Sub-basin, approximately 185 km west north-west of Karratha, Western Australia.

We are seeking feedback from relevant persons whose functions, interests or activities may be affected by the proposed activity. If you would like to comment on the proposed activity, please provide feedback to Woodside by 8 September 2025 using the details below.

Overview

Woodside proposes to undertake permanent P&A for four subsea exploration wells in the Julimar-Brunello licence. The wells underwent Exploration Temporary Abandonment (ETA) following exploration activities, however, the temporary abandonment methodology conducted does not align to the current legislative requirements and regulatory expectations for permanent abandonment, driving the need for further P&A activities, including:

- Permanent P&A of three wells using a Mobile Offshore Drilling Unit (MODU).
- Remediation and/or isolation of Synthetic Based Mud (SBM) in the annulus of an additional well.
- Vessel-based inspection, maintenance and repair (IMR) activities.
- Removal and recovery of well infrastructure below the mudline.

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Consultation information

A Consultation Information Sheet is attached, which provides additional background on the proposed activities including summaries of key impacts and risks and associated management measures. This is also available on our website.

Please also find attached a defence area map in the areas surrounding the Operational Area.

Activity and location summary

Julimar-Brunello P&A EP	
Activity details	Activities include: • Permanent P&A of three Julimar-Brunello ETA wells: Julimar East-1, Brunello-1 ST 1 and Brulimar-1. • Remediation and/or isolation of SBM in the annulus of Balnaves Deep-1. • Removal of four wellheads, which may be recovered following P&A or temporarily placed on the seabed for later recovery. • Preparation and support activities (inspections, cleaning, pre-laying and recovery of moorings). • IMR activities.
Titles	WA-49-L, MODU moorings for Brulimar-1 may extend into WA-34-L (Woodside-operated title)
Location	Barrow sub-basin
Water depth	~135 m to ~ 170 m
Timing	• Preparatory (IMR) activities: approximately 1–7 days per wellhead. Earliest commencement March 2026. • Preparation and support activities: approximately 5–10 days per site. Earliest commencement March 2026. • P&A activities: approximately 10–45 days per well (up to 180 days total). Earliest commencement April 2026, to be completed by December 2027. • SBM removal and/or isolation activity: 2–20 days. Earliest commencement April 2026, to be completed by December 2027. • Potential wellhead removal: commence any time after P&A activities completed.
Duration	• The EP will be in effect for a period of 5 years. • Operation will occur on a 24/7 basis during P&A and preparation activities. • IMR activities take place as required.

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Infrastructure	Key infrastructure includes, but is not limited to: • Julimar East-1 • Brunello-1 ST 1 • Brulimar-1 • Balnaves Deep-1
Vessels	Key vessels include, but are not limited to: • MODU with combined dynamic positioning (DP) and mooring capability • Offshore support vessels (IMR vessel or anchor-handling tug supply vessel (AHTSV) • General support vessels (Infield support vessels (ISV) or platform supply vessels (PSV)) • Remotely Operated Vehicles (ROV) • Helicopters
Operational Area and exclusion zones	The location of infrastructure is marked on nautical charts. The Operational Area and exclusion zones include: • A 4000 m radius around each well to allow a moored MODU to undertake plugging for abandonment activities. • A 1500 m radius around each well for non-moored activities and 1000 m buffer around subsea infrastructure to allow for IMR activities. • A temporary 500 m exclusion zone to manage vessel movements around the MODU during P&A and SBM activities.

Environment that May Be Affected (EMBA)

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Feedback

If you have feedback specific to the proposed activities, we welcome your feedback via email at consultation@feedback.woodside.com, via phone call at 1800 442 977 or via the feedback form on our website by **8 September 2025.** Alternatively, Woodside is willing to consider and accept your feedback via a means which suits you.

Your feedback and our response will be included in our EP, which will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023* (Cth). Your feedback

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may also be used to support other regulatory processes associated with the planned activities (which may or may not be confidential).

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Regards,

Woodside Energy Consultation

6.1.15 Email sent to Australian Maritime Safety Authority (AMSA) – Marine Pollution – 11 August 2025

Woodside is planning to submit the Julimar-Brunello Plug and Abandonment (P&A) Environment Plan (EP) and other info as relevant. The Julimar-Brunello license is in Permit Title WA-49-L, with moorings potentially extending into WA-34-L, located in Commonwealth waters in the Northern Carnarvon Sub-basin, approximately 185 km west north-west of Karratha, Western Australia.

We are seeking feedback from relevant persons whose functions, interests or activities may be affected by the proposed activity. If you would like to comment on the proposed activity, please provide feedback to Woodside by 8 September 2025 using the details below.

Overview

Woodside proposes to undertake permanent P&A for four subsea exploration wells in the Julimar-Brunello licence. The wells underwent Exploration Temporary Abandonment (ETA) following exploration activities, however, the temporary abandonment methodology conducted does not align to the current legislative requirements and regulatory expectations for permanent abandonment, driving the need for further P&A activities, including:

- Permanent P&A of three wells using a Mobile Offshore Drilling Unit (MODU).
- Remediation and/or isolation of Synthetic Based Mud (SBM) in the annulus of an additional well.
- Vessel-based inspection, maintenance and repair (IMR) activities.
- Removal and recovery of well infrastructure below the mudline.

Consultation information

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Activity and location summary

Julimar-Brunello P&A EP

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Activity details	Activities include: • Permanent P&A of three Julimar-Brunello ETA wells: Julimar East-1, Brunello-1 ST 1 and Brulimar-1. • Remediation and/or isolation of SBM in the annulus of Balnaves Deep-1. • Removal of four wellheads, which may be recovered following P&A or temporarily placed on the seabed for later recovery. • Preparation and support activities (inspections, cleaning, pre-laying and recovery of moorings). • IMR activities.
Titles	WA-49-L, MODU moorings for Brulimar-1 may extend into WA-34-L (Woodside-operated title)
Location	Barrow sub-basin
Water depth	~135 m to ~ 170 m
Timing	• Preparatory (IMR) activities: approximately 1–7 days per wellhead. Earliest commencement March 2026. • Preparation and support activities: approximately 5–10 days per site. Earliest commencement March 2026. • P&A activities: approximately 10–45 days per well (up to 180 days total). Earliest commencement April 2026, to be completed by December 2027. • SBM removal and/or isolation activity: 2–20 days. Earliest commencement April 2026, to be completed by December 2027. • Potential wellhead removal: commence any time after P&A activities completed.
Duration	• The EP will be in effect for a period of 5 years. • Operation will occur on a 24/7 basis during P&A and preparation activities. • IMR activities take place as required.
Infrastructure	Key infrastructure includes, but is not limited to: • Julimar East-1 • Brunello-1 ST 1 • Brulimar-1 • Balnaves Deep-1

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Vessels	Key vessels include, but are not limited to: • MODU with combined dynamic positioning (DP) and mooring capability • Offshore support vessels (IMR vessel or anchor-handling tug supply vessel (AHTSV) • General support vessels (Infield support vessels (ISV) or platform supply vessels (PSV)) • Remotely Operated Vehicles (ROV) • Helicopters
Operational Area and exclusion zones	The location of infrastructure is marked on nautical charts. The Operational Area and exclusion zones include: • A 4000 m radius around each well to allow a moored MODU to undertake plugging for abandonment activities. • A 1500 m radius around each well for non-moored activities and 1000 m buffer around subsea infrastructure to allow for IMR activities. • A temporary 500 m exclusion zone to manage vessel movements around the MODU during P&A and SBM activities.

Environment that May Be Affected (EMBA)

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Regards,

Woodside Energy Consultation

6.1.16 Email sent to Pilbara Ports – 11 August 2025

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We are seeking feedback from relevant persons whose functions, interests or activities may be affected by the proposed activity. If you would like to comment on the proposed activity, please provide feedback to Woodside by 8 September 2025 using the details below.

Overview

Woodside proposes to undertake permanent P&A for four subsea exploration wells in the Julimar-Brunello licence. The wells underwent Exploration Temporary Abandonment (ETA) following exploration activities, however, the temporary abandonment methodology conducted does not align to the current legislative requirements and regulatory expectations for permanent abandonment, driving the need for further P&A activities, including:

- Permanent P&A of three wells using a Mobile Offshore Drilling Unit (MODU).
- Remediation and/or isolation of Synthetic Based Mud (SBM) in the annulus of an additional well.
- Vessel-based inspection, maintenance and repair (IMR) activities.
- Removal and recovery of well infrastructure below the mudline.

Consultation information

A Consultation Information Sheet is attached, which provides additional background on the proposed activities including summaries of key impacts and risks and associated management measures. This is also available on our website.

Activity and location summary

Julimar-Brunello P&A EP	
Activity details	Activities include: • Permanent P&A of three Julimar-Brunello ETA wells: Julimar East-1, Brunello-1 ST 1 and Brulimar-1. • Remediation and/or isolation of SBM in the annulus of Balnaves Deep-1. • Removal of four wellheads, which may be recovered following P&A or temporarily placed on the seabed for later recovery. • Preparation and support activities (inspections, cleaning, pre-laying and recovery of moorings). • IMR activities.
Titles	WA-49-L, MODU moorings for Brulimar-1 may extend into WA-34-L (Woodside-operated title)

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Location	Barrow sub-basin
Water depth	~135 m to ~ 170 m
Timing	• Preparatory (IMR) activities: approximately 1–7 days per wellhead. Earliest commencement March 2026. • Preparation and support activities: approximately 5–10 days per site. Earliest commencement March 2026. • P&A activities: approximately 10–45 days per well (up to 180 days total). Earliest commencement April 2026, to be completed by December 2027. • SBM removal and/or isolation activity: 2–20 days. Earliest commencement April 2026, to be completed by December 2027. • Potential wellhead removal: commence any time after P&A activities completed.
Duration	• The EP will be in effect for a period of 5 years. • Operation will occur on a 24/7 basis during P&A and preparation activities. • IMR activities take place as required.
Infrastructure	Key infrastructure includes, but is not limited to: • Julimar East-1 • Brunello-1 ST 1 • Brulimar-1 • Balnaves Deep-1
Vessels	Key vessels include, but are not limited to: • MODU with combined dynamic positioning (DP) and mooring capability • Offshore support vessels (IMR vessel or anchor-handling tug supply vessel (AHTSV) • General support vessels (Infield support vessels (ISV) or platform supply vessels (PSV)) • Remotely Operated Vehicles (ROV) • Helicopters
Operational Area and exclusion zones	The location of infrastructure is marked on nautical charts. The Operational Area and exclusion zones include: • A 4000 m radius around each well to allow a moored MODU to undertake plugging for abandonment activities. • A 1500 m radius around each well for non-moored activities and 1000 m buffer around subsea infrastructure to allow for IMR activities.

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	• A temporary 500 m exclusion zone to manage vessel movements around the MODU during P&A and SBM activities.

Environment that May Be Affected (EMBA)

The EMBA is the largest geographic area where an unplanned event could potentially have an environmental consequence. The broadest extent of the EMBA takes into consideration planned activities and unplanned events. The EMBA has been developed combining numerous modelling outputs based on highly unlikely releases of hydrocarbons to the environment. The modelling scenarios that inform the EMBA are loss of well containment during P&A, vessel collision, and SBM planned release.

The EMBA does not represent the extent of the predicted impact of a highly unlikely hydrocarbon release. Rather, the EMBA represents the merged area of many possible paths that a highly unlikely hydrocarbon release could travel, which depends on the weather and ocean conditions at the time of a release. This means that in the highly unlikely event that a hydrocarbon release does occur, the whole EMBA will not be affected. The specific and minimal part of the EMBA that is affected will only be known if there is a release.

Feedback

If you have feedback specific to the proposed activities, we welcome your feedback via email at consultation@feedback.woodside.com, via phone call at 1800 442 977 or via the feedback form on our website by **8 September 2025.** Alternatively, Woodside is willing to consider and accept your feedback via a means which suits you.

Your feedback and our response will be included in our EP, which will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023* (Cth). Your feedback may also be used to support other regulatory processes associated with the planned activities (which may or may not be confidential).

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Regards,

Woodside Energy Consultation

6.1.17 Email sent to Ningaloo Coast World Heritage Advisory Committee (NCWHAC) – 11 August 2025

Woodside is planning to submit the Julimar-Brunello Plug and Abandonment (P&A) Environment Plan (EP) and other info as relevant. The Julimar-Brunello license is in Permit Title WA-49-L, with moorings potentially extending into WA-34-L, located in Commonwealth waters in the Northern Carnarvon Sub-basin, approximately 185 km west north-west of Karratha, Western Australia.

We are seeking feedback from relevant persons whose functions, interests or activities may be affected by the proposed activity. If you would like to comment on the proposed activity, please provide feedback to Woodside by 8 September 2025 using the details below.

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Overview

Woodside proposes to undertake permanent P&A for four subsea exploration wells in the Julimar-Brunello licence. The wells underwent Exploration Temporary Abandonment (ETA) following exploration activities, however, the temporary abandonment methodology conducted does not align to the current legislative requirements and regulatory expectations for permanent abandonment, driving the need for further P&A activities, including:

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- Remediation and/or isolation of Synthetic Based Mud (SBM) in the annulus of an additional well.
- Vessel-based inspection, maintenance and repair (IMR) activities.
- Removal and recovery of well infrastructure below the mudline.

Consultation information

A Consultation Information Sheet is attached, which provides additional background on the proposed activities including summaries of key impacts and risks and associated management measures. This is also available on our website.

Activity and location summary

Julimar-Brunello P&A EP	
Activity details	Activities include: • Permanent P&A of three Julimar-Brunello ETA wells: Julimar East-1, Brunello-1 ST 1 and Brulimar-1. • Remediation and/or isolation of SBM in the annulus of Balnaves Deep-1. • Removal of four wellheads, which may be recovered following P&A or temporarily placed on the seabed for later recovery. • Preparation and support activities (inspections, cleaning, pre-laying and recovery of moorings). • IMR activities.
Titles	WA-49-L, MODU moorings for Brulimar-1 may extend into WA-34-L (Woodside-operated title)
Location	Barrow sub-basin
Water depth	~135 m to ~ 170 m
Timing	• Preparatory (IMR) activities: approximately 1–7 days per wellhead. Earliest commencement March 2026. • Preparation and support activities: approximately 5–10 days per site. Earliest commencement March 2026. • P&A activities: approximately 10–45 days per well (up to 180 days total). Earliest commencement April 2026, to be completed by December 2027. • SBM removal and/or isolation activity: 2–20 days. Earliest commencement April 2026, to be completed by December 2027.

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	• Potential wellhead removal: commence any time after P&A activities completed.
Duration	• The EP will be in effect for a period of 5 years. • Operation will occur on a 24/7 basis during P&A and preparation activities. • IMR activities take place as required.
Infrastructure	Key infrastructure includes, but is not limited to: • Julimar East-1 • Brunello-1 ST 1 • Brulimar-1 • Balnaves Deep-1
Vessels	Key vessels include, but are not limited to: • MODU with combined dynamic positioning (DP) and mooring capability • Offshore support vessels (IMR vessel or anchor-handling tug supply vessel (AHTSV) • General support vessels (Infield support vessels (ISV) or platform supply vessels (PSV)) • Remotely Operated Vehicles (ROV) • Helicopters
Operational Area and exclusion zones	The location of infrastructure is marked on nautical charts. The Operational Area and exclusion zones include: • A 4000 m radius around each well to allow a moored MODU to undertake plugging for abandonment activities. • A 1500 m radius around each well for non-moored activities and 1000 m buffer around subsea infrastructure to allow for IMR activities. • A temporary 500 m exclusion zone to manage vessel movements around the MODU during P&A and SBM activities.

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The EMBA does not represent the extent of the predicted impact of a highly unlikely hydrocarbon release. Rather, the EMBA represents the merged area of many possible paths that a highly unlikely hydrocarbon

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release could travel, which depends on the weather and ocean conditions at the time of a release. This means that in the highly unlikely event that a hydrocarbon release does occur, the whole EMBA will not be affected. The specific and minimal part of the EMBA that is affected will only be known if there is a release.

Feedback

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Regards,

Woodside Energy Consultation

6.1.18 Email sent to Department of Mines, Petroleum and Exploration (DMPE) – 11 August 2025

Woodside is planning to submit the Julimar-Brunello Plug and Abandonment (P&A) Environment Plan (EP) and other info as relevant. The Julimar-Brunello license is in Permit Title WA-49-L, with moorings potentially extending into WA-34-L, located in Commonwealth waters in the Northern Carnarvon Sub-basin, approximately 185 km west north-west of Karratha, Western Australia.

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Overview

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- Removal and recovery of well infrastructure below the mudline.

Consultation information

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A Consultation Information Sheet is attached, which provides additional background on the proposed activities including summaries of key impacts and risks and associated management measures. This is also available on our website.

Activity and location summary

Julimar-Brunello P&A EP	
Activity details	Activities include: • Permanent P&A of three Julimar-Brunello ETA wells: Julimar East-1, Brunello-1 ST 1 and Brulimar-1. • Remediation and/or isolation of SBM in the annulus of Balnaves Deep-1. • Removal of four wellheads, which may be recovered following P&A or temporarily placed on the seabed for later recovery. • Preparation and support activities (inspections, cleaning, pre-laying and recovery of moorings). • IMR activities.
Titles	WA-49-L, MODU moorings for Brulimar-1 may extend into WA-34-L (Woodside-operated title)
Location	Barrow sub-basin
Water depth	~135 m to ~ 170 m
Timing	• Preparatory (IMR) activities: approximately 1–7 days per wellhead. Earliest commencement March 2026. • Preparation and support activities: approximately 5–10 days per site. Earliest commencement March 2026. • P&A activities: approximately 10–45 days per well (up to 180 days total). Earliest commencement April 2026, to be completed by December 2027. • SBM removal and/or isolation activity: 2–20 days. Earliest commencement April 2026, to be completed by December 2027. • Potential wellhead removal: commence any time after P&A activities completed.
Duration	• The EP will be in effect for a period of 5 years. • Operation will occur on a 24/7 basis during P&A and preparation activities. • IMR activities take place as required.
Infrastructure	Key infrastructure includes, but is not limited to: • Julimar East-1 • Brunello-1 ST 1 • Brulimar-1

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	• Balnaves Deep-1
Vessels	Key vessels include, but are not limited to: • MODU with combined dynamic positioning (DP) and mooring capability • Offshore support vessels (IMR vessel or anchor-handling tug supply vessel (AHTSV) • General support vessels (Infield support vessels (ISV) or platform supply vessels (PSV)) • Remotely Operated Vehicles (ROV) • Helicopters
Operational Area and exclusion zones	The location of infrastructure is marked on nautical charts. The Operational Area and exclusion zones include: • A 4000 m radius around each well to allow a moored MODU to undertake plugging for abandonment activities. • A 1500 m radius around each well for non-moored activities and 1000 m buffer around subsea infrastructure to allow for IMR activities. • A temporary 500 m exclusion zone to manage vessel movements around the MODU during P&A and SBM activities.

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Feedback

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Regards,

Woodside Energy Consultation

6.1.19 Email sent to Department of Industry, Science and Resources (DISR) – 11 August 2025

Woodside is planning to submit the Julimar-Brunello Plug and Abandonment (P&A) Environment Plan (EP) and other info as relevant. The Julimar-Brunello license is in Permit Title WA-49-L, with moorings potentially extending into WA-34-L, located in Commonwealth waters in the Northern Carnarvon Sub-basin, approximately 185 km west north-west of Karratha, Western Australia.

We are seeking feedback from relevant persons whose functions, interests or activities may be affected by the proposed activity. If you would like to comment on the proposed activity, please provide feedback to Woodside by 8 September 2025 using the details below.

Overview

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- Removal and recovery of well infrastructure below the mudline.

Consultation information

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Activity and location summary

Julimar-Brunello P&A EP

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Activity details	Activities include: • Permanent P&A of three Julimar-Brunello ETA wells: Julimar East-1, Brunello-1 ST 1 and Brulimar-1. • Remediation and/or isolation of SBM in the annulus of Balnaves Deep-1. • Removal of four wellheads, which may be recovered following P&A or temporarily placed on the seabed for later recovery. • Preparation and support activities (inspections, cleaning, pre-laying and recovery of moorings). • IMR activities.
Titles	WA-49-L, MODU moorings for Brulimar-1 may extend into WA-34-L (Woodside-operated title)
Location	Barrow sub-basin
Water depth	~135 m to ~ 170 m
Timing	• Preparatory (IMR) activities: approximately 1–7 days per wellhead. Earliest commencement March 2026. • Preparation and support activities: approximately 5–10 days per site. Earliest commencement March 2026. • P&A activities: approximately 10–45 days per well (up to 180 days total). Earliest commencement April 2026, to be completed by December 2027. • SBM removal and/or isolation activity: 2–20 days. Earliest commencement April 2026, to be completed by December 2027. • Potential wellhead removal: commence any time after P&A activities completed.
Duration	• The EP will be in effect for a period of 5 years. • Operation will occur on a 24/7 basis during P&A and preparation activities. • IMR activities take place as required.
Infrastructure	Key infrastructure includes, but is not limited to: • Julimar East-1 • Brunello-1 ST 1 • Brulimar-1 • Balnaves Deep-1

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Vessels	Key vessels include, but are not limited to: • MODU with combined dynamic positioning (DP) and mooring capability • Offshore support vessels (IMR vessel or anchor-handling tug supply vessel (AHTSV) • General support vessels (Infield support vessels (ISV) or platform supply vessels (PSV)) • Remotely Operated Vehicles (ROV) • Helicopters
Operational Area and exclusion zones	The location of infrastructure is marked on nautical charts. The Operational Area and exclusion zones include: • A 4000 m radius around each well to allow a moored MODU to undertake plugging for abandonment activities. • A 1500 m radius around each well for non-moored activities and 1000 m buffer around subsea infrastructure to allow for IMR activities. • A temporary 500 m exclusion zone to manage vessel movements around the MODU during P&A and SBM activities.

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Woodside Energy Consultation

6.1.20 Email sent to Australian Energy Producers (AEP) – 11 August 2025

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Consultation information

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Activity and location summary

Julimar-Brunello P&A EP	
Activity details	Activities include: • Permanent P&A of three Julimar-Brunello ETA wells: Julimar East-1, Brunello-1 ST 1 and Brulimar-1. • Remediation and/or isolation of SBM in the annulus of Balnaves Deep-1. • Removal of four wellheads, which may be recovered following P&A or temporarily placed on the seabed for later recovery. • Preparation and support activities (inspections, cleaning, pre-laying and recovery of moorings). • IMR activities.
Titles	WA-49-L, MODU moorings for Brulimar-1 may extend into WA-34-L (Woodside-operated title)

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Location	Barrow sub-basin
Water depth	~135 m to ~ 170 m
Timing	• Preparatory (IMR) activities: approximately 1–7 days per wellhead. Earliest commencement March 2026. • Preparation and support activities: approximately 5–10 days per site. Earliest commencement March 2026. • P&A activities: approximately 10–45 days per well (up to 180 days total). Earliest commencement April 2026, to be completed by December 2027. • SBM removal and/or isolation activity: 2–20 days. Earliest commencement April 2026, to be completed by December 2027. • Potential wellhead removal: commence any time after P&A activities completed.
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Infrastructure	Key infrastructure includes, but is not limited to: • Julimar East-1 • Brunello-1 ST 1 • Brulimar-1 • Balnaves Deep-1
Vessels	Key vessels include, but are not limited to: • MODU with combined dynamic positioning (DP) and mooring capability • Offshore support vessels (IMR vessel or anchor-handling tug supply vessel (AHTSV) • General support vessels (Infield support vessels (ISV) or platform supply vessels (PSV)) • Remotely Operated Vehicles (ROV) • Helicopters
Operational Area and exclusion zones	The location of infrastructure is marked on nautical charts. The Operational Area and exclusion zones include: • A 4000 m radius around each well to allow a moored MODU to undertake plugging for abandonment activities. • A 1500 m radius around each well for non-moored activities and 1000 m buffer around subsea infrastructure to allow for IMR activities.

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Regards,

Woodside Energy Consultation

6.1.21 Email sent to ACMA, Telstra, Vocus – 21 August 2025

- Australian Communications and Media Authority (ACMA)
- Telstra
- Vocus

Woodside is planning to submit the Julimar-Brunello Plug and Abandonment (P&A) Environment Plan (EP) and other info as relevant. The Julimar-Brunello license is in Permit Title WA-49-L, with moorings potentially extending into WA-34-L, located in Commonwealth waters in the Northern Carnarvon Sub-basin, approximately 185 km west north-west of Karratha, Western Australia.

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We are seeking feedback from relevant persons whose functions, interests or activities may be affected by the proposed activity. If you would like to comment on the proposed activity, please provide feedback to Woodside by **20 September 2025** using the details below.

Overview

Woodside proposes to undertake permanent P&A for four subsea exploration wells in the Julimar-Brunello licence. The wells underwent Exploration Temporary Abandonment (ETA) following exploration activities, however, the temporary abandonment methodology conducted does not align to the current legislative requirements and regulatory expectations for permanent abandonment, driving the need for further P&A activities, including:

- Permanent P&A of three wells using a Mobile Offshore Drilling Unit (MODU).
- Remediation and/or isolation of Synthetic Based Mud (SBM) in the annulus of an additional well.
- Vessel-based inspection, maintenance and repair (IMR) activities.
- Removal and recovery of well infrastructure below the mudline.

Consultation information

A Consultation Information Sheet is attached, which provides additional background on the proposed activities including summaries of key impacts and risks and associated management measures. This is also available on our website.

Activity and location summary

Julimar-Brunello P&A EP	
Activity details	Activities include: • Permanent P&A of three Julimar-Brunello ETA wells: Julimar East-1, Brunello-1 ST 1 and Brulimar-1. • Remediation and/or isolation of SBM in the annulus of Balnaves Deep-1. • Removal of four wellheads, which may be recovered following P&A or temporarily placed on the seabed for later recovery. • Preparation and support activities (inspections, cleaning, pre-laying and recovery of moorings). • IMR activities.
Titles	WA-49-L, MODU moorings for Brulimar-1 may extend into WA-34-L (Woodside-operated title)
Location	Barrow sub-basin
Water depth	~135 m to ~ 170 m
Timing	• Preparatory (IMR) activities: approximately 1–7 days per wellhead. Earliest commencement March 2026. • Preparation and support activities: approximately 5–10 days per site. Earliest commencement March 2026. • P&A activities: approximately 10–45 days per well (up to 180 days total). Earliest commencement April 2026, to be completed by December 2027. • SBM removal and/or isolation activity: 2–20 days. Earliest commencement April 2026, to be completed by December 2027.

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	• Potential wellhead removal: commence any time after P&A activities completed.
Duration	• The EP will be in effect for a period of 5 years. • Operation will occur on a 24/7 basis during P&A and preparation activities. • IMR activities take place as required.
Infrastructure	Key infrastructure includes, but is not limited to: • Julimar East-1 • Brunello-1 ST 1 • Brulimar-1 • Balnaves Deep-1
Vessels	Key vessels include, but are not limited to: • MODU with combined dynamic positioning (DP) and mooring capability • Offshore support vessels (IMR vessel or anchor-handling tug supply vessel (AHTSV) • General support vessels (Infield support vessels (ISV) or platform supply vessels (PSV)) • Remotely Operated Vehicles (ROV) • Helicopters
Operational Area and exclusion zones	The location of infrastructure is marked on nautical charts. The Operational Area and exclusion zones include: • A 4000 m radius around each well to allow a moored MODU to undertake plugging for abandonment activities. • A 1500 m radius around each well for non-moored activities and 1000 m buffer around subsea infrastructure to allow for IMR activities. • A temporary 500 m exclusion zone to manage vessel movements around the MODU during P&A and SBM activities.

Environment that May Be Affected (EMBA)

The EMBA is the largest geographic area where an unplanned event could potentially have an environmental consequence. The broadest extent of the EMBA takes into consideration planned activities and unplanned events. The EMBA has been developed combining numerous modelling outputs based on highly unlikely releases of hydrocarbons to the environment. The modelling scenarios that inform the EMBA are loss of well containment during P&A, vessel collision, and SBM planned release.

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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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Regards,

Woodside Energy Consultation

6.1.22 Email sent to Exmouth Chamber of Commerce and Industry (CCI) – 11 August 2025

Woodside is planning to submit the Julimar-Brunello Plug and Abandonment (P&A) Environment Plan (EP) and other info as relevant. The Julimar-Brunello license is in Permit Title WA-49-L, with moorings potentially extending into WA-34-L, located in Commonwealth waters in the Northern Carnarvon Sub-basin, approximately 185 km west north-west of Karratha, Western Australia.

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Overview

Woodside proposes to undertake permanent P&A for four subsea exploration wells in the Julimar-Brunello licence. The wells underwent Exploration Temporary Abandonment (ETA) following exploration activities, however, the temporary abandonment methodology conducted does not align to the current legislative requirements and regulatory expectations for permanent abandonment, driving the need for further P&A activities, including:

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Consultation information

A Consultation Information Sheet is attached, which provides additional background on the proposed activities including summaries of key impacts and risks and associated management measures. This is also available on our website.

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Activity and location summary

Julimar-Brunello P&A EP	
Activity details	Activities include: • Permanent P&A of three Julimar-Brunello ETA wells: Julimar East-1, Brunello-1 ST 1 and Brulimar-1. • Remediation and/or isolation of SBM in the annulus of Balnaves Deep-1. • Removal of four wellheads, which may be recovered following P&A or temporarily placed on the seabed for later recovery. • Preparation and support activities (inspections, cleaning, pre-laying and recovery of moorings). • IMR activities.
Titles	WA-49-L, MODU moorings for Brulimar-1 may extend into WA-34-L (Woodside-operated title)
Location	Barrow sub-basin
Water depth	~135 m to ~ 170 m
Timing	• Preparatory (IMR) activities: approximately 1–7 days per wellhead. Earliest commencement March 2026. • Preparation and support activities: approximately 5–10 days per site. Earliest commencement March 2026. • P&A activities: approximately 10–45 days per well (up to 180 days total). Earliest commencement April 2026, to be completed by December 2027. • SBM removal and/or isolation activity: 2–20 days. Earliest commencement April 2026, to be completed by December 2027. • Potential wellhead removal: commence any time after P&A activities completed.
Duration	• The EP will be in effect for a period of 5 years. • Operation will occur on a 24/7 basis during P&A and preparation activities. • IMR activities take place as required.
Infrastructure	Key infrastructure includes, but is not limited to: • Julimar East-1 • Brunello-1 ST 1 • Brulimar-1 • Balnaves Deep-1

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Operational Area and exclusion zones	The location of infrastructure is marked on nautical charts. The Operational Area and exclusion zones include: • A 4000 m radius around each well to allow a moored MODU to undertake plugging for abandonment activities. • A 1500 m radius around each well for non-moored activities and 1000 m buffer around subsea infrastructure to allow for IMR activities. • A temporary 500 m exclusion zone to manage vessel movements around the MODU during P&A and SBM activities.

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Feedback

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Regards,

Woodside Energy Consultation

6.1.23 Email sent to Karratha & Districts Chamber of Commerce and Industry (KDCCI) – 11 August 2025

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Overview

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Consultation information

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Activity and location summary

Julimar-Brunello P&A EP	
Activity details	Activities include: • Permanent P&A of three Julimar-Brunello ETA wells: Julimar East-1, Brunello-1 ST 1 and Brulimar-1. • Remediation and/or isolation of SBM in the annulus of Balnaves Deep-1. • Removal of four wellheads, which may be recovered following P&A or temporarily placed on the seabed for later recovery. • Preparation and support activities (inspections, cleaning, pre-laying and recovery of moorings). • IMR activities.

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Titles	WA-49-L, MODU moorings for Brulimar-1 may extend into WA-34-L (Woodside-operated title)
Location	Barrow sub-basin
Water depth	~135 m to ~ 170 m
Timing	• Preparatory (IMR) activities: approximately 1–7 days per wellhead. Earliest commencement March 2026. • Preparation and support activities: approximately 5–10 days per site. Earliest commencement March 2026. • P&A activities: approximately 10–45 days per well (up to 180 days total). Earliest commencement April 2026, to be completed by December 2027. • SBM removal and/or isolation activity: 2–20 days. Earliest commencement April 2026, to be completed by December 2027. • Potential wellhead removal: commence any time after P&A activities completed.
Duration	• The EP will be in effect for a period of 5 years. • Operation will occur on a 24/7 basis during P&A and preparation activities. • IMR activities take place as required.
Infrastructure	Key infrastructure includes, but is not limited to: • Julimar East-1 • Brunello-1 ST 1 • Brulimar-1 • Balnaves Deep-1
Vessels	Key vessels include, but are not limited to: • MODU with combined dynamic positioning (DP) and mooring capability • Offshore support vessels (IMR vessel or anchor-handling tug supply vessel (AHTSV) • General support vessels (Infield support vessels (ISV) or platform supply vessels (PSV)) • Remotely Operated Vehicles (ROV) • Helicopters
Operational Area and exclusion zones	The location of infrastructure is marked on nautical charts. The Operational Area and exclusion zones include: • A 4000 m radius around each well to allow a moored MODU to undertake plugging for abandonment activities.

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	• A 1500 m radius around each well for non-moored activities and 1000 m buffer around subsea infrastructure to allow for IMR activities. • A temporary 500 m exclusion zone to manage vessel movements around the MODU during P&A and SBM activities.

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Regards,

Woodside Energy Consultation

6.1.24 Email sent to Exmouth Community Liaison Group (CLG) – 11 August 2025

Woodside is planning to submit the Julimar-Brunello Plug and Abandonment (P&A) Environment Plan (EP) and other info as relevant. The Julimar-Brunello license is in Permit Title WA-49-L, with moorings potentially extending into WA-34-L, located in Commonwealth waters in the Northern Carnarvon Sub-basin, approximately 185 km west north-west of Karratha, Western Australia.

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Overview

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Woodside proposes to undertake permanent P&A for four subsea exploration wells in the Julimar-Brunello licence. The wells underwent Exploration Temporary Abandonment (ETA) following exploration activities, however, the temporary abandonment methodology conducted does not align to the current legislative requirements and regulatory expectations for permanent abandonment, driving the need for further P&A activities, including:

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Consultation information

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Activity and location summary

Julimar-Brunello P&A EP	
Activity details	Activities include: • Permanent P&A of three Julimar-Brunello ETA wells: Julimar East-1, Brunello-1 ST 1 and Brulimar-1. • Remediation and/or isolation of SBM in the annulus of Balnaves Deep-1. • Removal of four wellheads, which may be recovered following P&A or temporarily placed on the seabed for later recovery. • Preparation and support activities (inspections, cleaning, pre-laying and recovery of moorings). • IMR activities.
Titles	WA-49-L, MODU moorings for Brulimar-1 may extend into WA-34-L (Woodside-operated title)
Location	Barrow sub-basin
Water depth	~135 m to ~ 170 m
Timing	• Preparatory (IMR) activities: approximately 1–7 days per wellhead. Earliest commencement March 2026. • Preparation and support activities: approximately 5–10 days per site. Earliest commencement March 2026. • P&A activities: approximately 10–45 days per well (up to 180 days total). Earliest commencement April 2026, to be completed by December 2027. • SBM removal and/or isolation activity: 2–20 days. Earliest commencement April 2026, to be completed by December 2027. • Potential wellhead removal: commence any time after P&A activities completed.

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Duration	• The EP will be in effect for a period of 5 years. • Operation will occur on a 24/7 basis during P&A and preparation activities. • IMR activities take place as required.
Infrastructure	Key infrastructure includes, but is not limited to: • Julimar East-1 • Brunello-1 ST 1 • Brulimar-1 • Balnaves Deep-1
Vessels	Key vessels include, but are not limited to: • MODU with combined dynamic positioning (DP) and mooring capability • Offshore support vessels (IMR vessel or anchor-handling tug supply vessel (AHTSV) • General support vessels (Infield support vessels (ISV) or platform supply vessels (PSV)) • Remotely Operated Vehicles (ROV) • Helicopters
Operational Area and exclusion zones	The location of infrastructure is marked on nautical charts. The Operational Area and exclusion zones include: • A 4000 m radius around each well to allow a moored MODU to undertake plugging for abandonment activities. • A 1500 m radius around each well for non-moored activities and 1000 m buffer around subsea infrastructure to allow for IMR activities. • A temporary 500 m exclusion zone to manage vessel movements around the MODU during P&A and SBM activities.

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6.1.25 Email sent to Karratha Community Liaison Group (CLG) – 11 August 2025

Woodside is planning to submit the Julimar-Brunello Plug and Abandonment (P&A) Environment Plan (EP) and other info as relevant. The Julimar-Brunello license is in Permit Title WA-49-L, with moorings potentially extending into WA-34-L, located in Commonwealth waters in the Northern Carnarvon Sub-basin, approximately 185 km west north-west of Karratha, Western Australia.

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Activity and location summary

Julimar-Brunello P&A EP

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Activity details	Activities include: • Permanent P&A of three Julimar-Brunello ETA wells: Julimar East-1, Brunello-1 ST 1 and Brulimar-1. • Remediation and/or isolation of SBM in the annulus of Balnaves Deep-1. • Removal of four wellheads, which may be recovered following P&A or temporarily placed on the seabed for later recovery. • Preparation and support activities (inspections, cleaning, pre-laying and recovery of moorings). • IMR activities.
Titles	WA-49-L, MODU moorings for Brulimar-1 may extend into WA-34-L (Woodside-operated title)
Location	Barrow sub-basin
Water depth	~135 m to ~ 170 m
Timing	• Preparatory (IMR) activities: approximately 1–7 days per wellhead. Earliest commencement March 2026. • Preparation and support activities: approximately 5–10 days per site. Earliest commencement March 2026. • P&A activities: approximately 10–45 days per well (up to 180 days total). Earliest commencement April 2026, to be completed by December 2027. • SBM removal and/or isolation activity: 2–20 days. Earliest commencement April 2026, to be completed by December 2027. • Potential wellhead removal: commence any time after P&A activities completed.
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Regards,

Woodside Energy Consultation

6.1.26 Email sent to Shire of Exmouth – 11 August 2025

Woodside is planning to submit the Julimar-Brunello Plug and Abandonment (P&A) Environment Plan (EP) and other info as relevant. The Julimar-Brunello license is in Permit Title WA-49-L, with moorings potentially extending into WA-34-L, located in Commonwealth waters in the Northern Carnarvon Sub-basin, approximately 185 km west north-west of Karratha, Western Australia.

We are seeking feedback from relevant persons whose functions, interests or activities may be affected by the proposed activity. If you would like to comment on the proposed activity, please provide feedback to Woodside by 8 September 2025 using the details below.

Overview

Woodside proposes to undertake permanent P&A for four subsea exploration wells in the Julimar-Brunello licence. The wells underwent Exploration Temporary Abandonment (ETA) following exploration activities, however, the temporary abandonment methodology conducted does not align to the current legislative requirements and regulatory expectations for permanent abandonment, driving the need for further P&A activities, including:

- Permanent P&A of three wells using a Mobile Offshore Drilling Unit (MODU).
- Remediation and/or isolation of Synthetic Based Mud (SBM) in the annulus of an additional well.
- Vessel-based inspection, maintenance and repair (IMR) activities.
- Removal and recovery of well infrastructure below the mudline.

Consultation information

A Consultation Information Sheet is attached, which provides additional background on the proposed activities including summaries of key impacts and risks and associated management measures. This is also available on our website.

Activity and location summary

Julimar-Brunello P&A EP	
Activity details	Activities include: • Permanent P&A of three Julimar-Brunello ETA wells: Julimar East-1, Brunello-1 ST 1 and Brulimar-1. • Remediation and/or isolation of SBM in the annulus of Balnaves Deep-1. • Removal of four wellheads, which may be recovered following P&A or temporarily placed on the seabed for later recovery. • Preparation and support activities (inspections, cleaning, pre-laying and recovery of moorings). • IMR activities.
Titles	WA-49-L, MODU moorings for Brulimar-1 may extend into WA-34-L (Woodside-operated title)

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Location	Barrow sub-basin
Water depth	~135 m to ~ 170 m
Timing	• Preparatory (IMR) activities: approximately 1–7 days per wellhead. Earliest commencement March 2026. • Preparation and support activities: approximately 5–10 days per site. Earliest commencement March 2026. • P&A activities: approximately 10–45 days per well (up to 180 days total). Earliest commencement April 2026, to be completed by December 2027. • SBM removal and/or isolation activity: 2–20 days. Earliest commencement April 2026, to be completed by December 2027. • Potential wellhead removal: commence any time after P&A activities completed.
Duration	• The EP will be in effect for a period of 5 years. • Operation will occur on a 24/7 basis during P&A and preparation activities. • IMR activities take place as required.
Infrastructure	Key infrastructure includes, but is not limited to: • Julimar East-1 • Brunello-1 ST 1 • Brulimar-1 • Balnaves Deep-1
Vessels	Key vessels include, but are not limited to: • MODU with combined dynamic positioning (DP) and mooring capability • Offshore support vessels (IMR vessel or anchor-handling tug supply vessel (AHTSV) • General support vessels (Infield support vessels (ISV) or platform supply vessels (PSV)) • Remotely Operated Vehicles (ROV) • Helicopters
Operational Area and exclusion zones	The location of infrastructure is marked on nautical charts. The Operational Area and exclusion zones include: • A 4000 m radius around each well to allow a moored MODU to undertake plugging for abandonment activities. • A 1500 m radius around each well for non-moored activities and 1000 m buffer around subsea infrastructure to allow for IMR activities.

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	• A temporary 500 m exclusion zone to manage vessel movements around the MODU during P&A and SBM activities.

Environment that May Be Affected (EMBA)

The EMBA is the largest geographic area where an unplanned event could potentially have an environmental consequence. The broadest extent of the EMBA takes into consideration planned activities and unplanned events. The EMBA has been developed combining numerous modelling outputs based on highly unlikely releases of hydrocarbons to the environment. The modelling scenarios that inform the EMBA are loss of well containment during P&A, vessel collision, and SBM planned release.

The EMBA does not represent the extent of the predicted impact of a highly unlikely hydrocarbon release. Rather, the EMBA represents the merged area of many possible paths that a highly unlikely hydrocarbon release could travel, which depends on the weather and ocean conditions at the time of a release. This means that in the highly unlikely event that a hydrocarbon release does occur, the whole EMBA will not be affected. The specific and minimal part of the EMBA that is affected will only be known if there is a release.

Feedback

If you have feedback specific to the proposed activities, we welcome your feedback via email at consultation@feedback.woodside.com, via phone call at 1800 442 977 or via the feedback form on our website by **8 September 2025.** Alternatively, Woodside is willing to consider and accept your feedback via a means which suits you.

Your feedback and our response will be included in our EP, which will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023* (Cth). Your feedback may also be used to support other regulatory processes associated with the planned activities (which may or may not be confidential).

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Regards,

Woodside Energy Consultation

6.1.27 Email sent to City of Karratha – 11 August 2025

Woodside is planning to submit the Julimar-Brunello Plug and Abandonment (P&A) Environment Plan (EP) and other info as relevant. The Julimar-Brunello license is in Permit Title WA-49-L, with moorings potentially extending into WA-34-L, located in Commonwealth waters in the Northern Carnarvon Sub-basin, approximately 185 km west north-west of Karratha, Western Australia.

We are seeking feedback from relevant persons whose functions, interests or activities may be affected by the proposed activity. If you would like to comment on the proposed activity, please provide feedback to Woodside by 8 September 2025 using the details below.

Overview

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Woodside proposes to undertake permanent P&A for four subsea exploration wells in the Julimar-Brunello licence. The wells underwent Exploration Temporary Abandonment (ETA) following exploration activities, however, the temporary abandonment methodology conducted does not align to the current legislative requirements and regulatory expectations for permanent abandonment, driving the need for further P&A activities, including:

- Permanent P&A of three wells using a Mobile Offshore Drilling Unit (MODU).
- Remediation and/or isolation of Synthetic Based Mud (SBM) in the annulus of an additional well.
- Vessel-based inspection, maintenance and repair (IMR) activities.
- Removal and recovery of well infrastructure below the mudline.

Consultation information

A Consultation Information Sheet is attached, which provides additional background on the proposed activities including summaries of key impacts and risks and associated management measures. This is also available on our website.

Activity and location summary

Julimar-Brunello P&A EP	
Activity details	Activities include: • Permanent P&A of three Julimar-Brunello ETA wells: Julimar East-1, Brunello-1 ST 1 and Brulimar-1. • Remediation and/or isolation of SBM in the annulus of Balnaves Deep-1. • Removal of four wellheads, which may be recovered following P&A or temporarily placed on the seabed for later recovery. • Preparation and support activities (inspections, cleaning, pre-laying and recovery of moorings). • IMR activities.
Titles	WA-49-L, MODU moorings for Brulimar-1 may extend into WA-34-L (Woodside-operated title)
Location	Barrow sub-basin
Water depth	~135 m to ~ 170 m
Timing	• Preparatory (IMR) activities: approximately 1–7 days per wellhead. Earliest commencement March 2026. • Preparation and support activities: approximately 5–10 days per site. Earliest commencement March 2026. • P&A activities: approximately 10–45 days per well (up to 180 days total). Earliest commencement April 2026, to be completed by December 2027. • SBM removal and/or isolation activity: 2–20 days. Earliest commencement April 2026, to be completed by December 2027. • Potential wellhead removal: commence any time after P&A activities completed.

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Duration	• The EP will be in effect for a period of 5 years. • Operation will occur on a 24/7 basis during P&A and preparation activities. • IMR activities take place as required.
Infrastructure	Key infrastructure includes, but is not limited to: • Julimar East-1 • Brunello-1 ST 1 • Brulimar-1 • Balnaves Deep-1
Vessels	Key vessels include, but are not limited to: • MODU with combined dynamic positioning (DP) and mooring capability • Offshore support vessels (IMR vessel or anchor-handling tug supply vessel (AHTSV) • General support vessels (Infield support vessels (ISV) or platform supply vessels (PSV)) • Remotely Operated Vehicles (ROV) • Helicopters
Operational Area and exclusion zones	The location of infrastructure is marked on nautical charts. The Operational Area and exclusion zones include: • A 4000 m radius around each well to allow a moored MODU to undertake plugging for abandonment activities. • A 1500 m radius around each well for non-moored activities and 1000 m buffer around subsea infrastructure to allow for IMR activities. • A temporary 500 m exclusion zone to manage vessel movements around the MODU during P&A and SBM activities.

Environment that May Be Affected (EMBA)

The EMBA is the largest geographic area where an unplanned event could potentially have an environmental consequence. The broadest extent of the EMBA takes into consideration planned activities and unplanned events. The EMBA has been developed combining numerous modelling outputs based on highly unlikely releases of hydrocarbons to the environment. The modelling scenarios that inform the EMBA are loss of well containment during P&A, vessel collision, and SBM planned release.

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Feedback

If you have feedback specific to the proposed activities, we welcome your feedback via email at consultation@feedback.woodside.com, via phone call at 1800 442 977 or via the feedback form on

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our website by **8 September 2025.** Alternatively, Woodside is willing to consider and accept your feedback via a means which suits you.

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Regards,

Woodside Energy Consultation

6.1.28 Email sent to Cape Conservation Group (CCG) – 11 August 2025

Woodside is planning to submit the Julimar-Brunello Plug and Abandonment (P&A) Environment Plan (EP) and other info as relevant. The Julimar-Brunello license is in Permit Title WA-49-L, with moorings potentially extending into WA-34-L, located in Commonwealth waters in the Northern Carnarvon Sub-basin, approximately 185 km west north-west of Karratha, Western Australia.

We are seeking feedback from relevant persons whose functions, interests or activities may be affected by the proposed activity. If you would like to comment on the proposed activity, please provide feedback to Woodside by 8 September 2025 using the details below.

Overview

Woodside proposes to undertake permanent P&A for four subsea exploration wells in the Julimar-Brunello licence. The wells underwent Exploration Temporary Abandonment (ETA) following exploration activities, however, the temporary abandonment methodology conducted does not align to the current legislative requirements and regulatory expectations for permanent abandonment, driving the need for further P&A activities, including:

- Permanent P&A of three wells using a Mobile Offshore Drilling Unit (MODU).
- Remediation and/or isolation of Synthetic Based Mud (SBM) in the annulus of an additional well.
- Vessel-based inspection, maintenance and repair (IMR) activities.
- Removal and recovery of well infrastructure below the mudline.

Consultation information

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Activity and location summary

Julimar-Brunello P&A EP

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Activity details	Activities include: • Permanent P&A of three Julimar-Brunello ETA wells: Julimar East-1, Brunello-1 ST 1 and Brulimar-1. • Remediation and/or isolation of SBM in the annulus of Balnaves Deep-1. • Removal of four wellheads, which may be recovered following P&A or temporarily placed on the seabed for later recovery. • Preparation and support activities (inspections, cleaning, pre-laying and recovery of moorings). • IMR activities.
Titles	WA-49-L, MODU moorings for Brulimar-1 may extend into WA-34-L (Woodside-operated title)
Location	Barrow sub-basin
Water depth	~135 m to ~ 170 m
Timing	• Preparatory (IMR) activities: approximately 1–7 days per wellhead. Earliest commencement March 2026. • Preparation and support activities: approximately 5–10 days per site. Earliest commencement March 2026. • P&A activities: approximately 10–45 days per well (up to 180 days total). Earliest commencement April 2026, to be completed by December 2027. • SBM removal and/or isolation activity: 2–20 days. Earliest commencement April 2026, to be completed by December 2027. • Potential wellhead removal: commence any time after P&A activities completed.
Duration	• The EP will be in effect for a period of 5 years. • Operation will occur on a 24/7 basis during P&A and preparation activities. • IMR activities take place as required.
Infrastructure	Key infrastructure includes, but is not limited to: • Julimar East-1 • Brunello-1 ST 1 • Brulimar-1 • Balnaves Deep-1

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Vessels	Key vessels include, but are not limited to: • MODU with combined dynamic positioning (DP) and mooring capability • Offshore support vessels (IMR vessel or anchor-handling tug supply vessel (AHTSV) • General support vessels (Infield support vessels (ISV) or platform supply vessels (PSV)) • Remotely Operated Vehicles (ROV) • Helicopters
Operational Area and exclusion zones	The location of infrastructure is marked on nautical charts. The Operational Area and exclusion zones include: • A 4000 m radius around each well to allow a moored MODU to undertake plugging for abandonment activities. • A 1500 m radius around each well for non-moored activities and 1000 m buffer around subsea infrastructure to allow for IMR activities. • A temporary 500 m exclusion zone to manage vessel movements around the MODU during P&A and SBM activities.

Environment that May Be Affected (EMBA)

The EMBA is the largest geographic area where an unplanned event could potentially have an environmental consequence. The broadest extent of the EMBA takes into consideration planned activities and unplanned events. The EMBA has been developed combining numerous modelling outputs based on highly unlikely releases of hydrocarbons to the environment. The modelling scenarios that inform the EMBA are loss of well containment during P&A, vessel collision, and SBM planned release.

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Feedback

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Regards,

Woodside Energy Consultation

6.1.29 Email sent to Protect Ningaloo – 11 August 2025

Woodside is planning to submit the Julimar-Brunello Plug and Abandonment (P&A) Environment Plan (EP) and other info as relevant. The Julimar-Brunello license is in Permit Title WA-49-L, with moorings potentially extending into WA-34-L, located in Commonwealth waters in the Northern Carnarvon Sub-basin, approximately 185 km west north-west of Karratha, Western Australia.

We are seeking feedback from relevant persons whose functions, interests or activities may be affected by the proposed activity. If you would like to comment on the proposed activity, please provide feedback to Woodside by 8 September 2025 using the details below.

Overview

Woodside proposes to undertake permanent P&A for four subsea exploration wells in the Julimar-Brunello licence. The wells underwent Exploration Temporary Abandonment (ETA) following exploration activities, however, the temporary abandonment methodology conducted does not align to the current legislative requirements and regulatory expectations for permanent abandonment, driving the need for further P&A activities, including:

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- Removal and recovery of well infrastructure below the mudline.

Consultation information

A Consultation Information Sheet is attached, which provides additional background on the proposed activities including summaries of key impacts and risks and associated management measures. This is also available on our website.

Activity and location summary

Julimar-Brunello P&A EP	
Activity details	Activities include: • Permanent P&A of three Julimar-Brunello ETA wells: Julimar East-1, Brunello-1 ST 1 and Brulimar-1. • Remediation and/or isolation of SBM in the annulus of Balnaves Deep-1. • Removal of four wellheads, which may be recovered following P&A or temporarily placed on the seabed for later recovery. • Preparation and support activities (inspections, cleaning, pre-laying and recovery of moorings). • IMR activities.
Titles	WA-49-L, MODU moorings for Brulimar-1 may extend into WA-34-L (Woodside-operated title)

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Location	Barrow sub-basin
Water depth	~135 m to ~ 170 m
Timing	• Preparatory (IMR) activities: approximately 1–7 days per wellhead. Earliest commencement March 2026. • Preparation and support activities: approximately 5–10 days per site. Earliest commencement March 2026. • P&A activities: approximately 10–45 days per well (up to 180 days total). Earliest commencement April 2026, to be completed by December 2027. • SBM removal and/or isolation activity: 2–20 days. Earliest commencement April 2026, to be completed by December 2027. • Potential wellhead removal: commence any time after P&A activities completed.
Duration	• The EP will be in effect for a period of 5 years. • Operation will occur on a 24/7 basis during P&A and preparation activities. • IMR activities take place as required.
Infrastructure	Key infrastructure includes, but is not limited to: • Julimar East-1 • Brunello-1 ST 1 • Brulimar-1 • Balnaves Deep-1
Vessels	Key vessels include, but are not limited to: • MODU with combined dynamic positioning (DP) and mooring capability • Offshore support vessels (IMR vessel or anchor-handling tug supply vessel (AHTSV) • General support vessels (Infield support vessels (ISV) or platform supply vessels (PSV)) • Remotely Operated Vehicles (ROV) • Helicopters
Operational Area and exclusion zones	The location of infrastructure is marked on nautical charts. The Operational Area and exclusion zones include: • A 4000 m radius around each well to allow a moored MODU to undertake plugging for abandonment activities. • A 1500 m radius around each well for non-moored activities and 1000 m buffer around subsea infrastructure to allow for IMR activities.

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	• A temporary 500 m exclusion zone to manage vessel movements around the MODU during P&A and SBM activities.

Environment that May Be Affected (EMBA)

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Feedback

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Regards,

Woodside Energy Consultation

6.1.30 Email sent to Australian Conservation Foundation (ACF) – 11 August 2025

Woodside is planning to submit the Julimar-Brunello Plug and Abandonment (P&A) Environment Plan (EP) and other info as relevant. The Julimar-Brunello license is in Permit Title WA-49-L, with moorings potentially extending into WA-34-L, located in Commonwealth waters in the Northern Carnarvon Sub-basin, approximately 185 km west north-west of Karratha, Western Australia.

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Overview

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Activity and location summary

Julimar-Brunello P&A EP	
Activity details	Activities include: • Permanent P&A of three Julimar-Brunello ETA wells: Julimar East-1, Brunello-1 ST 1 and Brulimar-1. • Remediation and/or isolation of SBM in the annulus of Balnaves Deep-1. • Removal of four wellheads, which may be recovered following P&A or temporarily placed on the seabed for later recovery. • Preparation and support activities (inspections, cleaning, pre-laying and recovery of moorings). • IMR activities.
Titles	WA-49-L, MODU moorings for Brulimar-1 may extend into WA-34-L (Woodside-operated title)
Location	Barrow sub-basin
Water depth	~135 m to ~ 170 m
Timing	• Preparatory (IMR) activities: approximately 1–7 days per wellhead. Earliest commencement March 2026. • Preparation and support activities: approximately 5–10 days per site. Earliest commencement March 2026. • P&A activities: approximately 10–45 days per well (up to 180 days total). Earliest commencement April 2026, to be completed by December 2027. • SBM removal and/or isolation activity: 2–20 days. Earliest commencement April 2026, to be completed by December 2027. • Potential wellhead removal: commence any time after P&A activities completed.

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Duration	• The EP will be in effect for a period of 5 years. • Operation will occur on a 24/7 basis during P&A and preparation activities. • IMR activities take place as required.
Infrastructure	Key infrastructure includes, but is not limited to: • Julimar East-1 • Brunello-1 ST 1 • Brulimar-1 • Balnaves Deep-1
Vessels	Key vessels include, but are not limited to: • MODU with combined dynamic positioning (DP) and mooring capability • Offshore support vessels (IMR vessel or anchor-handling tug supply vessel (AHTSV) • General support vessels (Infield support vessels (ISV) or platform supply vessels (PSV)) • Remotely Operated Vehicles (ROV) • Helicopters
Operational Area and exclusion zones	The location of infrastructure is marked on nautical charts. The Operational Area and exclusion zones include: • A 4000 m radius around each well to allow a moored MODU to undertake plugging for abandonment activities. • A 1500 m radius around each well for non-moored activities and 1000 m buffer around subsea infrastructure to allow for IMR activities. • A temporary 500 m exclusion zone to manage vessel movements around the MODU during P&A and SBM activities.

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our website by **8 September 2025.** Alternatively, Woodside is willing to consider and accept your feedback via a means which suits you.

Your feedback and our response will be included in our EP, which will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023* (Cth). Your feedback may also be used to support other regulatory processes associated with the planned activities (which may or may not be confidential).

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Regards,

Woodside Energy Consultation

6.1.31 Email sent to Australian Marine Conservation Society (AMCS) – 11 August 2025

Woodside is planning to submit the Julimar-Brunello Plug and Abandonment (P&A) Environment Plan (EP) and other info as relevant. The Julimar-Brunello license is in Permit Title WA-49-L, with moorings potentially extending into WA-34-L, located in Commonwealth waters in the Northern Carnarvon Sub-basin, approximately 185 km west north-west of Karratha, Western Australia.

We are seeking feedback from relevant persons whose functions, interests or activities may be affected by the proposed activity. If you would like to comment on the proposed activity, please provide feedback to Woodside by 8 September 2025 using the details below.

Overview

Woodside proposes to undertake permanent P&A for four subsea exploration wells in the Julimar-Brunello licence. The wells underwent Exploration Temporary Abandonment (ETA) following exploration activities, however, the temporary abandonment methodology conducted does not align to the current legislative requirements and regulatory expectations for permanent abandonment, driving the need for further P&A activities, including:

- Permanent P&A of three wells using a Mobile Offshore Drilling Unit (MODU).
- Remediation and/or isolation of Synthetic Based Mud (SBM) in the annulus of an additional well.
- Vessel-based inspection, maintenance and repair (IMR) activities.
- Removal and recovery of well infrastructure below the mudline.

Consultation information

A Consultation Information Sheet is attached, which provides additional background on the proposed activities including summaries of key impacts and risks and associated management measures. This is also available on our website.

Activity and location summary

Julimar-Brunello P&A EP

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Activity details	Activities include: • Permanent P&A of three Julimar-Brunello ETA wells: Julimar East-1, Brunello-1 ST 1 and Brulimar-1. • Remediation and/or isolation of SBM in the annulus of Balnaves Deep-1. • Removal of four wellheads, which may be recovered following P&A or temporarily placed on the seabed for later recovery. • Preparation and support activities (inspections, cleaning, pre-laying and recovery of moorings). • IMR activities.
Titles	WA-49-L, MODU moorings for Brulimar-1 may extend into WA-34-L (Woodside-operated title)
Location	Barrow sub-basin
Water depth	~135 m to ~ 170 m
Timing	• Preparatory (IMR) activities: approximately 1–7 days per wellhead. Earliest commencement March 2026. • Preparation and support activities: approximately 5–10 days per site. Earliest commencement March 2026. • P&A activities: approximately 10–45 days per well (up to 180 days total). Earliest commencement April 2026, to be completed by December 2027. • SBM removal and/or isolation activity: 2–20 days. Earliest commencement April 2026, to be completed by December 2027. • Potential wellhead removal: commence any time after P&A activities completed.
Duration	• The EP will be in effect for a period of 5 years. • Operation will occur on a 24/7 basis during P&A and preparation activities. • IMR activities take place as required.
Infrastructure	Key infrastructure includes, but is not limited to: • Julimar East-1 • Brunello-1 ST 1 • Brulimar-1 • Balnaves Deep-1

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Vessels	Key vessels include, but are not limited to: • MODU with combined dynamic positioning (DP) and mooring capability • Offshore support vessels (IMR vessel or anchor-handling tug supply vessel (AHTSV) • General support vessels (Infield support vessels (ISV) or platform supply vessels (PSV)) • Remotely Operated Vehicles (ROV) • Helicopters
Operational Area and exclusion zones	The location of infrastructure is marked on nautical charts. The Operational Area and exclusion zones include: • A 4000 m radius around each well to allow a moored MODU to undertake plugging for abandonment activities. • A 1500 m radius around each well for non-moored activities and 1000 m buffer around subsea infrastructure to allow for IMR activities. • A temporary 500 m exclusion zone to manage vessel movements around the MODU during P&A and SBM activities.

Environment that May Be Affected (EMBA)

The EMBA is the largest geographic area where an unplanned event could potentially have an environmental consequence. The broadest extent of the EMBA takes into consideration planned activities and unplanned events. The EMBA has been developed combining numerous modelling outputs based on highly unlikely releases of hydrocarbons to the environment. The modelling scenarios that inform the EMBA are loss of well containment during P&A, vessel collision, and SBM planned release.

The EMBA does not represent the extent of the predicted impact of a highly unlikely hydrocarbon release. Rather, the EMBA represents the merged area of many possible paths that a highly unlikely hydrocarbon release could travel, which depends on the weather and ocean conditions at the time of a release. This means that in the highly unlikely event that a hydrocarbon release does occur, the whole EMBA will not be affected. The specific and minimal part of the EMBA that is affected will only be known if there is a release.

Feedback

If you have feedback specific to the proposed activities, we welcome your feedback via email at consultation@feedback.woodside.com, via phone call at 1800 442 977 or via the feedback form on our website by **8 September 2025.** Alternatively, Woodside is willing to consider and accept your feedback via a means which suits you.

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Regards,

Woodside Energy Consultation

6.1.32 Email sent to Conservation Council WA (CCWA) – 11 August 2025

Woodside is planning to submit the Julimar-Brunello Plug and Abandonment (P&A) Environment Plan (EP) and other info as relevant. The Julimar-Brunello license is in Permit Title WA-49-L, with moorings potentially extending into WA-34-L, located in Commonwealth waters in the Northern Carnarvon Sub-basin, approximately 185 km west north-west of Karratha, Western Australia.

We are seeking feedback from relevant persons whose functions, interests or activities may be affected by the proposed activity. If you would like to comment on the proposed activity, please provide feedback to Woodside by 8 September 2025 using the details below.

Overview

Woodside proposes to undertake permanent P&A for four subsea exploration wells in the Julimar-Brunello licence. The wells underwent Exploration Temporary Abandonment (ETA) following exploration activities, however, the temporary abandonment methodology conducted does not align to the current legislative requirements and regulatory expectations for permanent abandonment, driving the need for further P&A activities, including:

- Permanent P&A of three wells using a Mobile Offshore Drilling Unit (MODU).
- Remediation and/or isolation of Synthetic Based Mud (SBM) in the annulus of an additional well.
- Vessel-based inspection, maintenance and repair (IMR) activities.
- Removal and recovery of well infrastructure below the mudline.

Consultation information

A Consultation Information Sheet is attached, which provides additional background on the proposed activities including summaries of key impacts and risks and associated management measures. This is also available on our website.

Activity and location summary

Julimar-Brunello P&A EP	
Activity details	Activities include: • Permanent P&A of three Julimar-Brunello ETA wells: Julimar East-1, Brunello-1 ST 1 and Brulimar-1. • Remediation and/or isolation of SBM in the annulus of Balnaves Deep-1. • Removal of four wellheads, which may be recovered following P&A or temporarily placed on the seabed for later recovery. • Preparation and support activities (inspections, cleaning, pre-laying and recovery of moorings). • IMR activities.
Titles	WA-49-L, MODU moorings for Brulimar-1 may extend into WA-34-L (Woodside-operated title)

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Location	Barrow sub-basin
Water depth	~135 m to ~ 170 m
Timing	• Preparatory (IMR) activities: approximately 1–7 days per wellhead. Earliest commencement March 2026. • Preparation and support activities: approximately 5–10 days per site. Earliest commencement March 2026. • P&A activities: approximately 10–45 days per well (up to 180 days total). Earliest commencement April 2026, to be completed by December 2027. • SBM removal and/or isolation activity: 2–20 days. Earliest commencement April 2026, to be completed by December 2027. • Potential wellhead removal: commence any time after P&A activities completed.
Duration	• The EP will be in effect for a period of 5 years. • Operation will occur on a 24/7 basis during P&A and preparation activities. • IMR activities take place as required.
Infrastructure	Key infrastructure includes, but is not limited to: • Julimar East-1 • Brunello-1 ST 1 • Brulimar-1 • Balnaves Deep-1
Vessels	Key vessels include, but are not limited to: • MODU with combined dynamic positioning (DP) and mooring capability • Offshore support vessels (IMR vessel or anchor-handling tug supply vessel (AHTSV) • General support vessels (Infield support vessels (ISV) or platform supply vessels (PSV)) • Remotely Operated Vehicles (ROV) • Helicopters
Operational Area and exclusion zones	The location of infrastructure is marked on nautical charts. The Operational Area and exclusion zones include: • A 4000 m radius around each well to allow a moored MODU to undertake plugging for abandonment activities. • A 1500 m radius around each well for non-moored activities and 1000 m buffer around subsea infrastructure to allow for IMR activities.

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	• A temporary 500 m exclusion zone to manage vessel movements around the MODU during P&A and SBM activities.

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Feedback

If you have feedback specific to the proposed activities, we welcome your feedback via email at consultation@feedback.woodside.com, via phone call at 1800 442 977 or via the feedback form on our website by **8 September 2025.** Alternatively, Woodside is willing to consider and accept your feedback via a means which suits you.

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Regards,

Woodside Energy Consultation

6.1.33 Email sent to Greenpeace Australia Pacific (GAP) – 11 August 2025

Woodside is planning to submit the Julimar-Brunello Plug and Abandonment (P&A) Environment Plan (EP) and other info as relevant. The Julimar-Brunello license is in Permit Title WA-49-L, with moorings potentially extending into WA-34-L, located in Commonwealth waters in the Northern Carnarvon Sub-basin, approximately 185 km west north-west of Karratha, Western Australia.

We are seeking feedback from relevant persons whose functions, interests or activities may be affected by the proposed activity. If you would like to comment on the proposed activity, please provide feedback to Woodside by 8 September 2025 using the details below.

Overview

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Woodside proposes to undertake permanent P&A for four subsea exploration wells in the Julimar-Brunello licence. The wells underwent Exploration Temporary Abandonment (ETA) following exploration activities, however, the temporary abandonment methodology conducted does not align to the current legislative requirements and regulatory expectations for permanent abandonment, driving the need for further P&A activities, including:

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- Remediation and/or isolation of Synthetic Based Mud (SBM) in the annulus of an additional well.
- Vessel-based inspection, maintenance and repair (IMR) activities.
- Removal and recovery of well infrastructure below the mudline.

Consultation information

A Consultation Information Sheet is attached, which provides additional background on the proposed activities including summaries of key impacts and risks and associated management measures. This is also available on our website.

Activity and location summary

Julimar-Brunello P&A EP	
Activity details	Activities include: • Permanent P&A of three Julimar-Brunello ETA wells: Julimar East-1, Brunello-1 ST 1 and Brulimar-1. • Remediation and/or isolation of SBM in the annulus of Balnaves Deep-1. • Removal of four wellheads, which may be recovered following P&A or temporarily placed on the seabed for later recovery. • Preparation and support activities (inspections, cleaning, pre-laying and recovery of moorings). • IMR activities.
Titles	WA-49-L, MODU moorings for Brulimar-1 may extend into WA-34-L (Woodside-operated title)
Location	Barrow sub-basin
Water depth	~135 m to ~ 170 m
Timing	• Preparatory (IMR) activities: approximately 1–7 days per wellhead. Earliest commencement March 2026. • Preparation and support activities: approximately 5–10 days per site. Earliest commencement March 2026. • P&A activities: approximately 10–45 days per well (up to 180 days total). Earliest commencement April 2026, to be completed by December 2027. • SBM removal and/or isolation activity: 2–20 days. Earliest commencement April 2026, to be completed by December 2027. • Potential wellhead removal: commence any time after P&A activities completed.

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Duration	• The EP will be in effect for a period of 5 years. • Operation will occur on a 24/7 basis during P&A and preparation activities. • IMR activities take place as required.
Infrastructure	Key infrastructure includes, but is not limited to: • Julimar East-1 • Brunello-1 ST 1 • Brulimar-1 • Balnaves Deep-1
Vessels	Key vessels include, but are not limited to: • MODU with combined dynamic positioning (DP) and mooring capability • Offshore support vessels (IMR vessel or anchor-handling tug supply vessel (AHTSV) • General support vessels (Infield support vessels (ISV) or platform supply vessels (PSV)) • Remotely Operated Vehicles (ROV) • Helicopters
Operational Area and exclusion zones	The location of infrastructure is marked on nautical charts. The Operational Area and exclusion zones include: • A 4000 m radius around each well to allow a moored MODU to undertake plugging for abandonment activities. • A 1500 m radius around each well for non-moored activities and 1000 m buffer around subsea infrastructure to allow for IMR activities. • A temporary 500 m exclusion zone to manage vessel movements around the MODU during P&A and SBM activities.

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our website by **8 September 2025.** Alternatively, Woodside is willing to consider and accept your feedback via a means which suits you.

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Regards,

Woodside Energy Consultation

6.1.34 Email sent to Australasian Centre for Corporate Responsibility (ACCR) – 11 August 2025

Woodside is planning to submit the Julimar-Brunello Plug and Abandonment (P&A) Environment Plan (EP) and other info as relevant. The Julimar-Brunello license is in Permit Title WA-49-L, with moorings potentially extending into WA-34-L, located in Commonwealth waters in the Northern Carnarvon Sub-basin, approximately 185 km west north-west of Karratha, Western Australia.

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Overview

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- Vessel-based inspection, maintenance and repair (IMR) activities.
- Removal and recovery of well infrastructure below the mudline.

Consultation information

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Activity and location summary

Julimar-Brunello P&A EP

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Activity details	Activities include: • Permanent P&A of three Julimar-Brunello ETA wells: Julimar East-1, Brunello-1 ST 1 and Brulimar-1. • Remediation and/or isolation of SBM in the annulus of Balnaves Deep-1. • Removal of four wellheads, which may be recovered following P&A or temporarily placed on the seabed for later recovery. • Preparation and support activities (inspections, cleaning, pre-laying and recovery of moorings). • IMR activities.
Titles	WA-49-L, MODU moorings for Brulimar-1 may extend into WA-34-L (Woodside-operated title)
Location	Barrow sub-basin
Water depth	~135 m to ~ 170 m
Timing	• Preparatory (IMR) activities: approximately 1–7 days per wellhead. Earliest commencement March 2026. • Preparation and support activities: approximately 5–10 days per site. Earliest commencement March 2026. • P&A activities: approximately 10–45 days per well (up to 180 days total). Earliest commencement April 2026, to be completed by December 2027. • SBM removal and/or isolation activity: 2–20 days. Earliest commencement April 2026, to be completed by December 2027. • Potential wellhead removal: commence any time after P&A activities completed.
Duration	• The EP will be in effect for a period of 5 years. • Operation will occur on a 24/7 basis during P&A and preparation activities. • IMR activities take place as required.
Infrastructure	Key infrastructure includes, but is not limited to: • Julimar East-1 • Brunello-1 ST 1 • Brulimar-1 • Balnaves Deep-1

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Vessels	Key vessels include, but are not limited to: • MODU with combined dynamic positioning (DP) and mooring capability • Offshore support vessels (IMR vessel or anchor-handling tug supply vessel (AHTSV) • General support vessels (Infield support vessels (ISV) or platform supply vessels (PSV)) • Remotely Operated Vehicles (ROV) • Helicopters
Operational Area and exclusion zones	The location of infrastructure is marked on nautical charts. The Operational Area and exclusion zones include: • A 4000 m radius around each well to allow a moored MODU to undertake plugging for abandonment activities. • A 1500 m radius around each well for non-moored activities and 1000 m buffer around subsea infrastructure to allow for IMR activities. • A temporary 500 m exclusion zone to manage vessel movements around the MODU during P&A and SBM activities.

Environment that May Be Affected (EMBA)

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Feedback

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Regards,

Woodside Energy Consultation

6.1.35 Email sent to Friends of the Earth – 13 August 2025

Woodside is planning to submit the Julimar-Brunello Plug and Abandonment (P&A) Environment Plan (EP) and other info as relevant. The Julimar-Brunello license is in Permit Title WA-49-L, with moorings potentially extending into WA-34-L, located in Commonwealth waters in the Northern Carnarvon Sub-basin, approximately 185 km west north-west of Karratha, Western Australia.

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Overview

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Consultation information

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Activity and location summary

Julimar-Brunello P&A EP	
Activity details	Activities include: • Permanent P&A of three Julimar-Brunello ETA wells: Julimar East-1, Brunello-1 ST 1 and Brulimar-1. • Remediation and/or isolation of SBM in the annulus of Balnaves Deep-1. • Removal of four wellheads, which may be recovered following P&A or temporarily placed on the seabed for later recovery. • Preparation and support activities (inspections, cleaning, pre-laying and recovery of moorings). • IMR activities.
Titles	WA-49-L, MODU moorings for Brulimar-1 may extend into WA-34-L (Woodside-operated title)

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Location	Barrow sub-basin
Water depth	~135 m to ~ 170 m
Timing	• Preparatory (IMR) activities: approximately 1–7 days per wellhead. Earliest commencement March 2026. • Preparation and support activities: approximately 5–10 days per site. Earliest commencement March 2026. • P&A activities: approximately 10–45 days per well (up to 180 days total). Earliest commencement April 2026, to be completed by December 2027. • SBM removal and/or isolation activity: 2–20 days. Earliest commencement April 2026, to be completed by December 2027. • Potential wellhead removal: commence any time after P&A activities completed.
Duration	• The EP will be in effect for a period of 5 years. • Operation will occur on a 24/7 basis during P&A and preparation activities. • IMR activities take place as required.
Infrastructure	Key infrastructure includes, but is not limited to: • Julimar East-1 • Brunello-1 ST 1 • Brulimar-1 • Balnaves Deep-1
Vessels	Key vessels include, but are not limited to: • MODU with combined dynamic positioning (DP) and mooring capability • Offshore support vessels (IMR vessel or anchor-handling tug supply vessel (AHTSV) • General support vessels (Infield support vessels (ISV) or platform supply vessels (PSV)) • Remotely Operated Vehicles (ROV) • Helicopters
Operational Area and exclusion zones	The location of infrastructure is marked on nautical charts. The Operational Area and exclusion zones include: • A 4000 m radius around each well to allow a moored MODU to undertake plugging for abandonment activities. • A 1500 m radius around each well for non-moored activities and 1000 m buffer around subsea infrastructure to allow for IMR activities.

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	• A temporary 500 m exclusion zone to manage vessel movements around the MODU during P&A and SBM activities.

Environment that May Be Affected (EMBA)

The EMBA is the largest geographic area where an unplanned event could potentially have an environmental consequence. The broadest extent of the EMBA takes into consideration planned activities and unplanned events. The EMBA has been developed combining numerous modelling outputs based on highly unlikely releases of hydrocarbons to the environment. The modelling scenarios that inform the EMBA are loss of well containment during P&A, vessel collision, and SBM planned release.

The EMBA does not represent the extent of the predicted impact of a highly unlikely hydrocarbon release. Rather, the EMBA represents the merged area of many possible paths that a highly unlikely hydrocarbon release could travel, which depends on the weather and ocean conditions at the time of a release. This means that in the highly unlikely event that a hydrocarbon release does occur, the whole EMBA will not be affected. The specific and minimal part of the EMBA that is affected will only be known if there is a release.

Feedback

If you have feedback specific to the proposed activities, we welcome your feedback via email at consultation@feedback.woodside.com, via phone call at 1800 442 977 or via the feedback form on our website by **8 September 2025.** Alternatively, Woodside is willing to consider and accept your feedback via a means which suits you.

Your feedback and our response will be included in our EP, which will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023* (Cth). Your feedback may also be used to support other regulatory processes associated with the planned activities (which may or may not be confidential).

You may request that particular information you provide during consultation not be published in the EP made available on the NOPSEMA website. Please let us know if you request that particular information not be published, and we will make your request known to NOPSEMA.

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Regards,

Woodside Energy Consultation

6.1.36 Email sent to The Wilderness Society – 11 August 2025

Woodside is planning to submit the Julimar-Brunello Plug and Abandonment (P&A) Environment Plan (EP) and other info as relevant. The Julimar-Brunello license is in Permit Title WA-49-L, with moorings potentially extending into WA-34-L, located in Commonwealth waters in the Northern Carnarvon Sub-basin, approximately 185 km west north-west of Karratha, Western Australia.

We are seeking feedback from relevant persons whose functions, interests or activities may be affected by the proposed activity. If you would like to comment on the proposed activity, please provide feedback to Woodside by 8 September 2025 using the details below.

Overview

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Woodside proposes to undertake permanent P&A for four subsea exploration wells in the Julimar-Brunello licence. The wells underwent Exploration Temporary Abandonment (ETA) following exploration activities, however, the temporary abandonment methodology conducted does not align to the current legislative requirements and regulatory expectations for permanent abandonment, driving the need for further P&A activities, including:

- Permanent P&A of three wells using a Mobile Offshore Drilling Unit (MODU).
- Remediation and/or isolation of Synthetic Based Mud (SBM) in the annulus of an additional well.
- Vessel-based inspection, maintenance and repair (IMR) activities.
- Removal and recovery of well infrastructure below the mudline.

Consultation information

A Consultation Information Sheet is attached, which provides additional background on the proposed activities including summaries of key impacts and risks and associated management measures. This is also available on our website.

Activity and location summary

Julimar-Brunello P&A EP	
Activity details	Activities include: • Permanent P&A of three Julimar-Brunello ETA wells: Julimar East-1, Brunello-1 ST 1 and Brulimar-1. • Remediation and/or isolation of SBM in the annulus of Balnaves Deep-1. • Removal of four wellheads, which may be recovered following P&A or temporarily placed on the seabed for later recovery. • Preparation and support activities (inspections, cleaning, pre-laying and recovery of moorings). • IMR activities.
Titles	WA-49-L, MODU moorings for Brulimar-1 may extend into WA-34-L (Woodside-operated title)
Location	Barrow sub-basin
Water depth	~135 m to ~ 170 m
Timing	• Preparatory (IMR) activities: approximately 1–7 days per wellhead. Earliest commencement March 2026. • Preparation and support activities: approximately 5–10 days per site. Earliest commencement March 2026. • P&A activities: approximately 10–45 days per well (up to 180 days total). Earliest commencement April 2026, to be completed by December 2027. • SBM removal and/or isolation activity: 2–20 days. Earliest commencement April 2026, to be completed by December 2027. • Potential wellhead removal: commence any time after P&A activities completed.

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Duration	• The EP will be in effect for a period of 5 years. • Operation will occur on a 24/7 basis during P&A and preparation activities. • IMR activities take place as required.
Infrastructure	Key infrastructure includes, but is not limited to: • Julimar East-1 • Brunello-1 ST 1 • Brulimar-1 • Balnaves Deep-1
Vessels	Key vessels include, but are not limited to: • MODU with combined dynamic positioning (DP) and mooring capability • Offshore support vessels (IMR vessel or anchor-handling tug supply vessel (AHTSV) • General support vessels (Infield support vessels (ISV) or platform supply vessels (PSV)) • Remotely Operated Vehicles (ROV) • Helicopters
Operational Area and exclusion zones	The location of infrastructure is marked on nautical charts. The Operational Area and exclusion zones include: • A 4000 m radius around each well to allow a moored MODU to undertake plugging for abandonment activities. • A 1500 m radius around each well for non-moored activities and 1000 m buffer around subsea infrastructure to allow for IMR activities. • A temporary 500 m exclusion zone to manage vessel movements around the MODU during P&A and SBM activities.

Environment that May Be Affected (EMBA)

The EMBA is the largest geographic area where an unplanned event could potentially have an environmental consequence. The broadest extent of the EMBA takes into consideration planned activities and unplanned events. The EMBA has been developed combining numerous modelling outputs based on highly unlikely releases of hydrocarbons to the environment. The modelling scenarios that inform the EMBA are loss of well containment during P&A, vessel collision, and SBM planned release.

The EMBA does not represent the extent of the predicted impact of a highly unlikely hydrocarbon release. Rather, the EMBA represents the merged area of many possible paths that a highly unlikely hydrocarbon release could travel, which depends on the weather and ocean conditions at the time of a release. This means that in the highly unlikely event that a hydrocarbon release does occur, the whole EMBA will not be affected. The specific and minimal part of the EMBA that is affected will only be known if there is a release.

Feedback

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our website by **8 September 2025.** Alternatively, Woodside is willing to consider and accept your feedback via a means which suits you.

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Regards,

Woodside Energy Consultation

6.1.37 Email sent to Maritime Union of Australia – 11 August 2025

Woodside is planning to submit the Julimar-Brunello Plug and Abandonment (P&A) Environment Plan (EP) and other info as relevant. The Julimar-Brunello license is in Permit Title WA-49-L, with moorings potentially extending into WA-34-L, located in Commonwealth waters in the Northern Carnarvon Sub-basin, approximately 185 km west north-west of Karratha, Western Australia.

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Overview

Woodside proposes to undertake permanent P&A for four subsea exploration wells in the Julimar-Brunello licence. The wells underwent Exploration Temporary Abandonment (ETA) following exploration activities, however, the temporary abandonment methodology conducted does not align to the current legislative requirements and regulatory expectations for permanent abandonment, driving the need for further P&A activities, including:

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- Vessel-based inspection, maintenance and repair (IMR) activities.
- Removal and recovery of well infrastructure below the mudline.

Consultation information

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Activity and location summary

Julimar-Brunello P&A EP

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Activity details	Activities include: • Permanent P&A of three Julimar-Brunello ETA wells: Julimar East-1, Brunello-1 ST 1 and Brulimar-1. • Remediation and/or isolation of SBM in the annulus of Balnaves Deep-1. • Removal of four wellheads, which may be recovered following P&A or temporarily placed on the seabed for later recovery. • Preparation and support activities (inspections, cleaning, pre-laying and recovery of moorings). • IMR activities.
Titles	WA-49-L, MODU moorings for Brulimar-1 may extend into WA-34-L (Woodside-operated title)
Location	Barrow sub-basin
Water depth	~135 m to ~ 170 m
Timing	• Preparatory (IMR) activities: approximately 1–7 days per wellhead. Earliest commencement March 2026. • Preparation and support activities: approximately 5–10 days per site. Earliest commencement March 2026. • P&A activities: approximately 10–45 days per well (up to 180 days total). Earliest commencement April 2026, to be completed by December 2027. • SBM removal and/or isolation activity: 2–20 days. Earliest commencement April 2026, to be completed by December 2027. • Potential wellhead removal: commence any time after P&A activities completed.
Duration	• The EP will be in effect for a period of 5 years. • Operation will occur on a 24/7 basis during P&A and preparation activities. • IMR activities take place as required.
Infrastructure	Key infrastructure includes, but is not limited to: • Julimar East-1 • Brunello-1 ST 1 • Brulimar-1 • Balnaves Deep-1

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Vessels	Key vessels include, but are not limited to: • MODU with combined dynamic positioning (DP) and mooring capability • Offshore support vessels (IMR vessel or anchor-handling tug supply vessel (AHTSV) • General support vessels (Infield support vessels (ISV) or platform supply vessels (PSV)) • Remotely Operated Vehicles (ROV) • Helicopters
Operational Area and exclusion zones	The location of infrastructure is marked on nautical charts. The Operational Area and exclusion zones include: • A 4000 m radius around each well to allow a moored MODU to undertake plugging for abandonment activities. • A 1500 m radius around each well for non-moored activities and 1000 m buffer around subsea infrastructure to allow for IMR activities. • A temporary 500 m exclusion zone to manage vessel movements around the MODU during P&A and SBM activities.

Environment that May Be Affected (EMBA)

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Feedback

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Regards,

Woodside Energy Consultation

6.1.38 Email sent to Commonwealth Fisheries Association (CFA) – 11 August 2025

Woodside is planning to submit the Julimar-Brunello Plug and Abandonment (P&A) Environment Plan (EP) and other info as relevant. The Julimar-Brunello license is in Permit Title WA-49-L, with moorings potentially extending into WA-34-L, located in Commonwealth waters in the Northern Carnarvon Sub-basin, approximately 185 km west north-west of Karratha, Western Australia.

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Overview

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Consultation information

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Activity and location summary

Julimar-Brunello P&A EP	
Activity details	Activities include: • Permanent P&A of three Julimar-Brunello ETA wells: Julimar East-1, Brunello-1 ST 1 and Brulimar-1. • Remediation and/or isolation of SBM in the annulus of Balnaves Deep-1. • Removal of four wellheads, which may be recovered following P&A or temporarily placed on the seabed for later recovery. • Preparation and support activities (inspections, cleaning, pre-laying and recovery of moorings). • IMR activities.
Titles	WA-49-L, MODU moorings for Brulimar-1 may extend into WA-34-L (Woodside-operated title)

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Location	Barrow sub-basin
Water depth	~135 m to ~ 170 m
Timing	• Preparatory (IMR) activities: approximately 1–7 days per wellhead. Earliest commencement March 2026. • Preparation and support activities: approximately 5–10 days per site. Earliest commencement March 2026. • P&A activities: approximately 10–45 days per well (up to 180 days total). Earliest commencement April 2026, to be completed by December 2027. • SBM removal and/or isolation activity: 2–20 days. Earliest commencement April 2026, to be completed by December 2027. • Potential wellhead removal: commence any time after P&A activities completed.
Duration	• The EP will be in effect for a period of 5 years. • Operation will occur on a 24/7 basis during P&A and preparation activities. • IMR activities take place as required.
Infrastructure	Key infrastructure includes, but is not limited to: • Julimar East-1 • Brunello-1 ST 1 • Brulimar-1 • Balnaves Deep-1
Vessels	Key vessels include, but are not limited to: • MODU with combined dynamic positioning (DP) and mooring capability • Offshore support vessels (IMR vessel or anchor-handling tug supply vessel (AHTSV) • General support vessels (Infield support vessels (ISV) or platform supply vessels (PSV)) • Remotely Operated Vehicles (ROV) • Helicopters
Operational Area and exclusion zones	The location of infrastructure is marked on nautical charts. The Operational Area and exclusion zones include: • A 4000 m radius around each well to allow a moored MODU to undertake plugging for abandonment activities. • A 1500 m radius around each well for non-moored activities and 1000 m buffer around subsea infrastructure to allow for IMR activities.

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	• A temporary 500 m exclusion zone to manage vessel movements around the MODU during P&A and SBM activities.

Environment that May Be Affected (EMBA)

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Commonwealth fisheries

Commonwealth fisheries active in the Operational Area:

- None

Commonwealth fisheries active in the EMBA:

- North West Slope Trawl Fishery
- Western Deepwater Trawl Fishery

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.

Notifications

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 via email at consultation@feedback.woodside.com, via phone call at 1800 442 977 or via the feedback form on our website by **8 September 2025.** Alternatively, Woodside is willing to consider and accept your feedback via a means which suits you.

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Regards,

Woodside Energy Consultation

6.1.39 Email sent to Commonwealth Fishery Licence Holders – 11 August 2025

- North West Slope Trawl Fishery
- Western Deepwater Trawl Fishery

Woodside is planning to submit the Julimar-Brunello Plug and Abandonment (P&A) Environment Plan (EP) and other info as relevant. The Julimar-Brunello license is in Permit Title WA-49-L, with moorings potentially extending into WA-34-L, located in Commonwealth waters in the Northern Carnarvon Sub-basin, approximately 185 km west north-west of Karratha, Western Australia.

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Overview

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- Remediation and/or isolation of Synthetic Based Mud (SBM) in the annulus of an additional well.
- Vessel-based inspection, maintenance and repair (IMR) activities.
- Removal and recovery of well infrastructure below the mudline.

Consultation information

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Activity and location summary

Julimar-Brunello P&A EP	
Activity details	Activities include: • Permanent P&A of three Julimar-Brunello ETA wells: Julimar East-1, Brunello-1 ST 1 and Brulimar-1. • Remediation and/or isolation of SBM in the annulus of Balnaves Deep-1. • Removal of four wellheads, which may be recovered following P&A or temporarily placed on the seabed for later recovery. • Preparation and support activities (inspections, cleaning, pre-laying and recovery of moorings). • IMR activities.

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Titles	WA-49-L, MODU moorings for Brulimar-1 may extend into WA-34-L (Woodside-operated title)
Location	Barrow sub-basin
Water depth	~135 m to ~ 170 m
Timing	• Preparatory (IMR) activities: approximately 1–7 days per wellhead. Earliest commencement March 2026. • Preparation and support activities: approximately 5–10 days per site. Earliest commencement March 2026. • P&A activities: approximately 10–45 days per well (up to 180 days total). Earliest commencement April 2026, to be completed by December 2027. • SBM removal and/or isolation activity: 2–20 days. Earliest commencement April 2026, to be completed by December 2027. • Potential wellhead removal: commence any time after P&A activities completed.
Duration	• The EP will be in effect for a period of 5 years. • Operation will occur on a 24/7 basis during P&A and preparation activities. • IMR activities take place as required.
Infrastructure	Key infrastructure includes, but is not limited to: • Julimar East-1 • Brunello-1 ST 1 • Brulimar-1 • Balnaves Deep-1
Vessels	Key vessels include, but are not limited to: • MODU with combined dynamic positioning (DP) and mooring capability • Offshore support vessels (IMR vessel or anchor-handling tug supply vessel (AHTSV) • General support vessels (Infield support vessels (ISV) or platform supply vessels (PSV)) • Remotely Operated Vehicles (ROV) • Helicopters
Operational Area and exclusion zones	The location of infrastructure is marked on nautical charts. The Operational Area and exclusion zones include: • A 4000 m radius around each well to allow a moored MODU to undertake plugging for abandonment activities.

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	• A 1500 m radius around each well for non-moored activities and 1000 m buffer around subsea infrastructure to allow for IMR activities. • A temporary 500 m exclusion zone to manage vessel movements around the MODU during P&A and SBM activities.

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Commonwealth fisheries active in the EMBA:

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Regards,

Woodside Energy Consultation

6.1.40 Email sent to Commonwealth Fishery Licence Holders and associations – 19 August 2025

- Western Tuna and Billfish Fishery
- Western Skipjack Fishery
- Tuna Australia
- Southern Bluefin Tuna Fishery
- Australian Southern Bluefin Tuna Fishery Association

Woodside is planning to submit the Julimar-Brunello Plug and Abandonment (P&A) Environment Plan (EP) and other info as relevant. The Julimar-Brunello license is in Permit Title WA-49-L, with moorings potentially extending into WA-34-L, located in Commonwealth waters in the Northern Carnarvon Sub-basin, approximately 185 km west north-west of Karratha, Western Australia.

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Activity and location summary

Julimar-Brunello P&A EP	
Activity details	Activities include: • Permanent P&A of three Julimar-Brunello ETA wells: Julimar East-1, Brunello-1 ST 1 and Brulimar-1. • Remediation and/or isolation of SBM in the annulus of Balnaves Deep-1. • Removal of four wellheads, which may be recovered following P&A or temporarily placed on the seabed for later recovery.

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	• Preparation and support activities (inspections, cleaning, pre-laying and recovery of moorings). • IMR activities.
Titles	WA-49-L, MODU moorings for Brulimar-1 may extend into WA-34-L (Woodside-operated title)
Location	Barrow sub-basin
Water depth	~135 m to ~ 170 m
Timing	• Preparatory (IMR) activities: approximately 1–7 days per wellhead. Earliest commencement March 2026. • Preparation and support activities: approximately 5–10 days per site. Earliest commencement March 2026. • P&A activities: approximately 10–45 days per well (up to 180 days total). Earliest commencement April 2026, to be completed by December 2027. • SBM removal and/or isolation activity: 2–20 days. Earliest commencement April 2026, to be completed by December 2027. • Potential wellhead removal: commence any time after P&A activities completed.
Duration	• The EP will be in effect for a period of 5 years. • Operation will occur on a 24/7 basis during P&A and preparation activities. • IMR activities take place as required.
Infrastructure	Key infrastructure includes, but is not limited to: • Julimar East-1 • Brunello-1 ST 1 • Brulimar-1 • Balnaves Deep-1
Vessels	Key vessels include, but are not limited to: • MODU with combined dynamic positioning (DP) and mooring capability • Offshore support vessels (IMR vessel or anchor-handling tug supply vessel (AHTSV) • General support vessels (Infield support vessels (ISV) or platform supply vessels (PSV)) • Remotely Operated Vehicles (ROV)

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	• Helicopters
Operational Area and exclusion zones	The location of infrastructure is marked on nautical charts. The Operational Area and exclusion zones include: • A 4000 m radius around each well to allow a moored MODU to undertake plugging for abandonment activities. • A 1500 m radius around each well for non-moored activities and 1000 m buffer around subsea infrastructure to allow for IMR activities. • A temporary 500 m exclusion zone to manage vessel movements around the MODU during P&A and SBM activities.

Environment that May Be Affected (EMBA)

The EMBA is the largest geographic area where an unplanned event could potentially have an environmental consequence. The broadest extent of the EMBA takes into consideration planned activities and unplanned events. The EMBA has been developed combining numerous modelling outputs based on highly unlikely releases of hydrocarbons to the environment. The modelling scenarios that inform the EMBA are loss of well containment during P&A, vessel collision, and SBM planned release.

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.

Commonwealth fisheries

Commonwealth fisheries active in the Operational Area:

- None

Commonwealth fisheries active in the EMBA:

- North West Slope Trawl Fishery
- Western Deepwater Trawl Fishery
- Western Tuna and Billfish Fishery
- Western Skipjack Fishery
- Southern Bluefin Tuna Fishery

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.

Notifications

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 via email at consultation@feedback.woodside.com, via phone call at 1800 442 977 or via the feedback form on

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our website by **16 September 2025.** Alternatively, Woodside is willing to consider and accept your feedback via a means which suits you.

Your feedback and our response will be included in our EP, which will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023* (Cth). Your feedback may also be used to support other regulatory processes associated with the planned activities (which may or may not be confidential).

You may request that particular information you provide during consultation not be published in the EP made available on the NOPSEMA website. Please let us know if you request that particular information not be published, and we will make your request known to NOPSEMA.

NOPSEMA has published the brochure *Consultation on offshore petroleum environment plans – Information for the Community* to help community members understand consultation requirements for Commonwealth EPs and how to participate in consultation.

Personal information collected in the course of consultation will be handled in accordance with Woodside's Environment Plan Privacy Collection Notice. To understand how personal information will be handled, please visit our website.

Regards,

Woodside Energy Consultation

6.1.41 Email sent to Department of Agriculture, Fisheries and Forestry (DAFF) – Biosecurity & Fisheries – 11 August 2025

Woodside is planning to submit the Julimar-Brunello Plug and Abandonment (P&A) Environment Plan (EP) and other info as relevant. The Julimar-Brunello license is in Permit Title WA-49-L, with moorings potentially extending into WA-34-L, located in Commonwealth waters in the Northern Carnarvon Sub-basin, approximately 185 km west north-west of Karratha, Western Australia.

We are seeking feedback from relevant persons whose functions, interests or activities may be affected by the proposed activity. If you would like to comment on the proposed activity, please provide feedback to Woodside by 8 September 2025 using the details below.

Overview

Woodside proposes to undertake permanent P&A for four subsea exploration wells in the Julimar-Brunello licence. The wells underwent Exploration Temporary Abandonment (ETA) following exploration activities, however, the temporary abandonment methodology conducted does not align to the current legislative requirements and regulatory expectations for permanent abandonment, driving the need for further P&A activities, including:

- Permanent P&A of three wells using a Mobile Offshore Drilling Unit (MODU).
- Remediation and/or isolation of Synthetic Based Mud (SBM) in the annulus of an additional well.
- Vessel-based inspection, maintenance and repair (IMR) activities.
- Removal and recovery of well infrastructure below the mudline.

Consultation information

A Consultation Information Sheet is attached, which provides additional background on the proposed activities including summaries of key impacts and risks and associated management measures. This is also available on our website.

Activity and location summary

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Julimar-Brunello P&A EP	
Activity details	Activities include: • Permanent P&A of three Julimar-Brunello ETA wells: Julimar East-1, Brunello-1 ST 1 and Brulimar-1. • Remediation and/or isolation of SBM in the annulus of Balnaves Deep-1. • Removal of four wellheads, which may be recovered following P&A or temporarily placed on the seabed for later recovery. • Preparation and support activities (inspections, cleaning, pre-laying and recovery of moorings). • IMR activities.
Titles	WA-49-L, MODU moorings for Brulimar-1 may extend into WA-34-L (Woodside-operated title)
Location	Barrow sub-basin
Water depth	~135 m to ~ 170 m
Timing	• Preparatory (IMR) activities: approximately 1–7 days per wellhead. Earliest commencement March 2026. • Preparation and support activities: approximately 5–10 days per site. Earliest commencement March 2026. • P&A activities: approximately 10–45 days per well (up to 180 days total). Earliest commencement April 2026, to be completed by December 2027. • SBM removal and/or isolation activity: 2–20 days. Earliest commencement April 2026, to be completed by December 2027. • Potential wellhead removal: commence any time after P&A activities completed.
Duration	• The EP will be in effect for a period of 5 years. • Operation will occur on a 24/7 basis during P&A and preparation activities. • IMR activities take place as required.
Infrastructure	Key infrastructure includes, but is not limited to: • Julimar East-1 • Brunello-1 ST 1 • Brulimar-1 • Balnaves Deep-1

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Vessels	Key vessels include, but are not limited to: • MODU with combined dynamic positioning (DP) and mooring capability • Offshore support vessels (IMR vessel or anchor-handling tug supply vessel (AHTSV) • General support vessels (Infield support vessels (ISV) or platform supply vessels (PSV)) • Remotely Operated Vehicles (ROV) • Helicopters
Operational Area and exclusion zones	The location of infrastructure is marked on nautical charts. The Operational Area and exclusion zones include: • A 4000 m radius around each well to allow a moored MODU to undertake plugging for abandonment activities. • A 1500 m radius around each well for non-moored activities and 1000 m buffer around subsea infrastructure to allow for IMR activities. • A temporary 500 m exclusion zone to manage vessel movements around the MODU during P&A and SBM activities.

Environment that May Be Affected (EMBA)

The EMBA is the largest geographic area where an unplanned event could potentially have an environmental consequence. The broadest extent of the EMBA takes into consideration planned activities and unplanned events. The EMBA has been developed combining numerous modelling outputs based on highly unlikely releases of hydrocarbons to the environment. The modelling scenarios that inform the EMBA are loss of well containment during P&A, vessel collision, and SBM planned release.

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.

Commonwealth fisheries

Commonwealth fisheries active in the Operational Area:

- None

Commonwealth fisheries active in the EMBA:

- North West Slope Trawl Fishery
- Western Deepwater Trawl Fishery

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.

Biosecurity

With respect to the biosecurity matters, please note the following information below:

Environment Description

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The Operational Area is located in Commonwealth waters within the North-west Marine Region (NWMR) in water depths of approximately 135 m to 171 m deep. The seabed has a gentle (0.05°) seaward gradient, extending to a relatively steep outer slope approximately 200 to 300 km offshore in water depths of around 200 m. The continental slope then descends more rapidly from the shelf edge to depths greater than 1,000 m to the north-west.

Potential IMS risk	IMS mitigation management
Accidental introduction and establishment of invasive marine species	• 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. • Internationally sourced project vessels will manage their biosecurity risk associated with biofouling as specified in the Australian Biofouling Management Requirements. • Woodside's invasive marine species (IMS) risk assessment process will be applied to project vessels and relevant immersible equipment undertaking the Petroleum Activity. • Based on the outcomes of each IMS risk assessment, management measures commensurate with the risk (such as treating internal systems, IMS inspections or cleaning) will be implemented to minimise the likelihood of IMS being introduced.

Feedback

If you have feedback specific to the proposed activities, we welcome your feedback via email at consultation@feedback.woodside.com, via phone call at 1800 442 977 or via the feedback form on our website by **8 September 2025.** Alternatively, Woodside is willing to consider and accept your feedback via a means which suits you.

Your feedback and our response will be included in our EP, which will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023* (Cth). Your feedback may also be used to support other regulatory processes associated with the planned activities (which may or may not be confidential).

You may request that particular information you provide during consultation not be published in the EP made available on the NOPSEMA website. Please let us know if you request that particular information not be published, and we will make your request known to NOPSEMA.

NOPSEMA has published the brochure *Consultation on offshore petroleum environment plans – Information for the Community* to help community members understand consultation requirements for Commonwealth EPs and how to participate in consultation.

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Regards,

Woodside Energy Consultation

6.1.42 Email sent to Director of National Parks (DNP) – 12 August 2025

Woodside is planning to submit the Julimar-Brunello Plug and Abandonment (P&A) Environment Plan (EP) and other info as relevant. The Julimar-Brunello license is in Permit Title WA-49-L, with moorings potentially

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extending into WA-34-L, located in Commonwealth waters in the Northern Carnarvon Sub-basin, approximately 185 km west north-west of Karratha, Western Australia.

We are seeking feedback from relevant persons whose functions, interests or activities may be affected by the proposed activity. If you would like to comment on the proposed activity, please provide feedback to Woodside by **9 September 2025** using the details below.

Overview

Woodside proposes to undertake permanent P&A for four subsea exploration wells in the Julimar-Brunello licence. The wells underwent Exploration Temporary Abandonment (ETA) following exploration activities, however, the temporary abandonment methodology conducted does not align to the current legislative requirements and regulatory expectations for permanent abandonment, driving the need for further P&A activities, including:

- Permanent P&A of three wells using a Mobile Offshore Drilling Unit (MODU).
- Remediation and/or isolation of Synthetic Based Mud (SBM) in the annulus of an additional well.
- Vessel-based inspection, maintenance and repair (IMR) activities.
- Removal and recovery of well infrastructure below the mudline.

Consultation information

A Consultation Information Sheet is attached, which provides additional background on the proposed activities including summaries of key impacts and risks and associated management measures. This is also available on our website.

Activity and location summary

Julimar-Brunello P&A EP	
Activity details	Activities include: • Permanent P&A of three Julimar-Brunello ETA wells: Julimar East-1, Brunello-1 ST 1 and Brulimar-1. • Remediation and/or isolation of SBM in the annulus of Balnaves Deep-1. • Removal of four wellheads, which may be recovered following P&A or temporarily placed on the seabed for later recovery. • Preparation and support activities (inspections, cleaning, pre-laying and recovery of moorings). • IMR activities.
Titles	WA-49-L, MODU moorings for Brulimar-1 may extend into WA-34-L (Woodside-operated title)
Location	Barrow sub-basin
Water depth	~135 m to ~ 170 m
Timing	• Preparatory (IMR) activities: approximately 1–7 days per wellhead. Earliest commencement March 2026. • Preparation and support activities: approximately 5–10 days per site. Earliest commencement March 2026.

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	• P&A activities: approximately 10–45 days per well (up to 180 days total). Earliest commencement April 2026, to be completed by December 2027. • SBM removal and/or isolation activity: 2–20 days. Earliest commencement April 2026, to be completed by December 2027. • Potential wellhead removal: commence any time after P&A activities completed.
Duration	• The EP will be in effect for a period of 5 years. • Operation will occur on a 24/7 basis during P&A and preparation activities. • IMR activities take place as required.
Infrastructure	Key infrastructure includes, but is not limited to: • Julimar East-1 • Brunello-1 ST 1 • Brulimar-1 • Balnaves Deep-1
Vessels	Key vessels include, but are not limited to: • MODU with combined dynamic positioning (DP) and mooring capability • Offshore support vessels (IMR vessel or anchor-handling tug supply vessel (AHTSV) • General support vessels (Infield support vessels (ISV) or platform supply vessels (PSV)) • Remotely Operated Vehicles (ROV) • Helicopters
Operational Area and exclusion zones	The location of infrastructure is marked on nautical charts. The Operational Area and exclusion zones include: • A 4000 m radius around each well to allow a moored MODU to undertake plugging for abandonment activities. • A 1500 m radius around each well for non-moored activities and 1000 m buffer around subsea infrastructure to allow for IMR activities. • A temporary 500 m exclusion zone to manage vessel movements around the MODU during P&A and SBM activities.

Environment that May Be Affected (EMBA)

The EMBA is the largest geographic area where an unplanned event could potentially have an environmental consequence. The broadest extent of the EMBA takes into consideration planned activities and unplanned events. The EMBA has been developed combining numerous modelling outputs based on highly unlikely releases of hydrocarbons to the environment. The modelling scenarios that inform the EMBA are loss of well containment during P&A, vessel collision, and SBM planned release.

The EMBA does not represent the extent of the predicted impact of a highly unlikely hydrocarbon release. Rather, the EMBA represents the merged area of many possible paths that a highly unlikely hydrocarbon

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release could travel, which depends on the weather and ocean conditions at the time of a release. This means that in the highly unlikely event that a hydrocarbon release does occur, the whole EMBA will not be affected. The specific and minimal part of the EMBA that is affected will only be known if there is a release.

Australian Marine Parks (AMPs)

We note Australian Government Guidance on consultation activities and confirm that:

- The Operational Area does not overlap any AMPs. The nearest AMP is the Montebello Australian Marine Park located approximately 3 km east of the Operational Area.
- The worst-case credible spill scenario assessed in this EP is a loss of well containment. Through review of hydrocarbon spill modelling, and with consideration of a 50 ppb dissolved and 100 ppb entrained hydrocarbon threshold, the following AMPs may be contacted in the event of a spill:
  - Montebello MP
  - Gascoyne MP
  - Ningaloo MP
- 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 (DNP) will be advised if an environmental incident occurs that may impact the values of any AMP.
- Woodside is aware of and will consider the *'Petroleum Activities and Australian Marine Parks'* guidance note developed and published jointly by DNP and NOPSEMA, while preparing this EP to ensure that the EP:
- Identifies and manages all impacts and risks on AMP values (including ecosystem values) to an acceptable level and has considered all options to avoid or reduce them to as low as reasonably practicable (ALARP).
- Clearly demonstrates that the activities will not be inconsistent with the North-west Marine Parks Network Management Plan 2018.

If there is a change in activities which results in an overlap or new impact to a marine park, Woodside will notify DNP.

Feedback

If you have feedback specific to the proposed activities, we welcome your feedback via email at consultation@feedback.woodside.com, via phone call at 1800 442 977 or via the feedback form on our website by **9 September 2025.** Alternatively, Woodside is willing to consider and accept your feedback via a means which suits you.

Your feedback and our response will be included in our EP, which will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023* (Cth). Your feedback may also be used to support other regulatory processes associated with the planned activities (which may or may not be confidential).

You may request that particular information you provide during consultation not be published in the EP made available on the NOPSEMA website. Please let us know if you request that particular information not be published, and we will make your request known to NOPSEMA.

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Regards,

Woodside Energy Consultation

6.1.43 Email sent to Department of Transport and Major Infrastructure (DTMI) – 11 August 2025

Woodside is planning to submit the Julimar-Brunello Plug and Abandonment (P&A) Environment Plan (EP) and other info as relevant. The Julimar-Brunello license is in Permit Title WA-49-L, with moorings potentially extending into WA-34-L, located in Commonwealth waters in the Northern Carnarvon Sub-basin, approximately 185 km west north-west of Karratha, Western Australia.

We are seeking feedback from relevant persons whose functions, interests or activities may be affected by the proposed activity. If you would like to comment on the proposed activity, please provide feedback to Woodside by 8 September 2025 using the details below.

Overview

Woodside proposes to undertake permanent P&A for four subsea exploration wells in the Julimar-Brunello licence. The wells underwent Exploration Temporary Abandonment (ETA) following exploration activities, however, the temporary abandonment methodology conducted does not align to the current legislative requirements and regulatory expectations for permanent abandonment, driving the need for further P&A activities, including:

- Permanent P&A of three wells using a Mobile Offshore Drilling Unit (MODU).
- Remediation and/or isolation of Synthetic Based Mud (SBM) in the annulus of an additional well.
- Vessel-based inspection, maintenance and repair (IMR) activities.
- Removal and recovery of well infrastructure below the mudline.

Consultation information

A Consultation Information Sheet is attached, which provides additional background on the proposed activities including summaries of key impacts and risks and associated management measures. This is also available on our website.

Activity and location summary

Julimar-Brunello P&A EP	
Activity details	Activities include: • Permanent P&A of three Julimar-Brunello ETA wells: Julimar East-1, Brunello-1 ST 1 and Brulimar-1. • Remediation and/or isolation of SBM in the annulus of Balnaves Deep-1. • Removal of four wellheads, which may be recovered following P&A or temporarily placed on the seabed for later recovery. • Preparation and support activities (inspections, cleaning, pre-laying and recovery of moorings). • IMR activities.

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Titles	WA-49-L, MODU moorings for Brulimar-1 may extend into WA-34-L (Woodside-operated title)
Location	Barrow sub-basin
Water depth	~135 m to ~ 170 m
Timing	• Preparatory (IMR) activities: approximately 1–7 days per wellhead. Earliest commencement March 2026. • Preparation and support activities: approximately 5–10 days per site. Earliest commencement March 2026. • P&A activities: approximately 10–45 days per well (up to 180 days total). Earliest commencement April 2026, to be completed by December 2027. • SBM removal and/or isolation activity: 2–20 days. Earliest commencement April 2026, to be completed by December 2027. • Potential wellhead removal: commence any time after P&A activities completed.
Duration	• The EP will be in effect for a period of 5 years. • Operation will occur on a 24/7 basis during P&A and preparation activities. • IMR activities take place as required.
Infrastructure	Key infrastructure includes, but is not limited to: • Julimar East-1 • Brunello-1 ST 1 • Brulimar-1 • Balnaves Deep-1
Vessels	Key vessels include, but are not limited to: • MODU with combined dynamic positioning (DP) and mooring capability • Offshore support vessels (IMR vessel or anchor-handling tug supply vessel (AHTSV) • General support vessels (Infield support vessels (ISV) or platform supply vessels (PSV)) • Remotely Operated Vehicles (ROV) • Helicopters
Operational Area and exclusion zones	The location of infrastructure is marked on nautical charts. The Operational Area and exclusion zones include: • A 4000 m radius around each well to allow a moored MODU to undertake plugging for abandonment activities.

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	• A 1500 m radius around each well for non-moored activities and 1000 m buffer around subsea infrastructure to allow for IMR activities. • A temporary 500 m exclusion zone to manage vessel movements around the MODU during P&A and SBM activities.

Environment that May Be Affected (EMBA)

The EMBA is the largest geographic area where an unplanned event could potentially have an environmental consequence. The broadest extent of the EMBA takes into consideration planned activities and unplanned events. The EMBA has been developed combining numerous modelling outputs based on highly unlikely releases of hydrocarbons to the environment. The modelling scenarios that inform the EMBA are loss of well containment during P&A, vessel collision, and SBM planned release.

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.

If there is a risk of a spill impacting State waters, Woodside will further consult the Department of Transport and Major Infrastructure as outlined in the Department of Transport and Major Infrastructure's Offshore Petroleum Industry Guidance Note – *Marine Oil Pollution: Response and Consultation Arrangements* (July 2020).

Feedback

If you have feedback specific to the proposed activities, we welcome your feedback via email at consultation@feedback.woodside.com, via phone call at 1800 442 977 or via the feedback form on our website by **8 September 2025.** Alternatively, Woodside is willing to consider and accept your feedback via a means which suits you.

Your feedback and our response will be included in our EP, which will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023* (Cth). Your feedback may also be used to support other regulatory processes associated with the planned activities (which may or may not be confidential).

You may request that particular information you provide during consultation not be published in the EP made available on the NOPSEMA website. Please let us know if you request that particular information not be published, and we will make your request known to NOPSEMA.

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Regards,

Woodside Energy Consultation

6.1.44 Email sent to Department of Primary Industries and Regional Development (DPIRD) – 11 August 2025

Woodside is planning to submit the Julimar-Brunello Plug and Abandonment (P&A) Environment Plan (EP) and other info as relevant. The Julimar-Brunello license is in Permit Title WA-49-L, with moorings potentially

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extending into WA-34-L, located in Commonwealth waters in the Northern Carnarvon Sub-basin, approximately 185 km west north-west of Karratha, Western Australia.

We are seeking feedback from relevant persons whose functions, interests or activities may be affected by the proposed activity. If you would like to comment on the proposed activity, please provide feedback to Woodside by 8 September 2025 using the details below.

Overview

Woodside proposes to undertake permanent P&A for four subsea exploration wells in the Julimar-Brunello licence. The wells underwent Exploration Temporary Abandonment (ETA) following exploration activities, however, the temporary abandonment methodology conducted does not align to the current legislative requirements and regulatory expectations for permanent abandonment, driving the need for further P&A activities, including:

- Permanent P&A of three wells using a Mobile Offshore Drilling Unit (MODU).
- Remediation and/or isolation of Synthetic Based Mud (SBM) in the annulus of an additional well.
- Vessel-based inspection, maintenance and repair (IMR) activities.
- Removal and recovery of well infrastructure below the mudline.

Consultation information

A Consultation Information Sheet is attached, which provides additional background on the proposed activities including summaries of key impacts and risks and associated management measures. This is also available on our website.

Activity and location summary

Julimar-Brunello P&A EP	
Activity details	Activities include: • Permanent P&A of three Julimar-Brunello ETA wells: Julimar East-1, Brunello-1 ST 1 and Brulimar-1. • Remediation and/or isolation of SBM in the annulus of Balnaves Deep-1. • Removal of four wellheads, which may be recovered following P&A or temporarily placed on the seabed for later recovery. • Preparation and support activities (inspections, cleaning, pre-laying and recovery of moorings). • IMR activities.
Titles	WA-49-L, MODU moorings for Brulimar-1 may extend into WA-34-L (Woodside-operated title)
Location	Barrow sub-basin
Water depth	~135 m to ~ 170 m

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Timing	• Preparatory (IMR) activities: approximately 1–7 days per wellhead. Earliest commencement March 2026. • Preparation and support activities: approximately 5–10 days per site. Earliest commencement March 2026. • P&A activities: approximately 10–45 days per well (up to 180 days total). Earliest commencement April 2026, to be completed by December 2027. • SBM removal and/or isolation activity: 2–20 days. Earliest commencement April 2026, to be completed by December 2027. • Potential wellhead removal: commence any time after P&A activities completed.
Duration	• The EP will be in effect for a period of 5 years. • Operation will occur on a 24/7 basis during P&A and preparation activities. • IMR activities take place as required.
Infrastructure	Key infrastructure includes, but is not limited to: • Julimar East-1 • Brunello-1 ST 1 • Brulimar-1 • Balnaves Deep-1
Vessels	Key vessels include, but are not limited to: • MODU with combined dynamic positioning (DP) and mooring capability • Offshore support vessels (IMR vessel or anchor-handling tug supply vessel (AHTSV) • General support vessels (Infield support vessels (ISV) or platform supply vessels (PSV)) • Remotely Operated Vehicles (ROV) • Helicopters
Operational Area and exclusion zones	The location of infrastructure is marked on nautical charts. The Operational Area and exclusion zones include: • A 4000 m radius around each well to allow a moored MODU to undertake plugging for abandonment activities. • A 1500 m radius around each well for non-moored activities and 1000 m buffer around subsea infrastructure to allow for IMR activities. • A temporary 500 m exclusion zone to manage vessel movements around the MODU during P&A and SBM activities.

Environment that May Be Affected (EMBA)

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The EMBA does not represent the extent of the predicted impact of a highly unlikely hydrocarbon release. Rather, the EMBA represents the merged area of many possible paths that a highly unlikely hydrocarbon release could travel, which depends on the weather and ocean conditions at the time of a release. This means that in the highly unlikely event that a hydrocarbon release does occur, the whole EMBA will not be affected. The specific and minimal part of the EMBA that is affected will only be known if there is a release.

State fisheries

State fisheries active in the Operational Area:

- Mackerel Managed Fishery
- Marine Aquarium Fish Managed Fishery
- Onslow Prawn Managed Fishery
- Pilbara Trap Managed Fishery
- Pilbara Line Fishery

State fisheries active in the EMBA:

- West Australian Sea Cucumber Fishery
- Exmouth Gulf Prawn Managed Fishery
- Mackerel Managed Fishery
- Marine Aquarium Fish Managed Fishery
- Nickol Bay Prawn Managed Fishery
- Onslow Prawn Managed Fishery
- Pilbara Crab Managed Fishery
- Pilbara Fish Trawl (Interim) Managed Fishery
- Pilbara Trap Managed Fishery
- Pilbara Line Fishery (Condition)
- Specimen Shell Managed Fishery
- West Coast Deep Sea Crustacean Managed Fishery

Please note that Woodside has provided consultation information to the Western Australian Fishing Industry Council (WAFIC), Aquaculture Council of Western Australia (ACWA) and Recfishwest. Information provided to these bodies includes the planned timing and duration of the activities, and the spatial extent of the proposed activities (including any exclusion zones).

Woodside consults individual fishing license holders based on WAFIC's guidance and advice, whereby WAFIC:

- directly consults fishery licence holders that are assessed as having a potential for interaction in the Operational Area
- consults fisheries that are assessed as having a potential for interaction in the EMBA only in the event of an unplanned emergency scenario.

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Woodside also consults with relevant Traditional Owners in the preparation of this EP.

Spill Contingency Plans

Within Woodside's Oil Pollution First Strike Plan (FSP), Woodside commits to notifying Department of Transport and Major Infrastructure (DTMI) within 2 hours of becoming aware of a marine pollution incident that occurs in or may impact State waters. Woodside also consults DTMI in the development of the FSP.

Woodside commits to notify DPIRD within 24 hours of our reporting the incident to the appropriate authority. We have noted this contact as environment@dpird.wa.gov.au and placed this in the Notification section of the FSP.

In addition, within the FSP, Woodside commits to identify and notify additional relevant persons and organisations such as, but not limited to, commercial fishers or tourism operators that may be affected during a spill event. Woodside would, at the relevant time, engage with these parties as appropriate and will re-assess relevant persons and organisations throughout the response period.

Woodside mitigates the risk of spill events through the adoption of a range of preventative controls (including engineering design) that all contribute to reducing the likelihood of a spill event to an unlikely level. Whilst modelling for this activity does not predict contact with coastal regions, in the unlikely event of a spill to the marine environment, a suite of monitoring techniques (including satellite imagery, aerial surveillance, deployment of spill tracker buoys, and detailed predictive computer modelling) would be deployed from the outset of an incident provide continuous situational awareness of the location, trajectory and nature of the hydrocarbons present in the marine environment. This would allow early identification of sensitive coastal areas, including commercially important fish species spawning and aggregation areas, that may be contacted by hydrocarbons and, therefore, relevant mitigations employed.

Woodside's oil spill Operational and Scientific Monitoring (OSM) Program is executed under the Joint Industry OSM Framework (AEP, 2021). In the event of a spill, the OSM Framework will guide the situational awareness and response as well as undertake a suite of comprehensive science-based monitoring programs to evaluate environmental damage. One such program is dedicated to the impacts on fisheries. The fisheries impact assessment has two objectives – to assess any physiological impacts to important fish and shellfish species and to assess targeted fish and shellfish species for hydrocarbon contamination.

Biosecurity

Woodside contracts support, IMR and MODU vessel services for the petroleum activity described in the EP. Woodside works closely with contractors to ensure compliance with all requirements previously requested by DPIRD including DPIRD's policy that marine pests or disease are reported within 24 hours. A 24-hour notification will be formally captured as a notification within the EP and communicated to vessel operators.

All vessels are required to comply with the Australian Biosecurity Act 2015, specifically the Australian Ballast Water Management Requirements (as defined under the Biosecurity Act 2015) (aligned with the International Convention for the Control and Management of Ships' Ballast Water and Sediments) to prevent introducing invasive marine species (IMS). Vessels will be assessed and managed to prevent the introduction of IMS in accordance with Woodside's IMS Management Plan. Woodside's IMS 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.

Feedback

If you have feedback specific to the proposed activities, we welcome your feedback via email at consultation@feedback.woodside.com, via phone call at 1800 442 977 or via the feedback form on our website by **8 September 2025.** Alternatively, Woodside is willing to consider and accept your feedback via a means which suits you.

Your feedback and our response will be included in our EP, which will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023* (Cth). Your feedback

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may also be used to support other regulatory processes associated with the planned activities (which may or may not be confidential).

You may request that particular information you provide during consultation not be published in the EP made available on the NOPSEMA website. Please let us know if you request that particular information not be published, and we will make your request known to NOPSEMA.

NOPSEMA has published the brochure *Consultation on offshore petroleum environment plans – Information for the Community* to help community members understand consultation requirements for Commonwealth EPs and how to participate in consultation.

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Regards,

Woodside Energy Consultation

6.1.45 Email sent to Recreational Marine Users – 11 August 2025

- Gascoyne Recreational Marine Users
- Pilbara/Kimberley Recreational Marine Users

Woodside is planning to submit the Julimar-Brunello Plug and Abandonment (P&A) Environment Plan (EP) and other info as relevant. The Julimar-Brunello license is in Permit Title WA-49-L, with moorings potentially extending into WA-34-L, located in Commonwealth waters in the Northern Carnarvon Sub-basin, approximately 185 km west north-west of Karratha, Western Australia.

We are seeking feedback from relevant persons whose functions, interests or activities may be affected by the proposed activity. If you would like to comment on the proposed activity, please provide feedback to Woodside by 8 September 2025 using the details below.

Overview

Woodside proposes to undertake permanent P&A for four subsea exploration wells in the Julimar-Brunello licence. The wells underwent Exploration Temporary Abandonment (ETA) following exploration activities, however, the temporary abandonment methodology conducted does not align to the current legislative requirements and regulatory expectations for permanent abandonment, driving the need for further P&A activities, including:

- Permanent P&A of three wells using a Mobile Offshore Drilling Unit (MODU).
- Remediation and/or isolation of Synthetic Based Mud (SBM) in the annulus of an additional well.
- Vessel-based inspection, maintenance and repair (IMR) activities.
- Removal and recovery of well infrastructure below the mudline.

Consultation information

A Consultation Information Sheet is attached, which provides additional background on the proposed activities including summaries of key impacts and risks and associated management measures. This is also available on our website.

Activity and location summary

Julimar-Brunello P&A EP

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Activity details	Activities include: • Permanent P&A of three Julimar-Brunello ETA wells: Julimar East-1, Brunello-1 ST 1 and Brulimar-1. • Remediation and/or isolation of SBM in the annulus of Balnaves Deep-1. • Removal of four wellheads, which may be recovered following P&A or temporarily placed on the seabed for later recovery. • Preparation and support activities (inspections, cleaning, pre-laying and recovery of moorings). • IMR activities.
Titles	WA-49-L, MODU moorings for Brulimar-1 may extend into WA-34-L (Woodside-operated title)
Location	Barrow sub-basin
Water depth	~135 m to ~ 170 m
Timing	• Preparatory (IMR) activities: approximately 1–7 days per wellhead. Earliest commencement March 2026. • Preparation and support activities: approximately 5–10 days per site. Earliest commencement March 2026. • P&A activities: approximately 10–45 days per well (up to 180 days total). Earliest commencement April 2026, to be completed by December 2027. • SBM removal and/or isolation activity: 2–20 days. Earliest commencement April 2026, to be completed by December 2027. • Potential wellhead removal: commence any time after P&A activities completed.
Duration	• The EP will be in effect for a period of 5 years. • Operation will occur on a 24/7 basis during P&A and preparation activities. • IMR activities take place as required.
Infrastructure	Key infrastructure includes, but is not limited to: • Julimar East-1 • Brunello-1 ST 1 • Brulimar-1 • Balnaves Deep-1

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Vessels	Key vessels include, but are not limited to: • MODU with combined dynamic positioning (DP) and mooring capability • Offshore support vessels (IMR vessel or anchor-handling tug supply vessel (AHTSV) • General support vessels (Infield support vessels (ISV) or platform supply vessels (PSV)) • Remotely Operated Vehicles (ROV) • Helicopters
Operational Area and exclusion zones	The location of infrastructure is marked on nautical charts. The Operational Area and exclusion zones include: • A 4000 m radius around each well to allow a moored MODU to undertake plugging for abandonment activities. • A 1500 m radius around each well for non-moored activities and 1000 m buffer around subsea infrastructure to allow for IMR activities. • A temporary 500 m exclusion zone to manage vessel movements around the MODU during P&A and SBM activities.

Environment that May Be Affected (EMBA)

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Feedback

If you have feedback specific to the proposed activities, we welcome your feedback via email at consultation@feedback.woodside.com, via phone call at 1800 442 977 or via the feedback form on our website by **8 September 2025.** Alternatively, Woodside is willing to consider and accept your feedback via a means which suits you.

Your feedback and our response will be included in our EP, which will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023* (Cth). Your feedback may also be used to support other regulatory processes associated with the planned activities (which may or may not be confidential).

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Regards,

Woodside Energy Consultation

6.1.46 Letter sent to Recreational Marine Users – 11 August 2025

- Gascoyne Recreational Marine Users
- Pilbara/Kimberley Recreational Marine Users
- South Coast Recreational Marine Users
- West Coast Recreational Marine Users

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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

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

11 August 2025

[redacted]

Dear Stakeholder

Woodside is planning to submit the Julimar-Brunello Plug and Abandonment (P&A) Environment Plan (EP) and other info as relevant. The Julimar-Brunello license is in Permit Title WA-49-L, with moorings potentially extending into WA-34-L, located in Commonwealth waters in the Northern Carnarvon Sub-basin, approximately 185 km west north-west of Karratha, Western Australia.

We are seeking feedback from relevant persons whose functions, interests or activities may be affected by the proposed activity. If you would like to comment on the proposed activity, please provide feedback to Woodside by **8 September 2025** using the details below.

Overview

Woodside proposes to undertake permanent P&A for four subsea exploration wells in the Julimar-Brunello licence. The wells underwent Exploration Temporary Abandonment (ETA) following exploration activities, however, the temporary abandonment methodology conducted does not align to the current legislative requirements and regulatory expectations for permanent abandonment, driving the need for further P&A activities, including:

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- Remediation and/or isolation of Synthetic Based Mud (SBM) in the annulus of an additional well.
- Vessel-based inspection, maintenance and repair (IMR) activities.
- Removal and recovery of well infrastructure below the mudline.

Consultation information

A Consultation Information Sheet is attached, which provides additional background on the proposed activities including summaries of key impacts and risks and associated management measures. This is also available on our website.

Activity and location summary

Julimar-Brunello P&A EP	
Activity details	Activities include: • Permanent P&A of three Julimar-Brunello ETA wells: Julimar East-1, Brunello-1 ST 1 and Brulimar-1. • Remediation and/or isolation of SBM in the annulus of Balnaves Deep-1. • Removal of four wellheads, which may be recovered following P&A or temporarily placed on the seabed for later recovery. • Preparation and support activities (inspections, cleaning, pre-laying and recovery of moorings). • IMR activities.
Titles	WA-49-L, MODU moorings for Brulimar-1 may extend into WA-34-L (Woodside-operated title)

Julimar-Brunello P&A EP	
Location	Barrow sub-basin
Water depth	~135 m to ~ 170 m
Timing	• Preparatory (IMR) activities: approximately 1–7 days per wellhead. Earliest commencement March 2026. • Preparation and support activities: approximately 5–10 days per site. Earliest commencement March 2026. • P&A activities: approximately 10–60 days per well (up to 180 days total). Earliest commencement April 2026, to be completed by December 2027. • SBM removal and/or isolation activity: 2–20 days. Earliest commencement April 2026, to be completed by December 2027. • Potential wellhead removal: commence any time after P&A activities completed.
Duration	• The EP will be in effect for a period of 5 years. • Operation will occur on a 24/7 basis during P&A and preparation activities. • IMR activities take place as required.
Infrastructure	Key infrastructure includes, but is not limited to: • Julimar East-1 • Brunello-1 ST 1 • Brulimar-1 • Balnaves Deep-1
Vessels	Key vessels include, but are not limited to: • MODU with combined dynamic positioning (DP) and mooring capability • Offshore support vessels (IMR vessel or anchor-handling tug supply vessel (AHTSV) • General support vessels (Infield support vessels (ISV) or platform supply vessels (PSV)) • Remotely Operated Vehicles (ROV) • Helicopters
Operational Area and exclusion zones	The location of infrastructure is marked on nautical charts. The Operational Area and exclusion zones include: • A 4000 m radius around each well to allow a moored MODU to undertake plugging for abandonment activities. • A 1500 m radius around each well for non-moored activities and 1000 m buffer around subsea infrastructure to allow for IMR activities. • A temporary 500 m exclusion zone to manage vessel movements around the MODU during P&A and SBM activities.

Environment that May Be Affected (EMBA)

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scenarios that inform the EMBA are loss of well containment during P&A, vessel collision, and SBM planned release.

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Regards

Woodside Energy Consultation

Woodside Energy
Mia Yellagonga
Karlak, 11 Mount Street
Perth WA 6000
Australia

T: 1800 442 977
E: consultation@feedback.woodside.com
www.woodside.com

6.1.47 Email sent to Marine Tourism WA – 11 August 2025

Woodside is planning to submit the Julimar-Brunello Plug and Abandonment (P&A) Environment Plan (EP) and other info as relevant. The Julimar-Brunello license is in Permit Title WA-49-L, with moorings potentially extending into WA-34-L, located in Commonwealth waters in the Northern Carnarvon Sub-basin, approximately 185 km west north-west of Karratha, Western Australia.

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Overview

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- Remediation and/or isolation of Synthetic Based Mud (SBM) in the annulus of an additional well.
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- Removal and recovery of well infrastructure below the mudline.

Consultation information

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Activity and location summary

Julimar-Brunello P&A EP	
Activity details	Activities include: • Permanent P&A of three Julimar-Brunello ETA wells: Julimar East-1, Brunello-1 ST 1 and Brulimar-1. • Remediation and/or isolation of SBM in the annulus of Balnaves Deep-1. • Removal of four wellheads, which may be recovered following P&A or temporarily placed on the seabed for later recovery. • Preparation and support activities (inspections, cleaning, pre-laying and recovery of moorings). • IMR activities.
Titles	WA-49-L, MODU moorings for Brulimar-1 may extend into WA-34-L (Woodside-operated title)
Location	Barrow sub-basin
Water depth	~135 m to ~ 170 m

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Timing	• Preparatory (IMR) activities: approximately 1–7 days per wellhead. Earliest commencement March 2026. • Preparation and support activities: approximately 5–10 days per site. Earliest commencement March 2026. • P&A activities: approximately 10–45 days per well (up to 180 days total). Earliest commencement April 2026, to be completed by December 2027. • SBM removal and/or isolation activity: 2–20 days. Earliest commencement April 2026, to be completed by December 2027. • Potential wellhead removal: commence any time after P&A activities completed.
Duration	• The EP will be in effect for a period of 5 years. • Operation will occur on a 24/7 basis during P&A and preparation activities. • IMR activities take place as required.
Infrastructure	Key infrastructure includes, but is not limited to: • Julimar East-1 • Brunello-1 ST 1 • Brulimar-1 • Balnaves Deep-1
Vessels	Key vessels include, but are not limited to: • MODU with combined dynamic positioning (DP) and mooring capability • Offshore support vessels (IMR vessel or anchor-handling tug supply vessel (AHTSV) • General support vessels (Infield support vessels (ISV) or platform supply vessels (PSV)) • Remotely Operated Vehicles (ROV) • Helicopters
Operational Area and exclusion zones	The location of infrastructure is marked on nautical charts. The Operational Area and exclusion zones include: • A 4000 m radius around each well to allow a moored MODU to undertake plugging for abandonment activities. • A 1500 m radius around each well for non-moored activities and 1000 m buffer around subsea infrastructure to allow for IMR activities. • A temporary 500 m exclusion zone to manage vessel movements around the MODU during P&A and SBM activities.

Environment that May Be Affected (EMBA)

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Regards,

Woodside Energy Consultation

6.1.48 Email sent to Recfishwest – 11 August 2025

Woodside is planning to submit the Julimar-Brunello Plug and Abandonment (P&A) Environment Plan (EP) and other info as relevant. The Julimar-Brunello license is in Permit Title WA-49-L, with moorings potentially extending into WA-34-L, located in Commonwealth waters in the Northern Carnarvon Sub-basin, approximately 185 km west north-west of Karratha, Western Australia.

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- Remediation and/or isolation of Synthetic Based Mud (SBM) in the annulus of an additional well.
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Activity and location summary

Julimar-Brunello P&A EP	
Activity details	Activities include: • Permanent P&A of three Julimar-Brunello ETA wells: Julimar East-1, Brunello-1 ST 1 and Brulimar-1. • Remediation and/or isolation of SBM in the annulus of Balnaves Deep-1. • Removal of four wellheads, which may be recovered following P&A or temporarily placed on the seabed for later recovery. • Preparation and support activities (inspections, cleaning, pre-laying and recovery of moorings). • IMR activities.
Titles	WA-49-L, MODU moorings for Brulimar-1 may extend into WA-34-L (Woodside-operated title)
Location	Barrow sub-basin
Water depth	~135 m to ~ 170 m
Timing	• Preparatory (IMR) activities: approximately 1–7 days per wellhead. Earliest commencement March 2026. • Preparation and support activities: approximately 5–10 days per site. Earliest commencement March 2026. • P&A activities: approximately 10–45 days per well (up to 180 days total). Earliest commencement April 2026, to be completed by December 2027. • SBM removal and/or isolation activity: 2–20 days. Earliest commencement April 2026, to be completed by December 2027. • Potential wellhead removal: commence any time after P&A activities completed.
Duration	• The EP will be in effect for a period of 5 years. • Operation will occur on a 24/7 basis during P&A and preparation activities. • IMR activities take place as required.

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Infrastructure	Key infrastructure includes, but is not limited to: • Julimar East-1 • Brunello-1 ST 1 • Brulimar-1 • Balnaves Deep-1
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Environment that May Be Affected (EMBA)

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Feedback

If you have feedback specific to the proposed activities, we welcome your feedback via email at consultation@feedback.woodside.com, via phone call at 1800 442 977 or via the feedback form on our website by **8 September 2025.** Alternatively, Woodside is willing to consider and accept your feedback via a means which suits you.

Your feedback and our response will be included in our EP, which will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023* (Cth). Your feedback

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may also be used to support other regulatory processes associated with the planned activities (which may or may not be confidential).

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Regards,

Woodside Energy Consultation

6.1.49 Email sent to WA Game Fishing Association – 11 August 2025

Woodside is planning to submit the Julimar-Brunello Plug and Abandonment (P&A) Environment Plan (EP) and other info as relevant. The Julimar-Brunello license is in Permit Title WA-49-L, with moorings potentially extending into WA-34-L, located in Commonwealth waters in the Northern Carnarvon Sub-basin, approximately 185 km west north-west of Karratha, Western Australia.

We are seeking feedback from relevant persons whose functions, interests or activities may be affected by the proposed activity. If you would like to comment on the proposed activity, please provide feedback to Woodside by 8 September 2025 using the details below.

Overview

Woodside proposes to undertake permanent P&A for four subsea exploration wells in the Julimar-Brunello licence. The wells underwent Exploration Temporary Abandonment (ETA) following exploration activities, however, the temporary abandonment methodology conducted does not align to the current legislative requirements and regulatory expectations for permanent abandonment, driving the need for further P&A activities, including:

- Permanent P&A of three wells using a Mobile Offshore Drilling Unit (MODU).
- Remediation and/or isolation of Synthetic Based Mud (SBM) in the annulus of an additional well.
- Vessel-based inspection, maintenance and repair (IMR) activities.
- Removal and recovery of well infrastructure below the mudline.

Consultation information

A Consultation Information Sheet is attached, which provides additional background on the proposed activities including summaries of key impacts and risks and associated management measures. This is also available on our website.

Activity and location summary

Julimar-Brunello P&A EP	
Activity details	Activities include: • Permanent P&A of three Julimar-Brunello ETA wells: Julimar East-1, Brunello-1 ST 1 and Brulimar-1. • Remediation and/or isolation of SBM in the annulus of Balnaves Deep-1.

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	• Removal of four wellheads, which may be recovered following P&A or temporarily placed on the seabed for later recovery. • Preparation and support activities (inspections, cleaning, pre-laying and recovery of moorings). • IMR activities.
Titles	WA-49-L, MODU moorings for Brulimar-1 may extend into WA-34-L (Woodside-operated title)
Location	Barrow sub-basin
Water depth	~135 m to ~ 170 m
Timing	• Preparatory (IMR) activities: approximately 1–7 days per wellhead. Earliest commencement March 2026. • Preparation and support activities: approximately 5–10 days per site. Earliest commencement March 2026. • P&A activities: approximately 10–45 days per well (up to 180 days total). Earliest commencement April 2026, to be completed by December 2027. • SBM removal and/or isolation activity: 2–20 days. Earliest commencement April 2026, to be completed by December 2027. • Potential wellhead removal: commence any time after P&A activities completed.
Duration	• The EP will be in effect for a period of 5 years. • Operation will occur on a 24/7 basis during P&A and preparation activities. • IMR activities take place as required.
Infrastructure	Key infrastructure includes, but is not limited to: • Julimar East-1 • Brunello-1 ST 1 • Brulimar-1 • Balnaves Deep-1
Vessels	Key vessels include, but are not limited to: • MODU with combined dynamic positioning (DP) and mooring capability • Offshore support vessels (IMR vessel or anchor-handling tug supply vessel (AHTSV) • General support vessels (Infield support vessels (ISV) or platform supply vessels (PSV)) • Remotely Operated Vehicles (ROV) • Helicopters

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Operational Area and exclusion zones	The location of infrastructure is marked on nautical charts. The Operational Area and exclusion zones include: • A 4000 m radius around each well to allow a moored MODU to undertake plugging for abandonment activities. • A 1500 m radius around each well for non-moored activities and 1000 m buffer around subsea infrastructure to allow for IMR activities. • A temporary 500 m exclusion zone to manage vessel movements around the MODU during P&A and SBM activities.

Environment that May Be Affected (EMBA)

The EMBA is the largest geographic area where an unplanned event could potentially have an environmental consequence. The broadest extent of the EMBA takes into consideration planned activities and unplanned events. The EMBA has been developed combining numerous modelling outputs based on highly unlikely releases of hydrocarbons to the environment. The modelling scenarios that inform the EMBA are loss of well containment during P&A, vessel collision, and SBM planned release.

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Feedback

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Regards,

Woodside Energy Consultation

6.1.50 Email sent to Department of Climate Change, Energy, the Environment and Water (DCCEEW) – 11 August 2025

Woodside is planning to submit the Julimar-Brunello Plug and Abandonment (P&A) Environment Plan (EP) and other info as relevant. The Julimar-Brunello license is in Permit Title WA-49-L, with moorings potentially

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extending into WA-34-L, located in Commonwealth waters in the Northern Carnarvon Sub-basin, approximately 185 km west north-west of Karratha, Western Australia.

We are seeking feedback from relevant persons whose functions, interests or activities may be affected by the proposed activity. If you would like to comment on the proposed activity, please provide feedback to Woodside by 8 September 2025 using the details below.

Overview

Woodside proposes to undertake permanent P&A for four subsea exploration wells in the Julimar-Brunello licence. The wells underwent Exploration Temporary Abandonment (ETA) following exploration activities, however, the temporary abandonment methodology conducted does not align to the current legislative requirements and regulatory expectations for permanent abandonment, driving the need for further P&A activities, including:

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- Remediation and/or isolation of Synthetic Based Mud (SBM) in the annulus of an additional well.
- Vessel-based inspection, maintenance and repair (IMR) activities.
- Removal and recovery of well infrastructure below the mudline.

Consultation information

A Consultation Information Sheet is attached, which provides additional background on the proposed activities including summaries of key impacts and risks and associated management measures. This is also available on our website.

Please also find attached the details of WA shipwrecks that are relevant for this EP.

Activity and location summary

Julimar-Brunello P&A EP	
Activity details	Activities include: • Permanent P&A of three Julimar-Brunello ETA wells: Julimar East-1, Brunello-1 ST 1 and Brulimar-1. • Remediation and/or isolation of SBM in the annulus of Balnaves Deep-1. • Removal of four wellheads, which may be recovered following P&A or temporarily placed on the seabed for later recovery. • Preparation and support activities (inspections, cleaning, pre-laying and recovery of moorings). • IMR activities.
Titles	WA-49-L, MODU moorings for Brulimar-1 may extend into WA-34-L (Woodside-operated title)
Location	Barrow sub-basin
Water depth	~135 m to ~ 170 m

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Timing	• Preparatory (IMR) activities: approximately 1–7 days per wellhead. Earliest commencement March 2026. • Preparation and support activities: approximately 5–10 days per site. Earliest commencement March 2026. • P&A activities: approximately 10–45 days per well (up to 180 days total). Earliest commencement April 2026, to be completed by December 2027. • SBM removal and/or isolation activity: 2–20 days. Earliest commencement April 2026, to be completed by December 2027. • Potential wellhead removal: commence any time after P&A activities completed.
Duration	• The EP will be in effect for a period of 5 years. • Operation will occur on a 24/7 basis during P&A and preparation activities. • IMR activities take place as required.
Infrastructure	Key infrastructure includes, but is not limited to: • Julimar East-1 • Brunello-1 ST 1 • Brulimar-1 • Balnaves Deep-1
Vessels	Key vessels include, but are not limited to: • MODU with combined dynamic positioning (DP) and mooring capability • Offshore support vessels (IMR vessel or anchor-handling tug supply vessel (AHTSV) • General support vessels (Infield support vessels (ISV) or platform supply vessels (PSV)) • Remotely Operated Vehicles (ROV) • Helicopters
Operational Area and exclusion zones	The location of infrastructure is marked on nautical charts. The Operational Area and exclusion zones include: • A 4000 m radius around each well to allow a moored MODU to undertake plugging for abandonment activities. • A 1500 m radius around each well for non-moored activities and 1000 m buffer around subsea infrastructure to allow for IMR activities. • A temporary 500 m exclusion zone to manage vessel movements around the MODU during P&A and SBM activities.

Environment that May Be Affected (EMBA)

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Feedback

If you have feedback specific to the proposed activities, we welcome your feedback via email at consultation@feedback.woodside.com, via phone call at 1800 442 977 or via the feedback form on our website by **8 September 2025.** Alternatively, Woodside is willing to consider and accept your feedback via a means which suits you.

Your feedback and our response will be included in our EP, which will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023* (Cth). Your feedback may also be used to support other regulatory processes associated with the planned activities (which may or may not be confidential).

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Regards,

Woodside Energy Consultation

6.1.51 Email sent to Department of Planning, Lands and Heritage (DPLH) – 11 August 2025

Woodside is planning to submit the Julimar-Brunello Plug and Abandonment (P&A) Environment Plan (EP) and other info as relevant. The Julimar-Brunello license is in Permit Title WA-49-L, with moorings potentially extending into WA-34-L, located in Commonwealth waters in the Northern Carnarvon Sub-basin, approximately 185 km west north-west of Karratha, Western Australia.

We are seeking feedback from relevant persons whose functions, interests or activities may be affected by the proposed activity. If you would like to comment on the proposed activity, please provide feedback to Woodside by 8 September 2025 using the details below.

Overview

Woodside proposes to undertake permanent P&A for four subsea exploration wells in the Julimar-Brunello licence. The wells underwent Exploration Temporary Abandonment (ETA) following exploration activities, however, the temporary abandonment methodology conducted does not align to the current legislative requirements and regulatory expectations for permanent abandonment, driving the need for further P&A activities, including:

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- Permanent P&A of three wells using a Mobile Offshore Drilling Unit (MODU).
- Remediation and/or isolation of Synthetic Based Mud (SBM) in the annulus of an additional well.
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- Removal and recovery of well infrastructure below the mudline.

Consultation information

A Consultation Information Sheet is attached, which provides additional background on the proposed activities including summaries of key impacts and risks and associated management measures. This is also available on our website.

Please also find attached the details of WA shipwrecks that are relevant for this EP.

Given the proximity of the proposed activities to Marine Parks, Woodside is consulting with the Department of Biodiversity, Conservation and Attractions (DBCA) for this EP. Woodside is also consulting with the Western Australian Museum and provided it with relevant shipwreck information for this EP.

Activity and location summary

Julimar-Brunello P&A EP	
Activity details	Activities include: • Permanent P&A of three Julimar-Brunello ETA wells: Julimar East-1, Brunello-1 ST 1 and Brulimar-1. • Remediation and/or isolation of SBM in the annulus of Balnaves Deep-1. • Removal of four wellheads, which may be recovered following P&A or temporarily placed on the seabed for later recovery. • Preparation and support activities (inspections, cleaning, pre-laying and recovery of moorings). • IMR activities.
Titles	WA-49-L, MODU moorings for Brulimar-1 may extend into WA-34-L (Woodside-operated title)
Location	Barrow sub-basin
Water depth	~135 m to ~ 170 m
Timing	• Preparatory (IMR) activities: approximately 1–7 days per wellhead. Earliest commencement March 2026. • Preparation and support activities: approximately 5–10 days per site. Earliest commencement March 2026. • P&A activities: approximately 10–45 days per well (up to 180 days total). Earliest commencement April 2026, to be completed by December 2027. • SBM removal and/or isolation activity: 2–20 days. Earliest commencement April 2026, to be completed by December 2027. • Potential wellhead removal: commence any time after P&A activities completed.

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Duration	• The EP will be in effect for a period of 5 years. • Operation will occur on a 24/7 basis during P&A and preparation activities. • IMR activities take place as required.
Infrastructure	Key infrastructure includes, but is not limited to: • Julimar East-1 • Brunello-1 ST 1 • Brulimar-1 • Balnaves Deep-1
Vessels	Key vessels include, but are not limited to: • MODU with combined dynamic positioning (DP) and mooring capability • Offshore support vessels (IMR vessel or anchor-handling tug supply vessel (AHTSV) • General support vessels (Infield support vessels (ISV) or platform supply vessels (PSV)) • Remotely Operated Vehicles (ROV) • Helicopters
Operational Area and exclusion zones	The location of infrastructure is marked on nautical charts. The Operational Area and exclusion zones include: • A 4000 m radius around each well to allow a moored MODU to undertake plugging for abandonment activities. • A 1500 m radius around each well for non-moored activities and 1000 m buffer around subsea infrastructure to allow for IMR activities. • A temporary 500 m exclusion zone to manage vessel movements around the MODU during P&A and SBM activities.

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our website by **8 September 2025.** Alternatively, Woodside is willing to consider and accept your feedback via a means which suits you.

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Regards,

Woodside Energy Consultation

6.1.52 Email sent to Department of Water and Environmental Regulation (DWER) – 21 August 2025

As advised by DPLH, Woodside seeks the feedback of DWER on the following environment plan. Please advise if there is a more suitable email address for ongoing consultations.

Woodside is planning to submit the Julimar-Brunello Plug and Abandonment (P&A) Environment Plan (EP) and other info as relevant. The Julimar-Brunello license is in Permit Title WA-49-L, with moorings potentially extending into WA-34-L, located in Commonwealth waters in the Northern Carnarvon Sub-basin, approximately 185 km west north-west of Karratha, Western Australia.

We are seeking feedback from relevant persons whose functions, interests or activities may be affected by the proposed activity. If you would like to comment on the proposed activity, please provide feedback to Woodside by 8 September 2025 using the details below.

Overview

Woodside proposes to undertake permanent P&A for four subsea exploration wells in the Julimar-Brunello licence. The wells underwent Exploration Temporary Abandonment (ETA) following exploration activities, however, the temporary abandonment methodology conducted does not align to the current legislative requirements and regulatory expectations for permanent abandonment, driving the need for further P&A activities, including:

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Consultation information

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Activity and location summary

Julimar-Brunello P&A EP	
Activity details	Activities include: • Permanent P&A of three Julimar-Brunello ETA wells: Julimar East-1, Brunello-1 ST 1 and Brulimar-1. • Remediation and/or isolation of SBM in the annulus of Balnaves Deep-1. • Removal of four wellheads, which may be recovered following P&A or temporarily placed on the seabed for later recovery. • Preparation and support activities (inspections, cleaning, pre-laying and recovery of moorings). • IMR activities.
Titles	WA-49-L, MODU moorings for Brulimar-1 may extend into WA-34-L (Woodside-operated title)
Location	Barrow sub-basin
Water depth	~135 m to ~ 170 m
Timing	• Preparatory (IMR) activities: approximately 1–7 days per wellhead. Earliest commencement March 2026. • Preparation and support activities: approximately 5–10 days per site. Earliest commencement March 2026. • P&A activities: approximately 10–45 days per well (up to 180 days total). Earliest commencement April 2026, to be completed by December 2027. • SBM removal and/or isolation activity: 2–20 days. Earliest commencement April 2026, to be completed by December 2027. • Potential wellhead removal: commence any time after P&A activities completed.
Duration	• The EP will be in effect for a period of 5 years. • Operation will occur on a 24/7 basis during P&A and preparation activities. • IMR activities take place as required.
Infrastructure	Key infrastructure includes, but is not limited to: • Julimar East-1 • Brunello-1 ST 1 • Brulimar-1 • Balnaves Deep-1
Vessels	Key vessels include, but are not limited to:

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	• MODU with combined dynamic positioning (DP) and mooring capability • Offshore support vessels (IMR vessel or anchor-handling tug supply vessel (AHTSV) • General support vessels (Infield support vessels (ISV) or platform supply vessels (PSV)) • Remotely Operated Vehicles (ROV) • Helicopters
Operational Area and exclusion zones	The location of infrastructure is marked on nautical charts. The Operational Area and exclusion zones include: • A 4000 m radius around each well to allow a moored MODU to undertake plugging for abandonment activities. • A 1500 m radius around each well for non-moored activities and 1000 m buffer around subsea infrastructure to allow for IMR activities. • A temporary 500 m exclusion zone to manage vessel movements around the MODU during P&A and SBM activities.

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Regards,

Woodside Energy Consultation

6.1.53 Email sent to Western Australian Museum (WAM) – 11 August 2025

Woodside is planning to submit the Julimar-Brunello Plug and Abandonment (P&A) Environment Plan (EP) and other info as relevant. The Julimar-Brunello license is in Permit Title WA-49-L, with moorings potentially extending into WA-34-L, located in Commonwealth waters in the Northern Carnarvon Sub-basin, approximately 185 km west north-west of Karratha, Western Australia.

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Consultation information

A Consultation Information Sheet is attached, which provides additional background on the proposed activities including summaries of key impacts and risks and associated management measures. This is also available on our website.

Please also find attached the details of WA shipwrecks that are relevant for this EP.

As per the *Underwater Cultural Heritage Act 2018 (Cwth),* Woodside will contact the Commonwealth regulator, the Department of Climate Change, Energy, the Environment and Water (DCCEEW), regarding this EP.

Woodside also refers to the Commonwealth Government's Underwater Cultural Heritage (UCH) Guidance document regarding assessments and the draft Guidelines for Working in Near and Offshore Environment to Protect Underwater Cultural Heritage.

Activity and location summary

Julimar-Brunello P&A EP	
Activity details	Activities include: • Permanent P&A of three Julimar-Brunello ETA wells: Julimar East-1, Brunello-1 ST 1 and Brulimar-1. • Remediation and/or isolation of SBM in the annulus of Balnaves Deep-1.

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	• Removal of four wellheads, which may be recovered following P&A or temporarily placed on the seabed for later recovery. • Preparation and support activities (inspections, cleaning, pre-laying and recovery of moorings). • IMR activities.
Titles	WA-49-L, MODU moorings for Brulimar-1 may extend into WA-34-L (Woodside-operated title)
Location	Barrow sub-basin
Water depth	~135 m to ~ 170 m
Timing	• Preparatory (IMR) activities: approximately 1–7 days per wellhead. Earliest commencement March 2026. • Preparation and support activities: approximately 5–10 days per site. Earliest commencement March 2026. • P&A activities: approximately 10–45 days per well (up to 180 days total). Earliest commencement April 2026, to be completed by December 2027. • SBM removal and/or isolation activity: 2–20 days. Earliest commencement April 2026, to be completed by December 2027. • Potential wellhead removal: commence any time after P&A activities completed.
Duration	• The EP will be in effect for a period of 5 years. • Operation will occur on a 24/7 basis during P&A and preparation activities. • IMR activities take place as required.
Infrastructure	Key infrastructure includes, but is not limited to: • Julimar East-1 • Brunello-1 ST 1 • Brulimar-1 • Balnaves Deep-1
Vessels	Key vessels include, but are not limited to: • MODU with combined dynamic positioning (DP) and mooring capability • Offshore support vessels (IMR vessel or anchor-handling tug supply vessel (AHTSV) • General support vessels (Infield support vessels (ISV) or platform supply vessels (PSV)) • Remotely Operated Vehicles (ROV) • Helicopters

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Operational Area and exclusion zones	The location of infrastructure is marked on nautical charts. The Operational Area and exclusion zones include: • A 4000 m radius around each well to allow a moored MODU to undertake plugging for abandonment activities. • A 1500 m radius around each well for non-moored activities and 1000 m buffer around subsea infrastructure to allow for IMR activities. • A temporary 500 m exclusion zone to manage vessel movements around the MODU during P&A and SBM activities.

Environment that May Be Affected (EMBA)

The EMBA is the largest geographic area where an unplanned event could potentially have an environmental consequence. The broadest extent of the EMBA takes into consideration planned activities and unplanned events. The EMBA has been developed combining numerous modelling outputs based on highly unlikely releases of hydrocarbons to the environment. The modelling scenarios that inform the EMBA are loss of well containment during P&A, vessel collision, and SBM planned release.

The EMBA does not represent the extent of the predicted impact of a highly unlikely hydrocarbon release. Rather, the EMBA represents the merged area of many possible paths that a highly unlikely hydrocarbon release could travel, which depends on the weather and ocean conditions at the time of a release. This means that in the highly unlikely event that a hydrocarbon release does occur, the whole EMBA will not be affected. The specific and minimal part of the EMBA that is affected will only be known if there is a release.

Feedback

If you have feedback specific to the proposed activities, we welcome your feedback via email at consultation@feedback.woodside.com, via phone call at 1800 442 977 or via the feedback form on our website by **8 September 2025.** Alternatively, Woodside is willing to consider and accept your feedback via a means which suits you.

Your feedback and our response will be included in our EP, which will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023* (Cth). Your feedback may also be used to support other regulatory processes associated with the planned activities (which may or may not be confidential).

You may request that particular information you provide during consultation not be published in the EP made available on the NOPSEMA website. Please let us know if you request that particular information not be published, and we will make your request known to NOPSEMA.

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Personal information collected in the course of consultation will be handled in accordance with Woodside's Environment Plan Privacy Collection Notice. To understand how personal information will be handled, please visit our website.

Regards,

Woodside Energy Consultation

6.1.54 Email sent to Shire of Ashburton – 11 August 2025

Woodside is planning to submit the Julimar-Brunello Plug and Abandonment (P&A) Environment Plan (EP) and other info as relevant. The Julimar-Brunello license is in Permit Title WA-49-L, with moorings potentially extending into WA-34-L, located in Commonwealth waters in the Northern Carnarvon Sub-basin, approximately 185 km west north-west of Karratha, Western Australia.

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We are seeking feedback from relevant persons whose functions, interests or activities may be affected by the proposed activity. If you would like to comment on the proposed activity, please provide feedback to Woodside by 8 September 2025 using the details below.

Overview

Woodside proposes to undertake permanent P&A for four subsea exploration wells in the Julimar-Brunello licence. The wells underwent Exploration Temporary Abandonment (ETA) following exploration activities, however, the temporary abandonment methodology conducted does not align to the current legislative requirements and regulatory expectations for permanent abandonment, driving the need for further P&A activities, including:

- Permanent P&A of three wells using a Mobile Offshore Drilling Unit (MODU).
- Remediation and/or isolation of Synthetic Based Mud (SBM) in the annulus of an additional well.
- Vessel-based inspection, maintenance and repair (IMR) activities.
- Removal and recovery of well infrastructure below the mudline.

Consultation information

A Consultation Information Sheet is attached, which provides additional background on the proposed activities including summaries of key impacts and risks and associated management measures. This is also available on our website.

Activity and location summary

Julimar-Brunello P&A EP	
Activity details	Activities include: • Permanent P&A of three Julimar-Brunello ETA wells: Julimar East-1, Brunello-1 ST 1 and Brulimar-1. • Remediation and/or isolation of SBM in the annulus of Balnaves Deep-1. • Removal of four wellheads, which may be recovered following P&A or temporarily placed on the seabed for later recovery. • Preparation and support activities (inspections, cleaning, pre-laying and recovery of moorings). • IMR activities.
Titles	WA-49-L, MODU moorings for Brulimar-1 may extend into WA-34-L (Woodside-operated title)
Location	Barrow sub-basin
Water depth	~135 m to ~ 170 m
Timing	• Preparatory (IMR) activities: approximately 1–7 days per wellhead. Earliest commencement March 2026. • Preparation and support activities: approximately 5–10 days per site. Earliest commencement March 2026. • P&A activities: approximately 10–45 days per well (up to 180 days total). Earliest commencement April 2026, to be completed by December 2027.

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	• SBM removal and/or isolation activity: 2–20 days. Earliest commencement April 2026, to be completed by December 2027. • Potential wellhead removal: commence any time after P&A activities completed.
Duration	• The EP will be in effect for a period of 5 years. • Operation will occur on a 24/7 basis during P&A and preparation activities. • IMR activities take place as required.
Infrastructure	Key infrastructure includes, but is not limited to: • Julimar East-1 • Brunello-1 ST 1 • Brulimar-1 • Balnaves Deep-1
Vessels	Key vessels include, but are not limited to: • MODU with combined dynamic positioning (DP) and mooring capability • Offshore support vessels (IMR vessel or anchor-handling tug supply vessel (AHTSV) • General support vessels (Infield support vessels (ISV) or platform supply vessels (PSV)) • Remotely Operated Vehicles (ROV) • Helicopters
Operational Area and exclusion zones	The location of infrastructure is marked on nautical charts. The Operational Area and exclusion zones include: • A 4000 m radius around each well to allow a moored MODU to undertake plugging for abandonment activities. • A 1500 m radius around each well for non-moored activities and 1000 m buffer around subsea infrastructure to allow for IMR activities. • A temporary 500 m exclusion zone to manage vessel movements around the MODU during P&A and SBM activities.

Environment that May Be Affected (EMBA)

The EMBA is the largest geographic area where an unplanned event could potentially have an environmental consequence. The broadest extent of the EMBA takes into consideration planned activities and unplanned events. The EMBA has been developed combining numerous modelling outputs based on highly unlikely releases of hydrocarbons to the environment. The modelling scenarios that inform the EMBA are loss of well containment during P&A, vessel collision, and SBM planned release.

The EMBA does not represent the extent of the predicted impact of a highly unlikely hydrocarbon release. Rather, the EMBA represents the merged area of many possible paths that a highly unlikely hydrocarbon release could travel, which depends on the weather and ocean conditions at the time of a release. This

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means that in the highly unlikely event that a hydrocarbon release does occur, the whole EMBA will not be affected. The specific and minimal part of the EMBA that is affected will only be known if there is a release.

Woodside is required to manage environmental impacts and risks to the EMBA by its proposed activities to As Low As Reasonably Practicable (ALARP) and to an acceptable level, as required by the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Environment Regulations), through the implementation of the EP. Woodside will submit the proposed EP to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

Preparedness and Response

In the course of developing the EP, Woodside will develop the oil spill preparedness and response position tailored to this activity including the drafting of the Oil Pollution First Strike Plan which details the potential impacts, notifications and response mitigations that may be executed to manage an emergency event. Woodside consults with the relevant jurisdictional authorities and controlling agencies, including the Western Australian Department of Transport and Major Infrastructure (DTMI), the Australian Maritime Safety Agency (AMSA) and, in some circumstances, relevant port authorities, during the plan drafting process to inform mitigation management measures in place for the proposed activities. Woodside may also consult with other relevant external emergency management agencies, including LEMC, to ensure emergency management plans are aligned with effective outcomes.

In addition to the jurisdictional authorities and controlling agencies, the plan includes standard emergency notifications to agencies including NOPSEMA, the Department of Climate Change, Energy, the Environment and Water (DCCEEW), the Director of National Parks (DNP), and the WA Department of Biodiversity, Conservation and Attractions (DBCA). Where applicable, notification information for relevant Shires is also included in the Oil Pollution First Strike Plan.

Cultural heritage

Woodside routinely utilises the Department of Planning, Land and Heritage Aboriginal Cultural Heritage Inquiry System as part of the EP development process and includes the results of these inquiry system searches as an appendix to each EP.

As per Woodside's ongoing consultation approach, 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.

Please let us know if the Shire would like to receive start- and end-of-activity notifications.

Feedback

If you have feedback specific to the proposed activities, we welcome your feedback via email at consultation@feedback.woodside.com, via phone call at 1800 442 977 or via the feedback form on our website by **8 September 2025.** Alternatively, Woodside is willing to consider and accept your feedback via a means which suits you.

Your feedback and our response will be included in our EP, which will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023* (Cth). Your feedback may also be used to support other regulatory processes associated with the planned activities (which may or may not be confidential).

You may request that particular information you provide during consultation not be published in the EP made available on the NOPSEMA website. Please let us know if you request that particular information not be published, and we will make your request known to NOPSEMA.

NOPSEMA has published the brochure *Consultation on offshore petroleum environment plans – Information for the Community* to help community members understand consultation requirements for Commonwealth EPs and how to participate in consultation.

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Regards,

Woodside Energy Consultation

6.1.55 Email sent to Research Organisations and Universities – 11 August 2025

- Australian Institute of Marine Science (AIMS)
- Commonwealth Scientific and Industrial Research Organisation (CSIRO)
- Western Australian Marine Science Institution (WAMSI)
- Curtin University
- Edith Cowan University (ECU)
- Murdoch University
- University of Western Australia (UWA)

Woodside is planning to submit the Julimar-Brunello Plug and Abandonment (P&A) Environment Plan (EP) and other info as relevant. The Julimar-Brunello license is in Permit Title WA-49-L, with moorings potentially extending into WA-34-L, located in Commonwealth waters in the Northern Carnarvon Sub-basin, approximately 185 km west north-west of Karratha, Western Australia.

We are seeking feedback from relevant persons whose functions, interests or activities may be affected by the proposed activity. If you would like to comment on the proposed activity, please provide feedback to Woodside by 8 September 2025 using the details below.

Overview

Woodside proposes to undertake permanent P&A for four subsea exploration wells in the Julimar-Brunello licence. The wells underwent Exploration Temporary Abandonment (ETA) following exploration activities, however, the temporary abandonment methodology conducted does not align to the current legislative requirements and regulatory expectations for permanent abandonment, driving the need for further P&A activities, including:

- Permanent P&A of three wells using a Mobile Offshore Drilling Unit (MODU).
- Remediation and/or isolation of Synthetic Based Mud (SBM) in the annulus of an additional well.
- Vessel-based inspection, maintenance and repair (IMR) activities.
- Removal and recovery of well infrastructure below the mudline.

Consultation information

A Consultation Information Sheet is attached, which provides additional background on the proposed activities including summaries of key impacts and risks and associated management measures. This is also available on our website.

Woodside is seeking your advice regarding any research activities that your institution may be undertaking that may overlap with our proposed activities.

Activity and location summary

Julimar-Brunello P&A EP

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Activity details	Activities include: • Permanent P&A of three Julimar-Brunello ETA wells: Julimar East-1, Brunello-1 ST 1 and Brulimar-1. • Remediation and/or isolation of SBM in the annulus of Balnaves Deep-1. • Removal of four wellheads, which may be recovered following P&A or temporarily placed on the seabed for later recovery. • Preparation and support activities (inspections, cleaning, pre-laying and recovery of moorings). • IMR activities.
Titles	WA-49-L, MODU moorings for Brulimar-1 may extend into WA-34-L (Woodside-operated title)
Location	Barrow sub-basin
Water depth	~135 m to ~ 170 m
Timing	• Preparatory (IMR) activities: approximately 1–7 days per wellhead. Earliest commencement March 2026. • Preparation and support activities: approximately 5–10 days per site. Earliest commencement March 2026. • P&A activities: approximately 10–45 days per well (up to 180 days total). Earliest commencement April 2026, to be completed by December 2027. • SBM removal and/or isolation activity: 2–20 days. Earliest commencement April 2026, to be completed by December 2027. • Potential wellhead removal: commence any time after P&A activities completed.
Duration	• The EP will be in effect for a period of 5 years. • Operation will occur on a 24/7 basis during P&A and preparation activities. • IMR activities take place as required.
Infrastructure	Key infrastructure includes, but is not limited to: • Julimar East-1 • Brunello-1 ST 1 • Brulimar-1 • Balnaves Deep-1

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Vessels	Key vessels include, but are not limited to: • MODU with combined dynamic positioning (DP) and mooring capability • Offshore support vessels (IMR vessel or anchor-handling tug supply vessel (AHTSV) • General support vessels (Infield support vessels (ISV) or platform supply vessels (PSV)) • Remotely Operated Vehicles (ROV) • Helicopters
Operational Area and exclusion zones	The location of infrastructure is marked on nautical charts. The Operational Area and exclusion zones include: • A 4000 m radius around each well to allow a moored MODU to undertake plugging for abandonment activities. • A 1500 m radius around each well for non-moored activities and 1000 m buffer around subsea infrastructure to allow for IMR activities. • A temporary 500 m exclusion zone to manage vessel movements around the MODU during P&A and SBM activities.

Environment that May Be Affected (EMBA)

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Feedback

If you have feedback specific to the proposed activities, we welcome your feedback via email at consultation@feedback.woodside.com, via phone call at 1800 442 977 or via the feedback form on our website by **8 September 2025.** Alternatively, Woodside is willing to consider and accept your feedback via a means which suits you.

Your feedback and our response will be included in our EP, which will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023* (Cth). Your feedback may also be used to support other regulatory processes associated with the planned activities (which may or may not be confidential).

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Regards,

Woodside Energy Consultation

6.1.56 Email sent to Chevron Australia – 11 August 2025

- JERA Gorgon (part of Chevron)
- Chevron Australia
- MidOcean Gorgon (part of Chevron, replaces Tokyo Gas Gorgon)
- Osaka Gas Gorgon (part of Chevron)

Woodside is planning to submit the Julimar-Brunello Plug and Abandonment (P&A) Environment Plan (EP) and other info as relevant. The Julimar-Brunello license is in Permit Title WA-49-L, with moorings potentially extending into WA-34-L, located in Commonwealth waters in the Northern Carnarvon Sub-basin, approximately 185 km west north-west of Karratha, Western Australia.

We are seeking feedback from relevant persons whose functions, interests or activities may be affected by the proposed activity. If you would like to comment on the proposed activity, please provide feedback to Woodside by 8 September 2025 using the details below.

Overview

Woodside proposes to undertake permanent P&A for four subsea exploration wells in the Julimar-Brunello licence. The wells underwent Exploration Temporary Abandonment (ETA) following exploration activities, however, the temporary abandonment methodology conducted does not align to the current legislative requirements and regulatory expectations for permanent abandonment, driving the need for further P&A activities, including:

- Permanent P&A of three wells using a Mobile Offshore Drilling Unit (MODU).
- Remediation and/or isolation of Synthetic Based Mud (SBM) in the annulus of an additional well.
- Vessel-based inspection, maintenance and repair (IMR) activities.
- Removal and recovery of well infrastructure below the mudline.

Consultation information

A Consultation Information Sheet is attached, which provides additional background on the proposed activities including summaries of key impacts and risks and associated management measures. This is also available on our website.

Please also find attached GIS Shape Files.

We would be grateful if you could please forward this consultation information to your Joint Venture participants Osaka Gas Gorgon, MidOcean Gorgon and JERA Gorgon for feedback.

Activity and location summary

Julimar-Brunello P&A EP	
Activity details	Activities include: • Permanent P&A of three Julimar-Brunello ETA wells: Julimar East-1, Brunello-1 ST 1 and Brulimar-1.

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	• Remediation and/or isolation of SBM in the annulus of Balnaves Deep-1. • Removal of four wellheads, which may be recovered following P&A or temporarily placed on the seabed for later recovery. • Preparation and support activities (inspections, cleaning, pre-laying and recovery of moorings). • IMR activities.
Titles	WA-49-L, MODU moorings for Brulimar-1 may extend into WA-34-L (Woodside-operated title)
Location	Barrow sub-basin
Water depth	~135 m to ~ 170 m
Timing	• Preparatory (IMR) activities: approximately 1–7 days per wellhead. Earliest commencement March 2026. • Preparation and support activities: approximately 5–10 days per site. Earliest commencement March 2026. • P&A activities: approximately 10–45 days per well (up to 180 days total). Earliest commencement April 2026, to be completed by December 2027. • SBM removal and/or isolation activity: 2–20 days. Earliest commencement April 2026, to be completed by December 2027. • Potential wellhead removal: commence any time after P&A activities completed.
Duration	• The EP will be in effect for a period of 5 years. • Operation will occur on a 24/7 basis during P&A and preparation activities. • IMR activities take place as required.
Infrastructure	Key infrastructure includes, but is not limited to: • Julimar East-1 • Brunello-1 ST 1 • Brulimar-1 • Balnaves Deep-1
Vessels	Key vessels include, but are not limited to: • MODU with combined dynamic positioning (DP) and mooring capability • Offshore support vessels (IMR vessel or anchor-handling tug supply vessel (AHTSV) • General support vessels (Infield support vessels (ISV) or platform supply vessels (PSV)) • Remotely Operated Vehicles (ROV)

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	• Helicopters
Operational Area and exclusion zones	The location of infrastructure is marked on nautical charts. The Operational Area and exclusion zones include: • A 4000 m radius around each well to allow a moored MODU to undertake plugging for abandonment activities. • A 1500 m radius around each well for non-moored activities and 1000 m buffer around subsea infrastructure to allow for IMR activities. • A temporary 500 m exclusion zone to manage vessel movements around the MODU during P&A and SBM activities.

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Feedback

If you have feedback specific to the proposed activities, we welcome your feedback via email at consultation@feedback.woodside.com, via phone call at 1800 442 977 or via the feedback form on our website by **8 September 2025.** Alternatively, Woodside is willing to consider and accept your feedback via a means which suits you.

Your feedback and our response will be included in our EP, which will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023* (Cth). Your feedback may also be used to support other regulatory processes associated with the planned activities (which may or may not be confidential).

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NOPSEMA has published the brochure *Consultation on offshore petroleum environment plans – Information for the Community* to help community members understand consultation requirements for Commonwealth EPs and how to participate in consultation.

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Regards,

Woodside Energy Consultation

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6.1.57 Email sent to Western Australian Fishing Industry Council (WAFIC) – 11 August 2025

Please see below consultation information for the Julimar-Brunello Plug and Abandonment Environment Plan. The consultation period is due to close on 8 September 2025.

A Consultation Information Sheet is also attached.

Under the fee-for-service agreement Option A, can WAFIC please provide the consultation information to the following fisheries based on active fishing (Fishcube data) in the Operational Area:

- Mackerel Managed Fishery
- Marine Aquarium Fish Managed Fishery
- Onslow Prawn Managed Fishery
- Pilbara Trap Managed Fishery
- Pilbara Line Fishery

Draft email for WAFIC to send to Individual Licence Holders

Dear Licence Holders

Woodside is planning to submit the Julimar-Brunello Plug and Abandonment (P&A) Environment Plan (EP) and other info as relevant. The Julimar-Brunello license is in Permit Title WA-49-L, with moorings potentially extending into WA-34-L, located in Commonwealth waters in the Northern Carnarvon Sub-basin, approximately 185 km west north-west of Karratha, Western Australia.

We are seeking feedback from relevant persons whose functions, interests or activities may be affected by the proposed activity. If you would like to comment on the proposed activity, please contact WAFIC by 8 September 2025 using the details below.

Overview

Woodside proposes to undertake permanent P&A for four subsea exploration wells in the Julimar-Brunello licence. The wells underwent Exploration Temporary Abandonment (ETA) following exploration activities, however, the temporary abandonment methodology conducted does not align to the current legislative requirements and regulatory expectations for permanent abandonment, driving the need for further P&A activities, including:

- Permanent P&A of three wells using a Mobile Offshore Drilling Unit (MODU).
- Remediation and/or isolation of Synthetic Based Mud (SBM) in the annulus of an additional well.
- Vessel-based inspection, maintenance and repair (IMR) activities.
- Removal and recovery of well infrastructure below the mudline.

Consultation information

The table below provides a summary of the proposed activities under this EP. A Consultation Information Sheet is attached, which provides additional background on the proposed activities including summaries of key impacts and risks and associated management measures. This is also available on Woodside's website.

Activity and location summary

Julimar-Brunello P&A EP

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Activity details	Activities include: • Permanent P&A of three Julimar-Brunello ETA wells: Julimar East-1, Brunello-1 ST 1 and Brulimar-1. • Remediation and/or isolation of SBM in the annulus of Balnaves Deep-1. • Removal of four wellheads, which may be recovered following P&A or temporarily placed on the seabed for later recovery. • Preparation and support activities (inspections, cleaning, pre-laying and recovery of moorings). • IMR activities.
Titles	WA-49-L, MODU moorings for Brulimar-1 may extend into WA-34-L (Woodside-operated title)
Location	Barrow sub-basin
Water depth	~135 m to ~ 170 m
Timing	• Preparatory (IMR) activities: approximately 1–7 days per wellhead. Earliest commencement March 2026. • Preparation and support activities: approximately 5–10 days per site. Earliest commencement March 2026. • P&A activities: approximately 10–45 days per well (up to 180 days total). Earliest commencement April 2026, to be completed by December 2027. • SBM removal and/or isolation activity: 2–20 days. Earliest commencement April 2026, to be completed by December 2027. • Potential wellhead removal: commence any time after P&A activities completed.
Duration	• The EP will be in effect for a period of 5 years. • Operation will occur on a 24/7 basis during P&A and preparation activities. • IMR activities take place as required.
Infrastructure	Key infrastructure includes, but is not limited to: • Julimar East-1 • Brunello-1 ST 1 • Brulimar-1 • Balnaves Deep-1

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Vessels	Key vessels include, but are not limited to: • MODU with combined dynamic positioning (DP) and mooring capability • Offshore support vessels (IMR vessel or anchor-handling tug supply vessel (AHTSV) • General support vessels (Infield support vessels (ISV) or platform supply vessels (PSV)) • Remotely Operated Vehicles (ROV) • Helicopters
Operational Area and exclusion zones	The location of infrastructure is marked on nautical charts. The Operational Area and exclusion zones include: • A 4000 m radius around each well to allow a moored MODU to undertake plugging for abandonment activities. • A 1500 m radius around each well for non-moored activities and 1000 m buffer around subsea infrastructure to allow for IMR activities. • A temporary 500 m exclusion zone to manage vessel movements around the MODU during P&A and SBM activities.

Notifications

Please let WAFIC know if you require notification prior to and on completion of the proposed activities.

Feedback

Please provide feedback specific to the proposed activities described to Olivia.Mickle@wafic.org.au by **8 September 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).

You may request that particular information you provide during consultation not be published in the Environment Plan made available on the NOPSEMA website. Please let us know if you request that particular information not be published and if so, Woodside 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 Woodside's website.

Regards,

Woodside Energy Consultation

6.1.58 Email sent to State Commercial Fisheries (via WAFIC) – 11 August 2025

- Mackerel Managed Fishery
- Marine Aquarium Fish Managed Fishery
- Onslow Prawn Managed Fishery
- Pilbara Trap Managed Fishery

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- Pilbara Line Fishery

Dear Licence Holders

Woodside is planning to submit the Julimar-Brunello Plug and Abandonment (P&A) Environment Plan (EP) and other info as relevant. The Julimar-Brunello license is in Permit Title WA-49-L, with moorings potentially extending into WA-34-L, located in Commonwealth waters in the Northern Carnarvon Sub-basin, approximately 185 km west north-west of Karratha, Western Australia.

We are seeking feedback from relevant persons whose functions, interests or activities may be affected by the proposed activity. If you would like to comment on the proposed activity, please contact WAFIC by 8 September 2025 using the details below.

Overview

Woodside proposes to undertake permanent P&A for four subsea exploration wells in the Julimar-Brunello licence. The wells underwent Exploration Temporary Abandonment (ETA) following exploration activities, however, the temporary abandonment methodology conducted does not align to the current legislative requirements and regulatory expectations for permanent abandonment, driving the need for further P&A activities, including:

- Permanent P&A of three wells using a Mobile Offshore Drilling Unit (MODU).
- Remediation and/or isolation of Synthetic Based Mud (SBM) in the annulus of an additional well.
- Vessel-based inspection, maintenance and repair (IMR) activities.
- Removal and recovery of well infrastructure below the mudline.

Consultation information

The table below provides a summary of the proposed activities under this EP. A Consultation Information Sheet is attached, which provides additional background on the proposed activities including summaries of key impacts and risks and associated management measures. This is also available on Woodside's website.

Activity and location summary

Julimar-Brunello P&A EP	
Activity details	Activities include: • Permanent P&A of three Julimar-Brunello ETA wells: Julimar East-1, Brunello-1 ST 1 and Brulimar-1. • Remediation and/or isolation of SBM in the annulus of Balnaves Deep-1. • Removal of four wellheads, which may be recovered following P&A or temporarily placed on the seabed for later recovery. • Preparation and support activities (inspections, cleaning, pre-laying and recovery of moorings). • IMR activities.
Titles	WA-49-L, MODU moorings for Brulimar-1 may extend into WA-34-L (Woodside-operated title)
Location	Barrow sub-basin
Water depth	~135 m to ~ 170 m

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Timing	• Preparatory (IMR) activities: approximately 1–7 days per wellhead. Earliest commencement March 2026. • Preparation and support activities: approximately 5–10 days per site. Earliest commencement March 2026. • P&A activities: approximately 10–45 days per well (up to 180 days total). Earliest commencement April 2026, to be completed by December 2027. • SBM removal and/or isolation activity: 2–20 days. Earliest commencement April 2026, to be completed by December 2027. • Potential wellhead removal: commence any time after P&A activities completed.
Duration	• The EP will be in effect for a period of 5 years. • Operation will occur on a 24/7 basis during P&A and preparation activities. • IMR activities take place as required.
Infrastructure	Key infrastructure includes, but is not limited to: • Julimar East-1 • Brunello-1 ST 1 • Brulimar-1 • Balnaves Deep-1
Vessels	Key vessels include, but are not limited to: • MODU with combined dynamic positioning (DP) and mooring capability • Offshore support vessels (IMR vessel or anchor-handling tug supply vessel (AHTSV) • General support vessels (Infield support vessels (ISV) or platform supply vessels (PSV)) • Remotely Operated Vehicles (ROV) • Helicopters
Operational Area and exclusion zones	The location of infrastructure is marked on nautical charts. The Operational Area and exclusion zones include: • A 4000 m radius around each well to allow a moored MODU to undertake plugging for abandonment activities. • A 1500 m radius around each well for non-moored activities and 1000 m buffer around subsea infrastructure to allow for IMR activities. • A temporary 500 m exclusion zone to manage vessel movements around the MODU during P&A and SBM activities.

Notifications

Please let WAFIC know if you require notification prior to and on completion of the proposed activities.

Feedback

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Please provide feedback specific to the proposed activities described to Olivia.Mickle@wafic.org.au by **8 September 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).

You may request that particular information you provide during consultation not be published in the Environment Plan made available on the NOPSEMA website. Please let us know if you request that particular information not be published and if so, Woodside will make your request known to NOPSEMA.

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Regards,

Woodside Energy Consultation

6.1.59 Email sent to Aquaculture Council of Western Australia (ACWA) – 11 August 2025

Woodside is planning to submit the Julimar-Brunello Plug and Abandonment (P&A) Environment Plan (EP) and other info as relevant. The Julimar-Brunello license is in Permit Title WA-49-L, with moorings potentially extending into WA-34-L, located in Commonwealth waters in the Northern Carnarvon Sub-basin, approximately 185 km west north-west of Karratha, Western Australia.

We are seeking feedback from relevant persons whose functions, interests or activities may be affected by the proposed activity. If you would like to comment on the proposed activity, please provide feedback to Woodside by 8 September 2025 using the details below.

Overview

Woodside proposes to undertake permanent P&A for four subsea exploration wells in the Julimar-Brunello licence. The wells underwent Exploration Temporary Abandonment (ETA) following exploration activities, however, the temporary abandonment methodology conducted does not align to the current legislative requirements and regulatory expectations for permanent abandonment, driving the need for further P&A activities, including:

- Permanent P&A of three wells using a Mobile Offshore Drilling Unit (MODU).
- Remediation and/or isolation of Synthetic Based Mud (SBM) in the annulus of an additional well.
- Vessel-based inspection, maintenance and repair (IMR) activities.
- Removal and recovery of well infrastructure below the mudline.

Consultation information

A Consultation Information Sheet is attached, which provides additional background on the proposed activities including summaries of key impacts and risks and associated management measures. This is also available on our website.

Activity and location summary

Julimar-Brunello P&A EP

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Activity details	Activities include: • Permanent P&A of three Julimar-Brunello ETA wells: Julimar East-1, Brunello-1 ST 1 and Brulimar-1. • Remediation and/or isolation of SBM in the annulus of Balnaves Deep-1. • Removal of four wellheads, which may be recovered following P&A or temporarily placed on the seabed for later recovery. • Preparation and support activities (inspections, cleaning, pre-laying and recovery of moorings). • IMR activities.
Titles	WA-49-L, MODU moorings for Brulimar-1 may extend into WA-34-L (Woodside-operated title)
Location	Barrow sub-basin
Water depth	~135 m to ~ 170 m
Timing	• Preparatory (IMR) activities: approximately 1–7 days per wellhead. Earliest commencement March 2026. • Preparation and support activities: approximately 5–10 days per site. Earliest commencement March 2026. • P&A activities: approximately 10–45 days per well (up to 180 days total). Earliest commencement April 2026, to be completed by December 2027. • SBM removal and/or isolation activity: 2–20 days. Earliest commencement April 2026, to be completed by December 2027. • Potential wellhead removal: commence any time after P&A activities completed.
Duration	• The EP will be in effect for a period of 5 years. • Operation will occur on a 24/7 basis during P&A and preparation activities. • IMR activities take place as required.
Infrastructure	Key infrastructure includes, but is not limited to: • Julimar East-1 • Brunello-1 ST 1 • Brulimar-1 • Balnaves Deep-1

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Vessels	Key vessels include, but are not limited to: • MODU with combined dynamic positioning (DP) and mooring capability • Offshore support vessels (IMR vessel or anchor-handling tug supply vessel (AHTSV) • General support vessels (Infield support vessels (ISV) or platform supply vessels (PSV)) • Remotely Operated Vehicles (ROV) • Helicopters
Operational Area and exclusion zones	The location of infrastructure is marked on nautical charts. The Operational Area and exclusion zones include: • A 4000 m radius around each well to allow a moored MODU to undertake plugging for abandonment activities. • A 1500 m radius around each well for non-moored activities and 1000 m buffer around subsea infrastructure to allow for IMR activities. • A temporary 500 m exclusion zone to manage vessel movements around the MODU during P&A and SBM activities.

Environment that May Be Affected (EMBA)

The EMBA is the largest geographic area where an unplanned event could potentially have an environmental consequence. The broadest extent of the EMBA takes into consideration planned activities and unplanned events. The EMBA has been developed combining numerous modelling outputs based on highly unlikely releases of hydrocarbons to the environment. The modelling scenarios that inform the EMBA are loss of well containment during P&A, vessel collision, and SBM planned release.

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.

EMBA Overlap

Woodside is providing this information to the Aquaculture Council of Western Australia as our mapping data shows the EMBA for this EP overlaps with pearl farm leases in the Montebello Islands and an aquaculture site in the Mackerel Islands .

Notifications

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 via email at consultation@feedback.woodside.com, via phone call at 1800 442 977 or via the feedback form on our website by **8 September 2025.** Alternatively, Woodside is willing to consider and accept your feedback via a means which suits you.

Your feedback and our response will be included in our EP, which will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023* (Cth). Your feedback may also be used to support other regulatory processes associated with the planned activities (which may or may not be confidential).

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You may request that particular information you provide during consultation not be published in the EP made available on the NOPSEMA website. Please let us know if you request that particular information not be published, and we will make your request known to NOPSEMA.

NOPSEMA has published the brochure *Consultation on offshore petroleum environment plans – Information for the Community* to help community members understand consultation requirements for Commonwealth EPs and how to participate in consultation.

Personal information collected in the course of consultation will be handled in accordance with Woodside's Environment Plan Privacy Collection Notice. To understand how personal information will be handled, please visit our website.

Regards

Woodside Energy Consultation

6.1.60 Email sent to Department of Biodiversity, Conservation and Attractions (DBCA) – 11 August 2025

Woodside is planning to submit the Julimar-Brunello Plug and Abandonment (P&A) Environment Plan (EP) and other info as relevant. The Julimar-Brunello license is in Permit Title WA-49-L, with moorings potentially extending into WA-34-L, located in Commonwealth waters in the Northern Carnarvon Sub-basin, approximately 185 km west north-west of Karratha, Western Australia.

We are seeking feedback from relevant persons whose functions, interests or activities may be affected by the proposed activity. If you would like to comment on the proposed activity, please provide feedback to Woodside by 8 September 2025 using the details below.

Overview

Woodside proposes to undertake permanent P&A for four subsea exploration wells in the Julimar-Brunello licence. The wells underwent Exploration Temporary Abandonment (ETA) following exploration activities, however, the temporary abandonment methodology conducted does not align to the current legislative requirements and regulatory expectations for permanent abandonment, driving the need for further P&A activities, including:

- Permanent P&A of three wells using a Mobile Offshore Drilling Unit (MODU).
- Remediation and/or isolation of Synthetic Based Mud (SBM) in the annulus of an additional well.
- Vessel-based inspection, maintenance and repair (IMR) activities.
- Removal and recovery of well infrastructure below the mudline.

Consultation information

A Consultation Information Sheet is attached, which provides additional background on the proposed activities including summaries of key impacts and risks and associated management measures. This is also available on our website.

Activity and location summary

Julimar-Brunello P&A EP

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Activity details	Activities include: • Permanent P&A of three Julimar-Brunello ETA wells: Julimar East-1, Brunello-1 ST 1 and Brulimar-1. • Remediation and/or isolation of SBM in the annulus of Balnaves Deep-1. • Removal of four wellheads, which may be recovered following P&A or temporarily placed on the seabed for later recovery. • Preparation and support activities (inspections, cleaning, pre-laying and recovery of moorings). • IMR activities.
Titles	WA-49-L, MODU moorings for Brulimar-1 may extend into WA-34-L (Woodside-operated title)
Location	Barrow sub-basin
Water depth	~135 m to ~ 170 m
Timing	• Preparatory (IMR) activities: approximately 1–7 days per wellhead. Earliest commencement March 2026. • Preparation and support activities: approximately 5–10 days per site. Earliest commencement March 2026. • P&A activities: approximately 10–45 days per well (up to 180 days total). Earliest commencement April 2026, to be completed by December 2027. • SBM removal and/or isolation activity: 2–20 days. Earliest commencement April 2026, to be completed by December 2027. • Potential wellhead removal: commence any time after P&A activities completed.
Duration	• The EP will be in effect for a period of 5 years. • Operation will occur on a 24/7 basis during P&A and preparation activities. • IMR activities take place as required.
Infrastructure	Key infrastructure includes, but is not limited to: • Julimar East-1 • Brunello-1 ST 1 • Brulimar-1 • Balnaves Deep-1

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Vessels	Key vessels include, but are not limited to: • MODU with combined dynamic positioning (DP) and mooring capability • Offshore support vessels (IMR vessel or anchor-handling tug supply vessel (AHTSV) • General support vessels (Infield support vessels (ISV) or platform supply vessels (PSV)) • Remotely Operated Vehicles (ROV) • Helicopters
Operational Area and exclusion zones	The location of infrastructure is marked on nautical charts. The Operational Area and exclusion zones include: • A 4000 m radius around each well to allow a moored MODU to undertake plugging for abandonment activities. • A 1500 m radius around each well for non-moored activities and 1000 m buffer around subsea infrastructure to allow for IMR activities. • A temporary 500 m exclusion zone to manage vessel movements around the MODU during P&A and SBM activities.

Environment that May Be Affected (EMBA)

The EMBA is the largest geographic area where an unplanned event could potentially have an environmental consequence. The broadest extent of the EMBA takes into consideration planned activities and unplanned events. The EMBA has been developed combining numerous modelling outputs based on highly unlikely releases of hydrocarbons to the environment. The modelling scenarios that inform the EMBA are loss of well containment during P&A, vessel collision, and SBM planned release.

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.

Areas of ecological importance

Woodside affirms that areas of ecological importance do not overlap the Operational Area and will not be impacted by planned activities.

Woodside maintains knowledge and an understanding of areas of ecological importance within and adjacent to the Operational Area. An information system to track current existing environment knowledge is regularly updated and covers the following topics:

- EPBC Act Matters of National Ecological Significance (MNES) including threatened and migratory listed species
- WA Biodiversity Conservation Act 2016 – threatened and priority fauna list, the Part 13 Instruments, i.e., threatened species recovery plans and Biodiversity Regulations 2018
- EPBC Act threatened Species, Recovery Plans and Conservation advice
- State protected areas information and management plans on the habitats and associated fish and benthic communities.

The sources of information include credible published scientific research, industry and research agencies (government and university) study reports including baseline and monitoring programs. Woodside is also

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committed to sharing knowledge and contributes to the Index of Marine Surveys for Assessment (IMSA) hosted by the Department of Water and Environmental Regulation (WA) and supported by WAMSI.

National Light Pollution Guidelines

The lighting associated with the Julimar-Brunello P&A EP activity MODU, IMR and support vessels is required as a priority for safe operation. Woodside has considered the Commonwealth Department of Climate Change, Energy, the Environment and Water's National Light Pollution Guidelines for Wildlife (NLPG; Commonwealth of Australia 2023) with respect to vessel activities. The assessment of potential impacts to seabird and turtle behaviour is based on recommendations in the NLPG. This impact assessment determined that the impacts of lighting are as low as reasonably practicable (ALARP).

Operational and Scientific Monitoring Program

Woodside's oil spill Operational and Scientific Monitoring (OSM) Program, executed under the Joint Industry OSM Framework (AEP, 2021), provides for a quantitative assessment of the overall environmental impacts in the event of an unplanned hydrocarbon release, or any release event with the potential to contact sensitive environmental receptors including but not limited to the Ningaloo Marine Park (M 2), Montebello Islands Marine Park (M 9) and the Barrow Island Nature Reserve (R 11648). The OSM comprises ten scientific monitoring programs (SMPs) and six operational monitoring programs (OMPs). The SMPs are targeted environmental monitoring programs to assess and quantify the environmental impact of a hydrocarbon spill range of physical-chemical (water and sediment) and biological (species and habitats) receptors, including EPBC Act listed species, environmental values associated with protected areas and socio-economic values, such as fisheries. The ten SMPs address a range of receptors most vulnerable to the impacts of a hydrocarbon release. The actual design and execution of the OSM program will be dependent on the nature and scale of the spill and the receptors predicted to be impacted. One of the priority focus areas in the early phase of an incident would be to identify and execute OSM at First Strike Monitoring Priorities.

Incidents and emergency response

Woodside's Oil Pollution First Strike Plan for this activity includes a commitment that the DBCA will be notified via phone call as soon as practicable if there is potential for oiled wildlife or the spill is expected to contact land or waters managed by WA DBCA. Woodside has incorporated the DBCA Pilbara regional office phone number as part of the notifications as listed in the Oil Pollution First Strike Plan.

This plan describes the incident management structure, notification and reporting requirements, the Operational Area, activity specific credible spill scenarios, and the hydrocarbon spill response strategies available for the protection of priority receptors. Links are included in the plan to a suite of existing Operational Plans and Tactical Response Plans (TRPs) to commence the mobilisation of response resources immediately, including 'monitor and evaluate' services, operational and scientific monitoring, and shoreline clean-up where required. Woodside understands that DBCA will not implement an oiled wildlife management response on behalf of a petroleum operator.

Feedback

If you have feedback specific to the proposed activities, we welcome your feedback via email at consultation@feedback.woodside.com, via phone call at 1800 442 977 or via the feedback form on our website by **8 September 2025.** Alternatively, Woodside is willing to consider and accept your feedback via a means which suits you.

Your feedback and our response will be included in our EP, which will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023* (Cth). Your feedback may also be used to support other regulatory processes associated with the planned activities (which may or may not be confidential).

You may request that particular information you provide during consultation not be published in the EP made available on the NOPSEMA website. Please let us know if you request that particular information not be published, and we will make your request known to NOPSEMA.

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NOPSEMA has published the brochure *Consultation on offshore petroleum environment plans – Information for the Community* to help community members understand consultation requirements for Commonwealth EPs and how to participate in consultation.

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Regards

Woodside Energy Consultation

6.1.61 Email sent to Buurabalayji Thalanyji Aboriginal Corporation (BTAC) – 11 August 2025

We are contacting you as the delegated representative for Buurabalayji Thalanyji Aboriginal Corporation (BTAC).

Woodside would like to consult with BTAC as a 'relevant person' that may be affected by Julimar Brunello Plug and Abandonment (the activity) Environment Plan (EP).

Consultation for this activity opens on Monday 11 August 2025 and closes on Monday 8 September 2025.

Your feedback, opinions and comments provided by the consultation closing date will be reflected in the EP and considered by the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

The purpose of this email is to:

- Inform you about our plans for the activity.
- Invite you to submit feedback about the activity.
- Provide an opportunity to discuss the activity.
- Discuss further ways to consult and engage with you about the activity.

Overview of the activity

Woodside proposes to undertake the following activities in subsea exploration wells in permit area WA-49-L:

- Permanent plug and abandon (P&A) of three wells using a Mobile Offshore Drilling Unit (MODU).
- Removal or isolation of Non-Water-Based-Mud (NWBM) in one additional well.
- Vessel-based preparation and support activities such as wellhead cleaning and inspections, pre-laying and recovery of moorings and tethering equipment.
- Cutting and recovery of wellhead infrastructure at or below the mudline following P&A or recovery by vessel at a later date.

The attached Summary Consultation Information Sheet has been developed for a First Nations audience and provides a high-level overview of the activity, including the Environment that May Be Affected (EMBA) map.

We have also linked the Consultation Information Sheet here with further details including an assessment of the potential impacts and risks relevant to the activity, as well as mitigation and management measures.

Consultation with Woodside

We'd like to gather your feedback about:

- How the activity could impact your cultural values, interests, and activities.
- Protection of the environment and its relationship to your cultural values.
- Your concerns about the proposed activity.

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- Other elements we should consider in the Environment Plan.
- Any other individuals, groups, or organisations we should talk to about this activity.

Cultural values

We have collated information in relation to cultural values that have either been provided to Woodside during previous EP consultation or via publicly available literature. These are outlined in Appendix A.

If there are any changes or additional information about BTAC's cultural values that you would like Woodside to consider in the preparation of this EP, please let us know by Monday 8 September 2025. Please also get in touch if you'd like to know more about how we have collected this information.

Consultation preferences

Please let us know your preferred method of consultation including whether you would like to meet face-to-face. We welcome the opportunity to meet and speak with Board members, Elders, office holders and other interested parties about this activity.

Woodside provides various forms of assistance to organisations, Traditional Custodian groups and individuals to support participation in EP consultation. If you would like us to meet with you as part of Woodside's consultation on this activity, please contact me to discuss and confirm details.

How to contact us and further information

Information can be sent to feedback@woodside.com, via telephone on 1800 442 977 or directly to me.

Woodside manages gender-restricted or other culturally sensitive information carefully and will work with you to understand how you would like your information to be managed. If you would prefer to provide the information directly to NOPSEMA, please do so by phoning (08) 6188 8700 or via email at communications@nopsema.gov.au.

Further information about NOPSEMA

The following NOPSEMA publications may be of assistance to support understanding of the requirements to participate in consultation for Commonwealth EPs:

- Brochure: Consultation on offshore petroleum environment plans brochure.pdf (nopsema.gov.au)
- Guideline: Guideline: Consultation in the course of preparing an environment plan (nopsema.gov.au)
- Policy: Draft policy for managing gender-restricted information PL2098.pdf (nopsema.gov.au).

Ongoing Feedback

Feedback can continue to be provided during the life of an EP, including after consultation for the EP has closed, during EP assessment, and after an EP has been accepted by NOPSEMA. Woodside continues to receive, assess and respond to claims and objections from relevant persons throughout the life of the EP. Should a claim or objection be received following the acceptance of an EP that Woodside assesses, and which identifies a measure or control that Woodside considers requires implementation or updates to meet the intended outcome of consultation, Woodside will apply its Management of Change and Review process as appropriate.

Please feel free to forward this email and the attached document to members of BTAC, Traditional Owners and other people and organisations who may be interested.

We also acknowledge our discussions relating to the consultation framework agreement have been ongoing and appreciate that these discussions will progress in parallel with consultation for this EP.

I look forward to your response and please feel free to call or send through guidance on next steps.

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Cultural Value	Source	
	Consultation	Literature review (publicly available)
Sea Country – connection to, access to and transfer of knowledge: • Enduring deep connection north of Onslow, extending out to Islands off the Pilbara coast including Montebello, Barrow and Mackerel Islands. • Cultural obligation to care for environment and values of Sea Country. • Resources including fish, shellfish, crabs, crustaceans, sea urchins, eggs, turtles, dugongs, flora and fauna associated with mangrove communities. • Artefacts and burials in coastal sand dunes. • Archaeological sites on Barrow and Montebello Islands. • Archaeological evidence of use of resources including fish, turtles, marine mammals, crocodiles, crabs and sea urchins. • Ceremonial sites (Thalu) for the increase of turtle, shark, ray, fish, squid, octopus, hill kangaroo and emu.	x	x

6.1.62 Email sent to Kariyarra Aboriginal Corporation (KAC) – 11 August 2025

I hope you has an enjoyable and relaxing weekend. We have another Environmental Plan (EP) that may be of relevance to the Kariyarra Community. Let me know if you would like us to add this to the agenda for our meeting on the 21st August.

Please reach out anytime if you have any questions or would like to discuss this further.

Woodside would like to consult with Kariyarra Aboriginal Corporation (KAC) as a 'relevant person' that may be affected by Julimar Brunello Plug and Abandonment (the activity) Environment Plan (EP).

Consultation for this activity opens on Monday 11 August 2025 and closes on Monday 8 September 2025.

Your feedback, opinions and comments provided by the consultation closing date will be reflected in the EP and considered by the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

The purpose of this email is to:

- Inform you about our plans for the activity.

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- Invite you to submit feedback about the activity.
- Provide an opportunity to discuss the activity.
- Discuss further ways to consult and engage with you about the activity.

Overview of the activity

Woodside proposes to undertake the following activities in subsea exploration wells in permit area WA-49-L:

- Permanent plug and abandon (P&A) of three wells using a Mobile Offshore Drilling Unit (MODU).
- Removal or isolation of Non-Water-Based-Mud (NWBM) in one additional well.
- Vessel-based preparation and support activities such as wellhead cleaning and inspections, pre-laying and recovery of moorings and tethering equipment.
- Cutting and recovery of wellhead infrastructure at or below the mudline following P&A or recovery by vessel at a later date.

The attached Summary Consultation Information Sheet has been developed for a First Nations audience and provides a high-level overview of the activity, including the Environment that May Be Affected (EMBA) map.

We have also linked the Consultation Information Sheet here with further details including an assessment of the potential impacts and risks relevant to the activity, as well as mitigation and management measures.

Consultation with Woodside

We'd like to gather your feedback about:

- How the activity could impact your cultural values, interests, and activities.
- Protection of the environment and its relationship to your cultural values.
- Your concerns about the proposed activity.
- Other elements we should consider in the Environment Plan.
- Any other individuals, groups, or organisations we should talk to about this activity.

Cultural values

We have collated information in relation to cultural values that have either been provided to Woodside during previous EP consultation or via publicly available literature. These are outlined in Appendix A.

If there are any changes or additional information about KAC's cultural values that you would like Woodside to consider in the preparation of this EP, please let us know by Monday 8 September 2025. Please also get in touch if you'd like to know more about how we have collected this information.

Consultation preferences

Please let us know your preferred method of consultation including whether you would like to meet face-to-face. We welcome the opportunity to meet and speak with Board members, Elders, office holders and other interested parties about this activity.

Woodside provides various forms of assistance to organisations, Traditional Custodian groups and individuals to support participation in EP consultation. If you would like us to meet with you as part of Woodside's consultation on this activity, please contact me to discuss and confirm details.

How to contact us and further information

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Further information about NOPSEMA

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Ongoing Feedback

Feedback can continue to be provided during the life of an EP, including after consultation for the EP has closed, during EP assessment, and after an EP has been accepted by NOPSEMA. Woodside continues to receive, assess and respond to claims and objections from relevant persons throughout the life of the EP. Should a claim or objection be received following the acceptance of an EP that Woodside assesses, and which identifies a measure or control that Woodside considers requires implementation or updates to meet the intended outcome of consultation, Woodside will apply its Management of Change and Review process as appropriate.

Please feel free to forward this email and the attached document to members of KAC, Traditional Owners and other people and organisations who may be interested.

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.

I look forward to your response and please feel free to call or send through guidance on next steps.

Appendix A

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Cultural Value	Source	
	Consultation	Literature review (publicly available)
Marine Animals • Turtles: management of and sea turtle nesting. • Whales: connection to Songlines, impacts to whale migration.	x	
Sea Country • Cultural obligations to care for Country. • Secret habitat totems. • Access for fishing, trapping, crabbing, catching turtle, hunting dugong, using stingray barbs for spears, collecting shellfish and visiting offshore islands at low tide.	x	x
Yinta • Significant cultural/spiritual sites, often a water source but possibly other features such as hills. • Cultural rights to land determine who can use or speak for an area.	x	x
Marine species as resources • Marine mammals • Fish • Molluscs including bivalves, gastropods and cephalopods.	x	
Coastal landforms	x	
Coastal vegetation	x	
Heritage sites associated with the coast and ocean including the presence of mythical snakes. • Traditional knowledge recalls that a saltwater serpent lives in the sea and brings fish to shore.	x	x
Transfer of knowledge to future generations • Impacts to resources: species reduction • Temporary exclusion to areas in the case of an oil spill etc.	x	
Islands off the coast of Port Hedland are significant • Little Turtle • North Turtle • Bedout	x	

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6.1.63 Email sent to Murujuga Aboriginal Corporation (MAC) – 11 August 2025

Firstly, congratulations for the World Heritage listing! An awesome outcome, a testament to you and the MAC team's dedication to make this happen.

We are contacting you as the delegated representative for Murujuga Aboriginal Corporation (MAC).

Woodside would like to consult with MAC as a 'relevant person' that may be affected by Julimar Brunello Plug and Abandonment (the activity) Environment Plan (EP).

Consultation for this activity opens on Monday 11 August 2025 and closes on Monday 8 September 2025.

Your feedback, opinions and comments provided by the consultation closing date will be reflected in the EP and considered by the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

The purpose of this email is to:

- Inform you about our plans for the activity.
- Invite you to submit feedback about the activity.
- Provide an opportunity to discuss the activity.
- Discuss further ways to consult and engage with you about the activity.

Overview of the activity

Woodside proposes to undertake the following activities in subsea exploration wells in permit area WA-49-L:

- Permanent plug and abandon (P&A) of three wells using a Mobile Offshore Drilling Unit (MODU).
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- Cutting and recovery of wellhead infrastructure at or below the mudline following P&A or recovery by vessel at a later date.

The attached Summary Consultation Information Sheet has been developed for a First Nations audience and provides a high-level overview of the activity, including the Environment that May Be Affected (EMBA) map.

We have also linked the Consultation Information Sheet here with further details including an assessment of the potential impacts and risks relevant to the activity, as well as mitigation and management measures.

Consultation with Woodside

We'd like to gather your feedback about:

- How the activity could impact your cultural values, interests, and activities.
- Protection of the environment and its relationship to your cultural values.
- Your concerns about the proposed activity.
- Other elements we should consider in the Environment Plan.
- Any other individuals, groups, or organisations we should talk to about this activity.

Cultural values

We have collated information in relation to cultural values that have either been provided to Woodside during previous EP consultation or via publicly available literature. These are outlined in Appendix A.

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If there are any changes or additional information about MAC's cultural values that you would like Woodside to consider in the preparation of this EP, please let us know by Monday 8 September 2025. Please also get in touch if you'd like to know more about how we have collected this information.

Consultation preferences

Please let us know your preferred method of consultation including whether you would like to meet face-to-face. We welcome the opportunity to meet and speak with Board members, Elders, office holders and other interested parties about this activity.

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Please feel free to forward this email and the attached document to members of MAC, Traditional Owners and other people and organisations who may be interested.

I look forward to your response and please feel free to call or send through guidance on next steps.

Appendix A

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Cultural Value	Source	
	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.	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
Harvesting squid around Conzinc Bay		x
MAC is the appropriate cultural authority for Murujuga	x	
Potential impact on Jinna (Songlines) on the submerged landscape.	x	

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6.1.64 Email sent to Nganhurra Thanardi Garrbu Aboriginal Corporation (NTGAC) – 11 August 2025

We are contacting you as the delegated representative for Nganhurra Thanardi Garrbu Aboriginal Corporation (NTGAC).

Woodside would like to consult with NTGAC as a 'relevant person' that may be affected by Julimar Brunello Plug and Abandonment (the activity) Environment Plan (EP).

Consultation for this activity opens on Monday 11 August 2025 and closes on Monday 8 September 2025.

Your feedback, opinions and comments provided by the consultation closing date will be reflected in the EP and considered by the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

The purpose of this email is to:

- Inform you about our plans for the activity.
- Invite you to submit feedback about the activity.
- Provide an opportunity to discuss the activity.
- Discuss further ways to consult and engage with you about the activity.

Overview of the activity

Woodside proposes to undertake the following activities in subsea exploration wells in permit area WA-49-L:

- Permanent plug and abandon (P&A) of three wells using a Mobile Offshore Drilling Unit (MODU).
- Removal or isolation of Non-Water-Based-Mud (NWBM) in one additional well.
- Vessel-based preparation and support activities such as wellhead cleaning and inspections, pre-laying and recovery of moorings and tethering equipment.
- Cutting and recovery of wellhead infrastructure at or below the mudline following P&A or recovery by vessel at a later date.

The attached Summary Consultation Information Sheet has been developed for a First Nations audience and provides a high-level overview of the activity, including the Environment that May Be Affected (EMBA) map.

We have also linked the Consultation Information Sheet here with further details including an assessment of the potential impacts and risks relevant to the activity, as well as mitigation and management measures.

Consultation with Woodside

We'd like to gather your feedback about:

- How the activity could impact your cultural values, interests, and activities.
- Protection of the environment and its relationship to your cultural values.
- Your concerns about the proposed activity.
- Other elements we should consider in the Environment Plan.
- Any other individuals, groups, or organisations we should talk to about this activity.

Cultural values

We have collated information in relation to cultural values that have either been provided to Woodside during previous EP consultation or via publicly available literature. These are outlined in Appendix A.

If there are any changes or additional information about NTGAC's cultural values that you would like Woodside to consider in the preparation of this EP, please let us know by Monday 8 September 2025. Please also get in touch if you'd like to know more about how we have collected this information.

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Consultation preferences

Please let us know your preferred method of consultation including whether you would like to meet face-to-face. We welcome the opportunity to meet and speak with Board members, Elders, office holders and other interested parties about this activity.

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Ongoing Feedback

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Please feel free to forward this email and the attached document to members of NTGAC, Traditional Owners and other people and organisations who may be interested.

We also acknowledge our discussions relating to the consultation framework agreement have been ongoing and appreciate that these discussions will progress in parallel with consultation for this EP.

I look forward to your response and please feel free to call or send through guidance on next steps.

Appendix A

Cultural Value	Source	
	Consultation	Literature review (publicly available)
Marine ecosystems and species • Interest in invasive marine species • Interest in chemicals released into water – ballast water discharge • Marine parks – risks	x	

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6.1.65 Email sent to Ngarluma Aboriginal Corporation (NAC) – 11 August 2025

I hope you had time to relax over the weekend. We have another Environmental Plan (EP) that may be of relevance to the Ngarulma Community (details attached). As we discussed on the phone last week, I am available to catch up with you and any other NAC representatives to talk through this or any other matters relating to Woodsides activities. I will touch base with you later in the week, but in the meantime please don't hesitate to reach out if you have any questions.

Woodside would like to consult with Ngarluma Aboriginal Corporation (NAC) as a 'relevant person' that may be affected by Julimar Brunello Plug and Abandonment (the activity) Environment Plan (EP).

Consultation for this activity opens on Monday 11 August 2025 and closes on Monday 8 September 2025.

Your feedback, opinions and comments provided by the consultation closing date will be reflected in the EP and considered by the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

The purpose of this email is to:

- Inform you about our plans for the activity.
- Invite you to submit feedback about the activity.
- Provide an opportunity to discuss the activity.
- Discuss further ways to consult and engage with you about the activity.

Overview of the activity

Woodside proposes to undertake the following activities in subsea exploration wells in permit area WA-49-L:

- Permanent plug and abandon (P&A) of three wells using a Mobile Offshore Drilling Unit (MODU).
- Removal or isolation of Non-Water-Based-Mud (NWBM) in one additional well.
- Vessel-based preparation and support activities such as wellhead cleaning and inspections, pre-laying and recovery of moorings and tethering equipment.
- Cutting and recovery of wellhead infrastructure at or below the mudline following P&A or recovery by vessel at a later date.

The attached Summary Consultation Information Sheet has been developed for a First Nations audience and provides a high-level overview of the activity, including the Environment that May Be Affected (EMBA) map.

We have also linked the Consultation Information Sheet here with further details including an assessment of the potential impacts and risks relevant to the activity, as well as mitigation and management measures.

Consultation with Woodside

We'd like to gather your feedback about:

- How the activity could impact your cultural values, interests, and activities.
- Protection of the environment and its relationship to your cultural values.
- Your concerns about the proposed activity.
- Other elements we should consider in the Environment Plan.
- Any other individuals, groups, or organisations we should talk to about this activity.

Cultural values

We have collated information in relation to cultural values that have either been provided to Woodside during previous EP consultation or via publicly available literature. These are outlined in Appendix A.

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If there are any changes or additional information about NAC's cultural values that you would like Woodside to consider in the preparation of this EP, please let us know by Monday 8 September 2025. Please also get in touch if you'd like to know more about how we have collected this information.

Consultation preferences

Please let us know your preferred method of consultation including whether you would like to meet face-to-face. We welcome the opportunity to meet and speak with Board members, Elders, office holders and other interested parties about this activity.

Woodside provides various forms of assistance to organisations, Traditional Custodian groups and individuals to support participation in EP consultation. If you would like us to meet with you as part of Woodside's consultation on this activity, please contact me to discuss and confirm details.

How to contact us and further information

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Ongoing Feedback

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Please feel free to forward this email and the attached document to members of NAC, Traditional Owners and other people and organisations who may be interested.

We also acknowledge our discussions relating to the consultation framework agreement have been ongoing and appreciate that these discussions will progress in parallel with consultation for this EP.

I look forward to your response and please feel free to call or send through guidance on next steps.

Appendix A

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Cultural Value	Source	
	Consultation	Literature review (publicly available)
Onshore heritage: interest in management of heritage sites.	x	
Potential submerged heritage.	x	
Manggan • (creative beings) used supernatural force to shape the hills, rivers, seas and landforms.		x

6.1.66 Email sent to Nhuwala Claim Group via YMAC – 11 August 2025

Earlier today we contacted you as a representative of other First Nations organisations. We are now also contacting you as the representative for the Nhuwala People.

Woodside would like to consult with the Nhuwala People as a 'relevant person' that may be affected by Julimar Brunello Plug and Abandonment (the activity) Environment Plan (EP).

Consultation for this activity opens on Monday 11 August 2025 and closes on Monday 8 September 2025.

Your feedback, opinions and comments provided by the consultation closing date will be reflected in the EP and considered by the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

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- Invite you to submit feedback about the activity.
- Provide an opportunity to discuss the activity.
- Discuss further ways to consult and engage with you about the activity.

Overview of the activity

Woodside proposes to undertake the following activities in subsea exploration wells in permit area WA-49-L:

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The attached Summary Consultation Information Sheet has been developed for a First Nations audience and provides a high-level overview of the activity, including the Environment that May Be Affected (EMBA) map.

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Consultation with Woodside

We'd like to gather your feedback about:

- How the activity could impact your cultural values, interests, and activities.
- Protection of the environment and its relationship to your cultural values.
- Your concerns about the proposed activity.
- Other elements we should consider in the Environment Plan.
- Any other individuals, groups, or organisations we should talk to about this activity.

Consultation preferences

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Please feel free to forward this email and the attached document to members of the Nhuwala People, Traditional Owners and other people and organisations who may be interested.

I look forward to your response and please feel free to call or send through guidance on next steps.

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6.1.67 Email sent to Robe River Kuruma Aboriginal Corporation (RRKAC) – 11 August 2025

Woodside would like to consult with Robe River Kuruma Aboriginal Corporation (RRKAC) as a 'relevant person' that may be affected by Julimar Brunello Plug and Abandonment (the activity) Environment Plan (EP).

Consultation for this activity opens on Monday 11 August 2025 and closes on Monday 8 September 2025.

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Overview of the activity

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Consultation with Woodside

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- How the activity could impact your cultural values, interests, and activities.
- Protection of the environment and its relationship to your cultural values.
- Your concerns about the proposed activity.
- Other elements we should consider in the Environment Plan.
- Any other individuals, groups, or organisations we should talk to about this activity.

Cultural values

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If there are any changes or additional information about RRKAC's cultural values that you would like Woodside to consider in the preparation of this EP, please let us know by Monday 8 September 2025. Please also get in touch if you'd like to know more about how we have collected this information.

Consultation preferences

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Please feel free to forward this email and the attached document to members of RRKAC, Traditional Owners and other people and organisations who may be interested.

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.

I look forward to your response and please feel free to call or send through guidance on next steps.

Appendix A

Cultural Value	Source	
	Consultation	Literature review (publicly available)
Underwater heritage – concerns about impacts to heritage at shoreline.	x	
Coastline	x	

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6.1.68 Email sent to Thalanyji/Nhuwala People via BTAC – 11 August 2025

We are contacting you as the delegated representative for the Thalanyji/Nhuwala People Native Title Claim. We note that [Individual 2] is listed as the representative for the Thalanyji/Nhuwala People and that all communications are to be directed to you. Please let me know if this email should be sent to any additional representatives.

Woodside would like to consult with the Thalanyji/Nhuwala People Claim Group as a 'relevant person' that may be affected by Julimar Brunello Plug and Abandonment (the activity) Environment Plan (EP).

Consultation for this activity opens on Monday 11 August 2025 and closes on Monday 8 September 2025.

Your feedback, opinions and comments provided by the consultation closing date will be reflected in the EP and considered by the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

The purpose of this email is to:

- Inform you about our plans for the activity.
- Invite you to submit feedback about the activity.
- Provide an opportunity to discuss the activity.
- Discuss further ways to consult and engage with you about the activity.

Overview of the activity

Woodside proposes to undertake the following activities in subsea exploration wells in permit area WA-49-L:

- Permanent plug and abandon (P&A) of three wells using a Mobile Offshore Drilling Unit (MODU).
- Removal or isolation of Non-Water-Based-Mud (NWBM) in one additional well.
- Vessel-based preparation and support activities such as wellhead cleaning and inspections, pre-laying and recovery of moorings and tethering equipment.
- Cutting and recovery of wellhead infrastructure at or below the mudline following P&A or recovery by vessel at a later date.

The attached Summary Consultation Information Sheet has been developed for a First Nations audience and provides a high-level overview of the activity, including the Environment that May Be Affected (EMBA) map.

We have also linked the Consultation Information Sheet here with further details including an assessment of the potential impacts and risks relevant to the activity, as well as mitigation and management measures.

Consultation with Woodside

We'd like to gather your feedback about:

- How the activity could impact your cultural values, interests, and activities.
- Protection of the environment and its relationship to your cultural values.
- Your concerns about the proposed activity.
- Other elements we should consider in the Environment Plan.
- Any other individuals, groups, or organisations we should talk to about this activity.

Consultation preferences

Please let us know your preferred method of consultation including whether you would like to meet face-to-face. We welcome the opportunity to meet and speak with Board members, Elders, office holders and other interested parties about this activity.

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Woodside provides various forms of assistance to organisations, Traditional Custodian groups and individuals to support participation in EP consultation. If you would like us to meet with you as part of Woodside's consultation on this activity, please contact me to discuss and confirm details.

How to contact us and further information

Information can be sent to feedback@woodside.com, via telephone on 1800 442 977 or directly to me.

Woodside manages gender-restricted or other culturally sensitive information carefully and will work with you to understand how you would like your information to be managed. If you would prefer to provide the information directly to NOPSEMA, please do so by phoning (08) 6188 8700 or via email at communications@nopsema.gov.au.

Further information about NOPSEMA

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Ongoing Feedback

Feedback can continue to be provided during the life of an EP, including after consultation for the EP has closed, during EP assessment, and after an EP has been accepted by NOPSEMA. Woodside continues to receive, assess and respond to claims and objections from relevant persons throughout the life of the EP. Should a claim or objection be received following the acceptance of an EP that Woodside assesses, and which identifies a measure or control that Woodside considers requires implementation or updates to meet the intended outcome of consultation, Woodside will apply its Management of Change and Review process as appropriate.

Please feel free to forward this email and the attached document to members of the Thalanyji/Nhuwala People Claim Group, Traditional Owners and other people and organisations who may be interested.

I look forward to your response and please feel free to call or send through guidance on next steps.

6.1.69 Email sent to Wirrawandi Aboriginal Corporation (WAC) – 11 August 2025

We are contacting you as the delegated representative for Wirrawandi Aboriginal Corporation (WAC).

Woodside would like to consult with WAC as a 'relevant person' that may be affected by Julimar Brunello Plug and Abandonment (the activity) Environment Plan (EP).

Consultation for this activity opens on Monday 11 August 2025 and closes on Monday 8 September 2025.

Your feedback, opinions and comments provided by the consultation closing date will be reflected in the EP and considered by the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

The purpose of this email is to:

- Inform you about our plans for the activity.
- Invite you to submit feedback about the activity.
- Provide an opportunity to discuss the activity.
- Discuss further ways to consult and engage with you about the activity.

Overview of the activity

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Woodside proposes to undertake the following activities in subsea exploration wells in permit area WA-49-L:

- Permanent plug and abandon (P&A) of three wells using a Mobile Offshore Drilling Unit (MODU).
- Removal or isolation of Non-Water-Based-Mud (NWBM) in one additional well.
- Vessel-based preparation and support activities such as wellhead cleaning and inspections, pre-laying and recovery of moorings and tethering equipment.
- Cutting and recovery of wellhead infrastructure at or below the mudline following P&A or recovery by vessel at a later date.

The attached Summary Consultation Information Sheet has been developed for a First Nations audience and provides a high-level overview of the activity, including the Environment that May Be Affected (EMBA) map.

We have also linked the Consultation Information Sheet here with further details including an assessment of the potential impacts and risks relevant to the activity, as well as mitigation and management measures.

Consultation with Woodside

We'd like to gather your feedback about:

- How the activity could impact your cultural values, interests, and activities.
- Protection of the environment and its relationship to your cultural values.
- Your concerns about the proposed activity.
- Other elements we should consider in the Environment Plan.
- Any other individuals, groups, or organisations we should talk to about this activity.

Cultural values

We have collated information in relation to cultural values that have either been provided to Woodside during previous EP consultation or via publicly available literature. These are outlined in Appendix A.

If there are any changes or additional information about WAC's cultural values that you would like Woodside to consider in the preparation of this EP, please let us know by Monday 8 September 2025. Please also get in touch if you'd like to know more about how we have collected this information.

Consultation preferences

Please let us know your preferred method of consultation including whether you would like to meet face-to-face. We welcome the opportunity to meet and speak with Board members, Elders, office holders and other interested parties about this activity.

Woodside provides various forms of assistance to organisations, Traditional Custodian groups and individuals to support participation in EP consultation. If you would like us to meet with you as part of Woodside's consultation on this activity, please contact me to discuss and confirm details.

How to contact us and further information

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Ongoing Feedback

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Please feel free to forward this email and the attached document to members of WAC, Traditional Owners and other people and organisations who may be interested.

We also acknowledge our discussions relating to the consultation framework agreement have been ongoing and appreciate that these discussions will progress in parallel with consultation for this EP.

I look forward to your response and please feel free to call or send through guidance on next steps.

Appendix A

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	
Heritage: • Impacts on underwater heritage particularly given recent finding of artefacts. • Management of onshore heritage sites.	x	

6.1.70 Email sent to Yindjibarndi Aboriginal Corporation (YAC) via NYFL – 11 August 2025

Woodside would like to consult with Ngarluma Yindjibarndi Foundation Ltd (NYFL) and Yindjibarndi Aboriginal Corporation (YAC) as relevant stakeholders

that may be affected by Julimar Brunello Plug and Abandonment (the activity) Environment Plan (EP).

Consultation for this activity opens on Monday 11 August 2025 and closes on Monday 8 September 2025.

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Your feedback, opinions and comments provided by the consultation closing date will be reflected in the EP and considered by the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

The purpose of this email is to:

- Inform you about our plans for the activity.
- Invite you to submit feedback about the activity.
- Provide an opportunity to discuss the activity.
- Discuss further ways to consult and engage with you about the activity.

Overview of the activity

Woodside proposes to undertake the following activities in subsea exploration wells in permit area WA-49-L:

- Permanent plug and abandon (P&A) of three wells using a Mobile Offshore Drilling Unit (MODU).
- Removal or isolation of Non-Water-Based-Mud (NWBM) in one additional well.
- Vessel-based preparation and support activities such as wellhead cleaning and inspections, pre-laying and recovery of moorings and tethering equipment.
- Cutting and recovery of wellhead infrastructure at or below the mudline following P&A or recovery by vessel at a later date.

The attached Summary Consultation Information Sheet has been developed for a First Nations audience and provides a high-level overview of the activity, including the Environment that May Be Affected (EMBA) map.

We have also linked the Consultation Information Sheet here with further details including an assessment of the potential impacts and risks relevant to the activity, as well as mitigation and management measures.

Consultation with Woodside

We'd like to gather your feedback about:

- How the activity could impact your cultural values, interests, and activities.
- Protection of the environment and its relationship to your cultural values.
- Your concerns about the proposed activity.
- Other elements we should consider in the Environment Plan.
- Any other individuals, groups, or organisations we should talk to about this activity.

Consultation preferences

Please let us know your preferred method of consultation including whether you would like to meet face-to-face. We welcome the opportunity to meet and speak with Board members, Elders, office holders and other interested parties about this activity.

Woodside provides various forms of assistance to organisations, Traditional Custodian groups and individuals to support participation in EP consultation. If you would like us to meet with you as part of Woodside's consultation on this activity, please contact me to discuss and confirm details.

How to contact us and further information

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Further information about NOPSEMA

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- Guideline: Guideline: Consultation in the course of preparing an environment plan (nopsema.gov.au)
- Policy: Draft policy for managing gender-restricted information PL2098.pdf (nopsema.gov.au).

Ongoing Feedback

Feedback can continue to be provided during the life of an EP, including after consultation for the EP has closed, during EP assessment, and after an EP has been accepted by NOPSEMA. Woodside continues to receive, assess and respond to claims and objections from relevant persons throughout the life of the EP. Should a claim or objection be received following the acceptance of an EP that Woodside assesses, and which identifies a measure or control that Woodside considers requires implementation or updates to meet the intended outcome of consultation, Woodside will apply its Management of Change and Review process as appropriate.

Please feel free to forward this email and the attached document to members of NYFL and YAC, Traditional Owners and other people and organisations who may be interested.

We also acknowledge our discussions relating to the NYFL framework agreement have been ongoing and appreciate that these discussions will progress in parallel with consultation for these EPs.

I look forward to your response and please feel free to call or send through guidance on next steps.

6.1.71 Email sent to Yinggarda Aboriginal Corporation (YAC) via legal representative – 11 August 2025

We are contacting you as the delegated representative for Yinggarda Aboriginal Corporation (YAC).

Woodside would like to consult with YAC as a ‘relevant person’ that may be affected by Julimar Brunello Plug and Abandonment (the activity) Environment Plan (EP).

Consultation for this activity opens on Monday 11 August 2025 and closes on Monday 8 September 2025.

Your feedback, opinions and comments provided by the consultation closing date will be reflected in the EP and considered by the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

The purpose of this email is to:

- Inform you about our plans for the activity.
- Invite you to submit feedback about the activity.
- Provide an opportunity to discuss the activity.
- Discuss further ways to consult and engage with you about the activity.

Overview of the activity

Woodside proposes to undertake the following activities in subsea exploration wells in permit area WA-49-L:

- Permanent plug and abandon (P&A) of three wells using a Mobile Offshore Drilling Unit (MODU).
- Removal or isolation of Non-Water-Based-Mud (NWBM) in one additional well.
- Vessel-based preparation and support activities such as wellhead cleaning and inspections, pre-laying and recovery of moorings and tethering equipment.
- Cutting and recovery of wellhead infrastructure at or below the mudline following P&A or recovery by vessel at a later date.

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The attached Summary Consultation Information Sheet has been developed for a First Nations audience and provides a high-level overview of the activity, including the Environment that May Be Affected (EMBA) map.

We have also linked the Consultation Information Sheet here with further details including an assessment of the potential impacts and risks relevant to the activity, as well as mitigation and management measures.

Consultation with Woodside

We'd like to gather your feedback about:

- How the activity could impact your cultural values, interests, and activities.
- Protection of the environment and its relationship to your cultural values.
- Your concerns about the proposed activity.
- Other elements we should consider in the Environment Plan.
- Any other individuals, groups, or organisations we should talk to about this activity.

Cultural values

We have collated information in relation to cultural values that have either been provided to Woodside during previous EP consultation or via publicly available literature. These are outlined in Appendix A.

If there are any changes or additional information about YAC's cultural values that you would like Woodside to consider in the preparation of this EP, please let us know by Monday 8 September 2025. Please also get in touch if you'd like to know more about how we have collected this information.

Consultation preferences

Please let us know your preferred method of consultation including whether you would like to meet face-to-face. We welcome the opportunity to meet and speak with Board members, Elders, office holders and other interested parties about this activity.

Woodside provides various forms of assistance to organisations, Traditional Custodian groups and individuals to support participation in EP consultation. If you would like us to meet with you as part of Woodside's consultation on this activity, please contact me to discuss and confirm details.

How to contact us and further information

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Further information about NOPSEMA

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- Guideline: Guideline: Consultation in the course of preparing an environment plan (nopsema.gov.au)
- Policy: Draft policy for managing gender-restricted information PL2098.pdf (nopsema.gov.au).

Ongoing Feedback

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the intended outcome of consultation, Woodside will apply its Management of Change and Review process as appropriate.

Please feel free to forward this email and the attached document to members of YAC, Traditional Owners and other people and organisations who may be interested.

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.

I look forward to your response and please feel free to call or send through guidance on next steps.

Appendix A

Cultural Value	Source	
	Consultation	Literature review (publicly available)
Right and responsibility to speak and care for Country		x
Contemporary use of Country for cultural activities • Fishing including for Shark Bay mullet. • Camping • Hunting and gathering	x	x
Ecosystem health • Plants, animals and the environment are inexorably linked to culture. • Seagrass important food source for dugongs.	x	
Marine Mammals • Dugongs • Whales: potential impact to migration patterns and potential collisions with vessels.	x	

6.1.72 Email sent to Kimberley Land Council (KLC) – 11 August 2025

Looking forward to catching up at this year's KALACC AGM's.

We are contacting you as the delegated representative for Kimberley Land Council (KLC).

Woodside would like to consult with KLC as a 'relevant person' that may be affected by Julimar Brunello Plug and Abandonment (the activity) Environment Plan (EP).

Consultation for this activity opens on Monday 11 August 2025 and closes on Monday 8 September 2025.

Your feedback, opinions and comments provided by the consultation closing date will be reflected in the EP and considered by the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

The purpose of this email is to:

- Inform you about our plans for the activity.
- Invite you to submit feedback about the activity.

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- Provide an opportunity to discuss the activity.
- Discuss further ways to consult and engage with you about the activity.

Overview of the activity

Woodside proposes to undertake the following activities in subsea exploration wells in permit area WA-49-L:

- Permanent plug and abandon (P&A) of three wells using a Mobile Offshore Drilling Unit (MODU).
- Removal or isolation of Non-Water-Based-Mud (NWBM) in one additional well.
- Vessel-based preparation and support activities such as wellhead cleaning and inspections, pre-laying and recovery of moorings and tethering equipment.
- Cutting and recovery of wellhead infrastructure at or below the mudline following P&A or recovery by vessel at a later date.

The attached Summary Consultation Information Sheet has been developed for a First Nations audience and provides a high-level overview of the activity, including the Environment that May Be Affected (EMBA) map.

We have also linked the Consultation Information Sheet here with further details including an assessment of the potential impacts and risks relevant to the activity, as well as mitigation and management measures.

Consultation with Woodside

We'd like to gather your feedback about:

- How the activity could impact your cultural values, interests, and activities.
- Protection of the environment and its relationship to your cultural values.
- Your concerns about the proposed activity.
- Other elements we should consider in the Environment Plan.
- Any other individuals, groups, or organisations we should talk to about this activity.

Consultation preferences

Please let us know your preferred method of consultation including whether you would like to meet face-to-face. We welcome the opportunity to meet and speak with Board members, Elders, office holders and other interested parties about this activity.

Woodside provides various forms of assistance to organisations, Traditional Custodian groups and individuals to support participation in EP consultation. If you would like us to meet with you as part of Woodside's consultation on this activity, please contact me to discuss and confirm details.

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Ongoing Feedback

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Please feel free to forward this email and the attached document to members of KLC, Traditional Owners and other people and organisations who may be interested.

I look forward to your response and please feel free to call or send through guidance on next steps.

6.1.73 Email sent to Yamatji Marlpa Aboriginal Corporation (YMAC) – 11 August 2025

I hope this email finds you well.

Woodside would like to consult with Yamatji Marlpa Aboriginal Corporation (YMAC) as a 'relevant person' that may be affected by Julimar Brunello Plug and Abandonment (the activity) Environment Plan (EP).

Consultation for this activity opens on Monday 11 August 2025 and closes on Monday 8 September 2025.

Your feedback, opinions and comments provided by the consultation closing date will be reflected in the EP and considered by the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

The purpose of this email is to:

- Inform you about our plans for the activity.
- Invite you to submit feedback about the activity.
- Provide an opportunity to discuss the activity.
- Discuss further ways to consult and engage with you about the activity.

Overview of the activity

Woodside proposes to undertake the following activities in subsea exploration wells in permit area WA-49-L:

- Permanent plug and abandon (P&A) of three wells using a Mobile Offshore Drilling Unit (MODU).
- Removal or isolation of Non-Water-Based-Mud (NWBM) in one additional well.
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- Cutting and recovery of wellhead infrastructure at or below the mudline following P&A or recovery by vessel at a later date.

The attached Summary Consultation Information Sheet has been developed for a First Nations audience and provides a high-level overview of the activity, including the Environment that May Be Affected (EMBA) map.

We have also linked the Consultation Information Sheet here with further details including an assessment of the potential impacts and risks relevant to the activity, as well as mitigation and management measures.

Consultation with Woodside

We'd like to gather your feedback about:

- How the activity could impact your cultural values, interests, and activities.

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- Protection of the environment and its relationship to your cultural values.
- Your concerns about the proposed activity.
- Other elements we should consider in the Environment Plan.
- Any other individuals, groups, or organisations we should talk to about this activity.

Consultation preferences

Please let us know your preferred method of consultation including whether you would like to meet face-to-face. We welcome the opportunity to meet and speak with Board members, Elders, office holders and other interested parties about this activity.

Woodside provides various forms of assistance to organisations, Traditional Custodian groups and individuals to support participation in EP consultation. If you would like us to meet with you as part of Woodside's consultation on this activity, please contact me to discuss and confirm details.

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Please feel free to forward this email and the attached document to members of YMAC, Traditional Owners and other people and organisations who may be interested.

I look forward to your response and please feel free to call or send through guidance on next steps.

6.1.74 Email sent to Ngarluma Yindjibarndi Foundation Ltd (NYFL) – 11 August 2025

Please see 6.1.66

6.1.75 Email sent to Save Our Songlines (SOS) and [Individual 1] – 11 August 2025

We are contacting you as a representative of Save Our Songlines and [Individual 1]. Please see our consultation email about the Julimar Brunello Plug and Abandonment Environment Plan below.

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Dear [Individual 1] and Save Our Songlines

Woodside would like to consult with Save Our Songlines (SOS) and [Individual 1] as a 'relevant person' that may be affected by Julimar Brunello Plug and Abandonment (the activity) Environment Plan (EP).

Consultation for this activity opens on Monday 11 August 2025 and closes on Monday 8 September 2025.

Your feedback, opinions and comments provided by the consultation closing date will be reflected in the EP and considered by the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

The purpose of this email is to:

- Inform you about our plans for the activity.
- Invite you to submit feedback about the activity.
- Provide an opportunity to discuss the activity.
- Discuss further ways to consult and engage with you about the activity.

Overview of the activity

Woodside proposes to undertake the following activities in subsea exploration wells in permit area WA-49-L:

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- Removal or isolation of Non-Water-Based-Mud (NWBM) in one additional well.
- Vessel-based preparation and support activities such as wellhead cleaning and inspections, pre-laying and recovery of moorings and tethering equipment.
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We have also linked the Consultation Information Sheet here with further details including an assessment of the potential impacts and risks relevant to the activity, as well as mitigation and management measures.

Consultation with Woodside

We'd like to gather your feedback about:

- How the activity could impact your cultural values, interests, and activities.
- Protection of the environment and its relationship to your cultural values.
- Your concerns about the proposed activity.
- Other elements we should consider in the Environment Plan.
- Any other individuals, groups, or organisations we should talk to about this activity.

Consultation preferences

We note your previously stated preference for consultation to occur in written format (as set out in an email dated 10 April 2024). We also note that Johnson Legal Pty now acts for [Individual 1] and SOS. Woodside also welcomes the opportunity to meet face-to-face.

How to contact us and further information

Information can be sent to feedback@woodside.com, via telephone on 1800 442 977 or directly to me.

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Woodside manages gender-restricted or other culturally sensitive information carefully and will work with you to understand how you would like your information to be managed. If you would prefer to provide the information directly to NOPSEMA, please do so by phoning (08) 6188 8700 or via email at communications@nopsema.gov.au.

Further information about NOPSEMA

The following NOPSEMA publications may be of assistance to support understanding of the requirements to participate in consultation for Commonwealth EPs:

- Brochure: Consultation on offshore petroleum environment plans brochure.pdf (nopsema.gov.au)
- Guideline: Guideline: Consultation in the course of preparing an environment plan (nopsema.gov.au)
- Policy: Draft policy for managing gender-restricted information PL2098.pdf (nopsema.gov.au).

Ongoing Feedback

Feedback can continue to be provided during the life of an EP, including after consultation for the EP has closed, during EP assessment, and after an EP has been accepted by NOPSEMA. Woodside continues to receive, assess and respond to claims and objections from relevant persons throughout the life of the EP. Should a claim or objection be received following the acceptance of an EP that Woodside assesses, and which identifies a measure or control that Woodside considers requires implementation or updates to meet the intended outcome of consultation, Woodside will apply its Management of Change and Review process as appropriate.

Please feel free to forward this email and the attached document to members of Save Our Songlines, Traditional Owners and other people and organisations who may be interested.

I look forward to your response and please feel free to call or send through guidance on next steps.

6.2 Follow-up to initial consultation

6.2.1 Email sent to ABF – 22 August 2025

Woodside previously consulted you on its plans to submit the Julimar-Brunello Plug & Abandonment Environment Plan (EP).

The Julimar-Brunello license is in Permit Title WA-49-L, with moorings potentially extending into WA-34-L, located in Commonwealth waters in the Northern Carnarvon Sub-basin, approximately 185 km west north-west of Karratha, Western Australia.

Additional information on the EP is provided in the email below and in the Consultation Information Sheet attached, which is also available on Woodside's website.

Feedback

If you would like to provide feedback specific to the proposed activities, we welcome your feedback via email at consultation@feedback.woodside.com, via phone call at 1800 442 977 or via the feedback form on our website by **8 September 2025**. Alternatively, Woodside is willing to consider and accept your feedback via a means which suit you.

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Regards,

Woodside Energy Consultation

6.2.2 Email sent to ACMA – 22 August 2025

Woodside previously consulted you on its plans to submit the Julimar-Brunello Plug & Abandonment Environment Plan (EP).

The Julimar-Brunello license is in Permit Title WA-49-L, with moorings potentially extending into WA-34-L, located in Commonwealth waters in the Northern Carnarvon Sub-basin, approximately 185 km west north-west of Karratha, Western Australia.

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Regards,

Woodside Energy Consultation

6.2.3 Email sent to Titleholders – 22 August 2025

- Beagle No. 1
- Carbon CQ
- INPEX Alpha
- JX Nippon O&G Exploration (Australia)
- KATO Energy
- KUFPEC

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- Kyushu Electric Wheatstone
- Melbana Exploration
- Mobil Australia Resources Company
- OMV Australia
- PE Wheatstone
- Pelsart Resources
- Santos
- Shell Australia
- SK Earthon Australia
- Skye Resources
- Tanami Energy
- Western Gas

Woodside previously consulted you on its plans to submit the Julimar-Brunello Plug & Abandonment Environment Plan (EP).

The Julimar-Brunello license is in Permit Title WA-49-L, with moorings potentially extending into WA-34-L, located in Commonwealth waters in the Northern Carnarvon Sub-basin, approximately 185 km west north-west of Karratha, Western Australia.

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Regards,

Woodside Energy Consultation

6.2.4 Email sent to AMSA - Marine Pollution – 22 August 2025

Woodside previously consulted you on its plans to submit the Julimar-Brunello Plug & Abandonment Environment Plan (EP).

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The Julimar-Brunello license is in Permit Title WA-49-L, with moorings potentially extending into WA-34-L, located in Commonwealth waters in the Northern Carnarvon Sub-basin, approximately 185 km west north-west of Karratha, Western Australia.

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Regards,

Woodside Energy Consultation

6.2.5 Email sent to Pilbara Ports – 22 August 2025

Woodside previously consulted you on its plans to submit the Julimar-Brunello Plug & Abandonment Environment Plan (EP).

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Regards,

Woodside Energy Consultation

6.2.6 Email sent to NCWHAC – 22 August 2025

Woodside previously consulted you on its plans to submit the Julimar-Brunello Plug & Abandonment Environment Plan (EP).

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Regards,

Woodside Energy Consultation

6.2.7 Email sent to DMPE – 22 August 2025

Woodside previously consulted you on its plans to submit the Julimar-Brunello Plug & Abandonment Environment Plan (EP).

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Regards,

Woodside Energy Consultation

6.2.8 Email sent to DISR – 22 August 2025

Woodside previously consulted you on its plans to submit the Julimar-Brunello Plug & Abandonment Environment Plan (EP).

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Regards,

Woodside Energy Consultation

6.2.9 Email sent to AEP – 22 August 2025

Woodside previously consulted you on its plans to submit the Julimar-Brunello Plug & Abandonment Environment Plan (EP).

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Regards,

Woodside Energy Consultation

6.2.10 Email sent to Exmouth CCI – 22 August 2025

Woodside previously consulted you on its plans to submit the Julimar-Brunello Plug & Abandonment Environment Plan (EP).

The Julimar-Brunello license is in Permit Title WA-49-L, with moorings potentially extending into WA-34-L, located in Commonwealth waters in the Northern Carnarvon Sub-basin, approximately 185 km west north-west of Karratha, Western Australia.

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Regards,

Woodside Energy Consultation

6.2.11 Email sent to Karratha & Districts CCI – 22 August 2025

Woodside previously consulted you on its plans to submit the Julimar-Brunello Plug & Abandonment Environment Plan (EP).

The Julimar-Brunello license is in Permit Title WA-49-L, with moorings potentially extending into WA-34-L, located in Commonwealth waters in the Northern Carnarvon Sub-basin, approximately 185 km west north-west of Karratha, Western Australia.

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Regards,

Woodside Energy Consultation

6.2.12 Email sent to Karratha CLG & Exmouth CLG – 22 August 2025

Woodside previously consulted you on its plans to submit the Julimar-Brunello Plug & Abandonment Environment Plan (EP).

The Julimar-Brunello license is in Permit Title WA-49-L, with moorings potentially extending into WA-34-L, located in Commonwealth waters in the Northern Carnarvon Sub-basin, approximately 185 km west north-west of Karratha, Western Australia.

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Regards,

Woodside Energy Consultation

6.2.13 Email sent to Shire of Exmouth – 22 August 2025

Woodside previously consulted you on its plans to submit the Julimar-Brunello Plug & Abandonment Environment Plan (EP).

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6.2.14 Email sent to City of Karratha – 22 August 2025

Woodside previously consulted you on its plans to submit the Julimar-Brunello Plug & Abandonment Environment Plan (EP).

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Regards,

Woodside Energy Consultation

6.2.15 Email sent to CCG – 22 August 2025

Woodside previously consulted you on its plans to submit the Julimar-Brunello Plug & Abandonment Environment Plan (EP).

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Regards,

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6.2.16 Email sent to Protect Ningaloo – 22 August 2025

Woodside previously consulted you on its plans to submit the Julimar-Brunello Plug & Abandonment Environment Plan (EP).

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Regards,

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6.2.17 Email sent to ACF – 22 August 2025

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Regards,

Woodside Energy Consultation

6.2.18 Email sent to AMCS – 22 August 2025

Woodside previously consulted you on its plans to submit the Julimar-Brunello Plug & Abandonment Environment Plan (EP).

The Julimar-Brunello license is in Permit Title WA-49-L, with moorings potentially extending into WA-34-L, located in Commonwealth waters in the Northern Carnarvon Sub-basin, approximately 185 km west north-west of Karratha, Western Australia.

Additional information on the EP is provided in the email below and in the Consultation Information Sheet attached, which is also available on Woodside's website.

Feedback

If you would like to provide feedback specific to the proposed activities, we welcome your feedback via email at consultation@feedback.woodside.com, via phone call at 1800 442 977 or via the feedback form on our website by **8 September 2025**. Alternatively, Woodside is willing to consider and accept your feedback via a means which suit you.

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Regards,

Woodside Energy Consultation

6.2.19 Email sent to CCWA – 22 August 2025

Woodside previously consulted you on its plans to submit the Julimar-Brunello Plug & Abandonment Environment Plan (EP).

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The Julimar-Brunello license is in Permit Title WA-49-L, with moorings potentially extending into WA-34-L, located in Commonwealth waters in the Northern Carnarvon Sub-basin, approximately 185 km west north-west of Karratha, Western Australia.

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Regards,

Woodside Energy Consultation

6.2.20 Email sent to GAP – 22 August 2025

Woodside previously consulted you on its plans to submit the Julimar-Brunello Plug & Abandonment Environment Plan (EP).

The Julimar-Brunello license is in Permit Title WA-49-L, with moorings potentially extending into WA-34-L, located in Commonwealth waters in the Northern Carnarvon Sub-basin, approximately 185 km west north-west of Karratha, Western Australia.

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Regards,

Woodside Energy Consultation

6.2.21 Email sent to ACCR – 22 August 2025

Woodside previously consulted you on its plans to submit the Julimar-Brunello Plug & Abandonment Environment Plan (EP).

The Julimar-Brunello license is in Permit Title WA-49-L, with moorings potentially extending into WA-34-L, located in Commonwealth waters in the Northern Carnarvon Sub-basin, approximately 185 km west north-west of Karratha, Western Australia.

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Regards,

Woodside Energy Consultation

6.2.22 Email sent to TWS – 22 August 2025

Woodside previously consulted you on its plans to submit the Julimar-Brunello Plug & Abandonment Environment Plan (EP).

The Julimar-Brunello license is in Permit Title WA-49-L, with moorings potentially extending into WA-34-L, located in Commonwealth waters in the Northern Carnarvon Sub-basin, approximately 185 km west north-west of Karratha, Western Australia.

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Regards,

Woodside Energy Consultation

6.2.23 Email sent to MUA – 22 August 2025

Woodside previously consulted you on its plans to submit the Julimar-Brunello Plug & Abandonment Environment Plan (EP).

The Julimar-Brunello license is in Permit Title WA-49-L, with moorings potentially extending into WA-34-L, located in Commonwealth waters in the Northern Carnarvon Sub-basin, approximately 185 km west north-west of Karratha, Western Australia.

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Regards,

Woodside Energy Consultation

6.2.24 Email sent to FOE – 22 August 2025

Woodside previously consulted you on its plans to submit the Julimar-Brunello Plug & Abandonment Environment Plan (EP).

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Regards,

Woodside Energy Consultation

6.2.25 Email sent to DNP – 22 August 2025

Woodside previously consulted you on its plans to submit the Julimar-Brunello Plug & Abandonment Environment Plan (EP).

The Julimar-Brunello license is in Permit Title WA-49-L, with moorings potentially extending into WA-34-L, located in Commonwealth waters in the Northern Carnarvon Sub-basin, approximately 185 km west north-west of Karratha, Western Australia.

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Regards,

Woodside Energy Consultation

6.2.26 Email sent to DTMI – 22 August 2025

Woodside previously consulted you on its plans to submit the Julimar-Brunello Plug & Abandonment Environment Plan (EP).

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Regards,

Woodside Energy Consultation

6.2.27 Email sent to DPIRD – 22 August 2025

Woodside previously consulted you on its plans to submit the Julimar-Brunello Plug & Abandonment Environment Plan (EP).

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Regards,

Woodside Energy Consultation

6.2.28 Email sent to Marine Tourism WA – 22 August 2025

Woodside previously consulted you on its plans to submit the Julimar-Brunello Plug & Abandonment Environment Plan (EP).

The Julimar-Brunello license is in Permit Title WA-49-L, with moorings potentially extending into WA-34-L, located in Commonwealth waters in the Northern Carnarvon Sub-basin, approximately 185 km west north-west of Karratha, Western Australia.

Additional information on the EP is provided in the email below and in the Consultation Information Sheet attached, which is also available on Woodside's website.

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Regards,

Woodside Energy Consultation

6.2.29 Email sent to Recreational Marine Users – 22 August 2025

- Gascoyne Recreational Marine Users
- Pilbara/Kimberley Recreational Marine Users

Woodside previously consulted you on its plans to submit the Julimar-Brunello Plug & Abandonment Environment Plan (EP).

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Regards,

Woodside Energy Consultation

6.2.30 Letter sent to Recreational Marine Users – 28 August 2025

- Gascoyne Recreational Marine Users
- Pilbara/Kimberley Recreational Marine Users
- South Coast Recreational Marine Users
- West Coast Recreational Marine Users

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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

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

28 August 2025

007 - 1
[redacted]

Dear Stakeholder

Woodside previously consulted you on its plans for the Julimar-Brunello Plug and Abandonment (P&A) Environment Plan (EP).

The EP involves the permanent P&A of four subsea exploration wells in Permit Title WA-49-L, with moorings potentially extending into WA-34-L.

Information on the EP 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 consultation@feedback.woodside.com or 1800 442 977 by **8 September 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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Regards

Woodside Energy Consultation

Woodside Energy
Mia Yellagonga
Karlak, 11 Mount Street
Perth WA 6000
Australia

T: 1800 442 977
E: consultation@feedback.woodside.com
www.woodside.com

6.2.31 Email sent to Recfishwest – 22 August 2025

Woodside previously consulted you on its plans to submit the Julimar-Brunello Plug & Abandonment Environment Plan (EP).

The Julimar-Brunello license is in Permit Title WA-49-L, with moorings potentially extending into WA-34-L, located in Commonwealth waters in the Northern Carnarvon Sub-basin, approximately 185 km west north-west of Karratha, Western Australia.

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Regards,

Woodside Energy Consultation

6.2.32 Email sent to WA Game Fishing Association – 22 August 2025

Woodside previously consulted you on its plans to submit the Julimar-Brunello Plug & Abandonment Environment Plan (EP).

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may also be used to support other regulatory processes associated with the planned activities (which may or may not be confidential).

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Regards,

Woodside Energy Consultation

6.2.33 Email sent to University and Research Institutes – 22 August 2025

- AIMS
- CSIRO
- Curtin University
- ECU
- Murdoch University
- UWA
- WAMSI

Woodside previously consulted you on its plans to submit the Julimar-Brunello Plug & Abandonment Environment Plan (EP).

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Regards,

Woodside Energy Consultation

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6.2.34 Email sent to DCCEEW – 22 August 2025

Woodside previously consulted you on its plans to submit the Julimar-Brunello Plug & Abandonment Environment Plan (EP).

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Regards,

Woodside Energy Consultation

6.2.35 Email sent to Shire of Ashburton – 22 August 2025

Woodside previously consulted you on its plans to submit the Julimar-Brunello Plug & Abandonment Environment Plan (EP).

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Regards,

Woodside Energy Consultation

6.2.36 Email sent to Chevron – 22 August 2025

Woodside previously consulted you on its plans to submit the Julimar-Brunello Plug & Abandonment Environment Plan (EP).

The Julimar-Brunello license is in Permit Title WA-49-L, with moorings potentially extending into WA-34-L, located in Commonwealth waters in the Northern Carnarvon Sub-basin, approximately 185 km west north-west of Karratha, Western Australia.

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6.2.37 Email sent to ACWA – 22 August 2025

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6.2.38 Email sent to DBCA – 22 August 2025

Woodside previously consulted you on its plans to submit the Julimar-Brunello Plug & Abandonment Environment Plan (EP).

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6.2.39 Email sent to DoD – 22 August 2025

Woodside previously consulted you on its plans to submit the Julimar-Brunello Plug & Abandonment Environment Plan (EP).

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6.2.40 Email sent to AMSA – 22 August 2025

Woodside previously consulted you on its plans to submit the Julimar-Brunello Plug & Abandonment Environment Plan (EP).

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Regards,

Woodside Energy Consultation

6.2.41 Email sent to CFA – 22 August 2025

Woodside previously consulted you on its plans to submit the Julimar-Brunello Plug & Abandonment Environment Plan (EP).

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Regards,

Woodside Energy Consultation

6.2.42 Email sent to Commonwealth Fishery Licence Holders – 22 August 2025

- North West Slope Trawl Fishery licence holders
- Western Deepwater Trawl Fishery licence holders

Woodside previously consulted you on its plans to submit the Julimar-Brunello Plug & Abandonment Environment Plan (EP).

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Regards,

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6.2.43 Email sent to DAFF - Fisheries and DAFF - Biosecurity – 22 August 2025

Woodside previously consulted you on its plans to submit the Julimar-Brunello Plug & Abandonment Environment Plan (EP).

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Regards,

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6.2.44 Email sent to ACMA – 5 September 2025

Woodside previously consulted you on its plans to submit the Julimar-Brunello Plug & Abandonment Environment Plan (EP).

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6.2.45 Email sent to DWER – 5 September 2025

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Regards,

Woodside Energy Consultation

6.2.46 Email sent to Commonwealth Fishery Licence Holders and Peak Representative Bodies – 5 September 2025

- Western Tuna and Billfish Fishery
- Western Skipjack Fishery
- Tuna Australia
- Southern Bluefin Tuna Fishery
- Australian Southern Bluefin Tuna Fishery Association

Woodside previously consulted you on its plans to submit the Julimar-Brunello Plug & Abandonment Environment Plan (EP).

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6.2.47 Email sent to Telstra – 5 September 2025

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6.2.48 Email sent to Vocus – 5 September 2025

Woodside previously consulted you on its plans to submit the Julimar-Brunello Plug & Abandonment Environment Plan (EP).

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6.3 Consultation update

6.3.1 Consultation Information Sheet

Woodside Energy

Consultation Information Sheet
October 2025

Julimar Brunello Plug and Abandonment Environment Plan

Northern Carnarvon Sub-Basin, North-West Australia

Activity Overview

Woodside proposes to undertake activities to permanently plug and abandon (P&A) a number of subsea exploration wells in permit area WA-49-L, including:

- Permanent P&A of three wells using a Mobile Offshore Drilling Unit (MODU).
- Remediation (i.e. removal or isolation) of Non-Water-Based-Mud (NWBM) in the annulus of one additional well.
- Vessel-based preparation and support activities (e.g. wellhead cleaning and inspections, pre-laying of moorings and blowout preventer (BOP) tethering equipment, recovery of moorings and tethering equipment).
- Cutting and recovery of wellhead infrastructure as close as reasonably practicable to the mudline following P&A or recovery by vessel at a later date.

Location

- The wells are within Commonwealth waters in the Northern Carnarvon Sub-basin, approximately 185 km west north-west of Karratha (**Figure 1**).

Water depth

- The wells are in water depths ranging from approximately 135 m to 170 m.
- The depths of the mooring spread around each well will range from approximately 120 m to 210 m.

Timings and Duration

- Wellhead preparatory activities, including cleaning, inspections, wellhead testing: approximately 1–7 days per well. Earliest commencement in March 2026.
- MODU preparation and support activities, including pre-lay of MODU moorings and anchor hold testing: approximately 5–10 days per well. Earliest commencement in March 2026.
- P&A activities including wellhead removal: approximately 10–60 days per well (up to 180 days total). Earliest commencement in April 2026, currently planned to be completed by December 2027.
- NWBD remediation: 2–20 days. Earliest commencement in April 2026, currently planned to be completed by December 2027.

Joint Venture

- Woodside is operator on behalf of the Julimar joint venture participants.
- The participants are Woodside Energy Julimar Pty Ltd and KUFPEC Australia (Julimar) 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 provide feedback on our proposed activity, in accordance with the intended outcome of consultation.

Woodside consults 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, and that 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 you may be affected by the activities under this EP, we would like your feedback by **20 October 2025**.

consultation@feedback.woodside.com
Toll free: 1800 442 977
woodside.com

A summary of the proposed activity and location is provided in **Tables 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 Julimar-Brunello Plug and Abandonment Environment Plan | October 2025

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Table 1 – Activity and Location Summary

Julimar-Brunello Plug and Abandonment Environment Plan	
Activity details	· P&A of three Julimar-Brunello subsea wells: Julimar East-1, Brunello-1 ST1, and Brulimar-1. · Remediation, removal, or isolation of NWBM in the annulus of well: Balnaves Deep-1. · Removal of four wellheads, which may be recovered following P&A or temporarily placed on mud mats on the seabed for later recovery. · Wellhead preparatory activities (inspections, cleaning, and wellhead testing). · MODU preparation and support activities (pre-lay of moorings, anchor hold testing, removal of moorings).
Permit Areas	WA-49-L, MODU moorings extending into WA-34-L (Woodside operated title) and vacant anchorage.
Infrastructure	· Three subsea Exploration Temporarily Abandoned (ETA) wells. · One well requiring NWBM remediation (reservoir already accepted as permanently abandoned).
Vessels	· MODU with combined dynamic positioning (DP) and mooring capability (**Figure 2**). · Offshore support vessels (typically a multi-purpose support vessel (MPSV), light construction vessel (LCV), Inspection, Maintenance and Repair (IMR) Vessel, or Anchor Handling Tug Support Vessel (AHTSV). · General supply vessels including Infield Support Vessel (ISV) or Platform Supply Vessel (PSV).
Operational area and exclusion zones	· The Operational Area is defined by a 4000 m radius around each well to allow a moored MODU to undertake P&A activities. This includes a 1500 m radius around each well for non-moored activities and a 1000 m buffer around subsea infrastructure for IMR vessel-based activities. A temporary 500 m exclusion zone will be implemented to manage vessel movements around the MODU during permanent plugging and NWBM remediation activities.
Communication with mariners	· Marine users are permitted to use the Operational Area but should take care when entering. Marine users must remain clear of the 500 m temporary exclusion zone when in place.
Distance to nearest marine park/nature reserve	· Montebello Marine Park - Multiple Use Zone (Cth) - 3 km east of the Operational Area. · Montebello Islands Marine Park (WA) - 35 km southeast of the Operational Area. · Barrow Island Marine Park (WA) - 69 km southeast of the Operational Area.

Table 2 – Approximate locations of key infrastructure within the scope of the Julimar-Brunello P&A EP

Structure	Water Depth (m)	Latitude	Longitude	Titles
Julimar East-1	~171	20°06'23.21"S	115°05'07.97"E	WA-49-L
Brunello-1 ST 1	~151	20°03'16.247"S	115°10'25.273"E	WA-49-L
Brulimar-1	~171	20°00'18.265"S	115°11'04.989"E	WA-49-L
Balnaves Deep-1	~135	20°04'58.213"S	115°10'34.192"E	WA-49-L

Activity Location

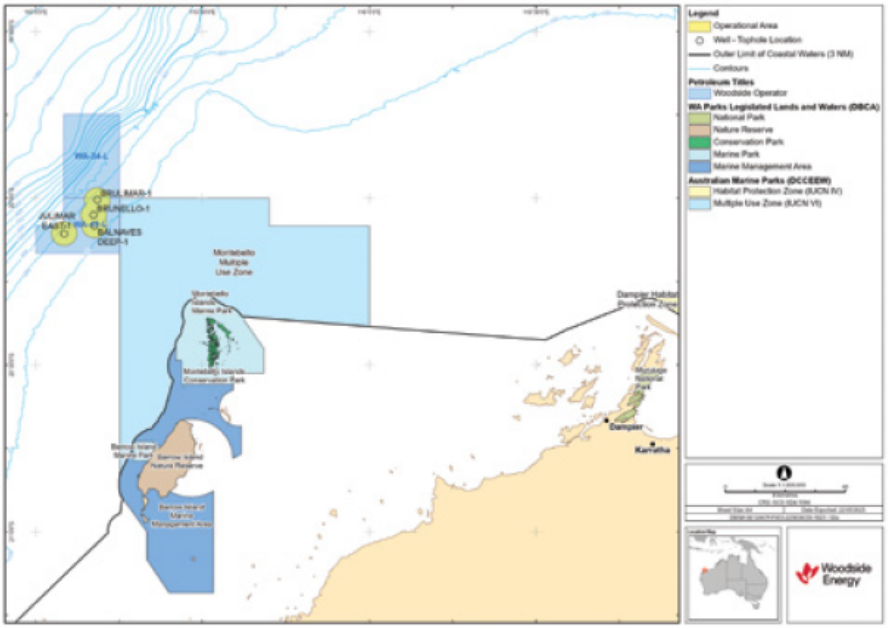

Figure 1. Location of the activity, including Julimar-Brunello Operational Area and nearby infrastructure

Uncontrolled when printed. Refer to electronic version for most up to date information.

Environment that May Be Affected (EMBA)

The EMBA is the largest geographic area where an unplanned event could potentially have an environmental consequence. The broadest extent of the EMBA takes into consideration planned activities and unplanned events. The EMBA was developed combining numerous modelling outputs based on highly unlikely releases of hydrocarbons to the environment. The modelling scenarios that inform the EMBA are loss of well containment, an unplanned release on NWBM, and vessel collision. The EMBA is depicted in Figure 3.

The EMBA does not represent the extent of the predicted impact of a highly unlikely hydrocarbon release. Rather, the EMBA represents the merged area of many possible paths that a highly unlikely hydrocarbon release could travel, which depends on the weather and ocean conditions at the time of a release. This means that in the highly unlikely event that a hydrocarbon release does occur, the whole EMBA 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**.

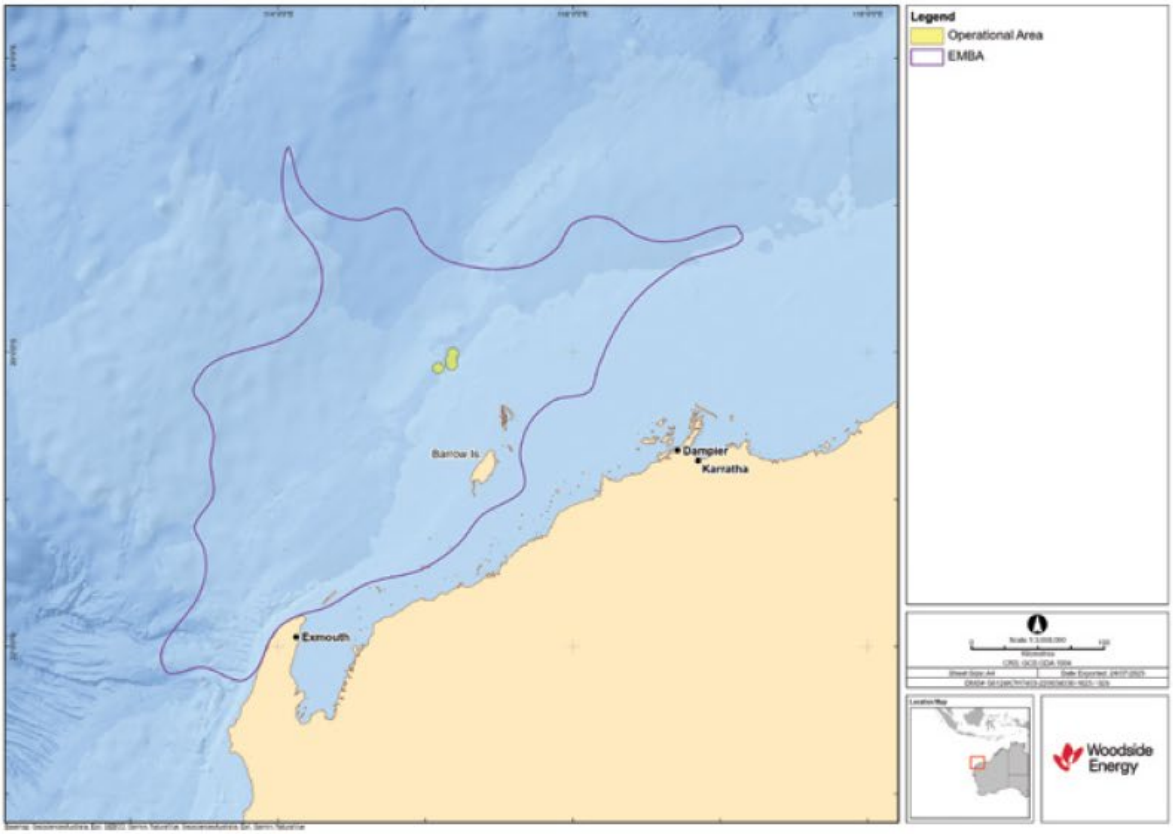

Figure 3. Environment that May Be Affected (EMBA) by the Julimar-Brunello P&A EP.

Uncontrolled when printed. Refer to electronic version for most up to date information.

Impacts/Risks, and Mitigation and/or Management Measures

Woodside has 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 we seek your feedback to inform our decision-making.

Table 3 – Summary of key impacts and risks and proposed management measures*

Potential 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***	• Physical presence of the MODU and subsea wells as well as offshore support vessels.	• Localised impact with no lasting effect arising from: – Subsea wells and equipment with the potential to interact with marine users such as commercial fisheries where fishing methods are at or close to the seabed. – Displacement or exclusion of other marine users when the MODU or vessels are in the field.	• Vessels adhere to regulatory requirements for navigational safety. • Notify Australian Fisheries Management Authority and the Department of Primary Industries and Regional Development at least 10 days prior to commencement and upon completion of activities. • Notify the Australia Hydraulic Office no less than four weeks prior to commencement of activities. • Notify AMSA at least 24 – 48 hours prior to commencement of vessel movement and activities. • Notify Department of Defence of activities and movements no less than five weeks before the scheduled activity commencement date. • Consult with relevant persons so they are informed of the proposed activities.
Physical Presence: ***Disturbance to Seabed***	• Seabed disturbance may result from the following activities: – Installation and recovery of MODU mooring chains and anchors; and BOP tethering equipment. – Presence of subsea infrastructure. – Wellhead cleaning and preparation activities. – Cutting and removal of wellheads.	• Localised impact with high environmental recovery. Impact to seabed arising from: – Localised modification of seabed habitat within the Operational Area. – Localised change in habitat, water quality, and sediment quality, which may affect fauna. • Indirect disturbance from suspended sediment and sediment deposition due to interactions with the seabed.	• Support vessels used for IMR activities will be dynamic positioning capable (vessels will not anchor). • Project-specific MODU Mooring Design Analysis. • Comply with regulatory requirements for Underwater Cultural Heritage (UCH). • Manage unexpected finds of potential UCH sites/features, including First Nations UCH, in accordance with Woodside's Unexpected Finds Procedure. • Relevant personnel will be trained on the potential to encounter UCH and their obligation to follow the Unexpected Finds Procedure. • Report any potential UCH finds to relevant stakeholders and authorities in accordance with the Unexpected Finds Procedure, Underwater Cultural Heritage Act 2018 and the Aboriginal and Torres Strait Islander Heritage Protection (ATSIHP) Act 1984. • An ROV as-left survey is undertaken at the end of activity to confirm all temporary equipment has been removed.
Acoustic Emissions: ***Generation of Noise from Project Vessels, MODU, Mechanical Equipment and Helicopter Operations***	• Noise generated in the Operation Area from: – MODU and support vessel thruster engines, propellers. – Helicopters. – Subsea cutting tools. – Positioning equipment. – P&A operations activities.	• Localised minor impact arising from: – Behavioural changes to marine fauna around MODU and support vessels.	• Project vessels comply with *EPBC Regulations 2000 – Part 8 Division 8.1 Interacting with cetaceans.* • Project vessels will not travel greater than 6 knots within 300 m of a cetacean. • If the cetacean shows signs of being disturbed, project vessels will immediately withdraw from the caution zone at a constant speed of less than 6 knots. • Stop or deviate from course if pygmy blue whale (or large unidentified whale) is observed during entry of a hybrid/DP MODU and petroleum industry vessel to the Operational Area. • Vessels will not travel greater than 6 knots within 300 m of a turtle (caution zone). • If the turtle shows signs of being disturbed, vessels will immediately withdraw from the caution zone at a constant speed of less than 6 knots (with the exception of a moored MODU). • Vessels will not travel greater than 6 knots within 250 m of a whale shark and not approach closer than 30 m of a whale shark. • Environmental Induction of all relevant vessel crew.

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Potential Impact/Risk	Description of Source of Impact/Risk	Description of Impact/Risk	Proposed Mitigation and/or Management Measure
Routine Light Emissions: *MODU, Project Vessels, and Flaring*	• External light emissions from MODU and project vessels and submersible equipment. • Light emissions from MODU operations - flaring.	• Localised impact with no lasting effect arising from: – Change in ambient light resulting in change in fauna behaviour.	• Lighting will be limited to the minimum required for navigational and safety requirements, with the exception of emergency events. • Implementation of appropriate management measures according to best practice lighting design as described in the National Light Pollution Guidelines for Wildlife Including Marine Turtles, Seabirds and Migratory Shorebirds. • Implementation of Woodside Offshore Seabird Management Plan. • Environmental Induction of all relevant marine crew. • Flaring / venting, if required, is restricted to a duration necessary to perform the activity for well kill.
Routine and Non-routine Atmospheric and Greenhouse Gas (GHG) Emissions	• Atmospheric and GHG emissions associated with flaring or cold venting, power generation, and fuel combustion.	• Localised impact with no lasting effect arising from: – Localised reduction in air quality in the immediate vicinity. – Contribution to global GHG emissions.	• Comply with regulatory requirements relating to GHG emissions and reporting. • Vessels comply with Marine Orders for pollution prevention to air.
Routine and Non-routine Discharges	• Routine discharge of sewage, grey water and putrescible wastes to marine environment from MODU and project vessels. • Routine discharge of deck and bilge water to marine environment from MODU and project vessels. • Routine discharge of brine and cooling water.	• Localised impact with no lasting effect arising from: – Change in marine water quality, which may affect fauna.	• MODU and support vessels comply with Marine Orders to prevent pollution events. • Assessment of chemicals used following Woodside's Chemical Selection and Assessment Environment Guideline.
	• Routine and non-routine drilling discharges such as: NWBM, swarf, cements, cuttings, drilling chemicals and bulk products during subsea well P&A and NWBD remediation activities.	• Localised impact with no lasting effect arising from: – Temporary reduction in water quality. – Sediment deposition. – Potential contamination and toxicity effects to benthic and in-water biota.	• Chemicals selected with the lowest practicable environmental impacts subject to technical constraints and approved through the Woodside chemical assessment process. • Options for use of excess bulk cement, bentonite and barite will be managed as per Woodside's Management process for excess bulk product. • Displacement, brine, intervention, or returned well fluids contaminated with hydrocarbons will be treated prior to discharge or contained. If discharge specification cannot be met the fluid will be returned to shore.

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Potential Impact/Risk	Description of Source of Impact/Risk	Description of Impact/Risk	Proposed Mitigation and/or Management Measure
Unplanned events (accidents / incidents)			
Unplanned Hydrocarbon Release: *Loss of Well Containment During P&A*	• Loss of condensate oil to marine environment due to loss of well containment.	• Potential major level impact with moderate recovery arising from: – Contact with sensitive nearshore areas of offshore islands and coastal shorelines. – Reduction in water and sediment quality. – Disruption to marine fauna including protected species. – Potential archaeological and intangible cultural heritage damage.	**Preventative:** • OPGGS (Resource Management and Administration) Regulations 2011: accepted Well Operations Management Plan (WOMP) which describes the well integrity outcomes, control measures and performance criteria that will be used to demonstrate how the risk of loss of well integrity is managed to (ALARP) including the well design and barriers to be used to prevent a loss of well integrity, which aligns with industry guidance and good practice. • Subsea Blow Out Preventer (BOP) installed, and function tested during permanent plugging operations. • Subsea Well Control Package (WCP), if installed, will be function tested during well intervention activities. The WCP shall meet the Woodside Well Control Standard and the Woodside MODU Deployed Subsea Installation and Workover Equipment Standard. • Maintain well barrier envelope to contain reservoir fluids within the well in compliance with Woodside Well Barrier Standard. **Spill response arrangements:** • In the event of a spill, emergency response activities will be implemented in accordance with the Oil Pollution Emergency Plan (OPEP). • Arrangements supporting the activities in the OPEP will be tested to ensure the OPEP can be implemented as planned.
Unplanned Hydrocarbon Release: *Vessel Collision*	• Loss of hydrocarbons to marine environment due to a vessel collision (e.g. support vessels or other marine users).	• Potential minor level impact with high recovery arising from: – Contact with sensitive nearshore areas of offshore islands and coastal shorelines. – Reduction in water quality. – Disruption to marine fauna including protected species. – Interference with or displacement of other marine users including activities of other regional petroleum activities.	**Preventative:** • Project vessels comply with Marine Orders for safe vessel operations. • Establishment of a 500 m temporary exclusion zone around MODU/infrastructure removal vessel and communicated to marine users. • Support vessel on standby as per the MODU safety case during the Petroleum Activity. **Spill response arrangements:** • In the event of a spill, emergency response activities are implemented in accordance with the Oil Pollution Emergency Plan (OPEP). • Arrangements supporting the OPEP will be tested to ensure the OPEP can be implemented as planned.
Unplanned Hydrocarbon or Chemical Release: *Hydrocarbon Release during Bunkering/ Refuelling and Chemical Transfer, Storage and Use*	• Loss of hydrocarbons to marine environment from bunkering/refuelling.	• Potential minor level impact with high recovery arising from: – Reduction in water quality. – Disruption to marine fauna. – Archaeological and intangible cultural heritage damage.	**Preventative:** • Comply with Marine Orders to prevent pollution events. • Bunkering equipment controls including integrity testing and certification of bulk transfer hoses, dry break couplings and floatation installed on fuel hoses. • Contractor procedures include requirements to be implemented during bunkering/ refuelling operations. • Liquid chemical and fuel storage areas are bunded or secondarily contained when they are not being handled/ moved temporarily. **Spill response arrangements:** • In the event of a spill, emergency response activities are implemented in accordance with the Oil Pollution Emergency Plan (OPEP) or Shipboard Oil Pollution Emergency Plan (SOPEP).

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Potential Impact/Risk	Description of Source of Impact/Risk	Description of Impact/Risk	Proposed Mitigation and/or Management Measure
Unplanned Discharges: ***Deck and Subsea Spills***	• Discharge of chemicals and hydrocarbons from MODU, project vessels and submersible equipment.	• Potential localised impact with no lasting effect arising from: – Reduction in water quality. – Disruption to marine fauna.	**Preventative:** • Liquid chemical and fuel storage areas are bunded or secondarily contained when they are not being handled/moved temporarily. • MODU and project vessels have a self-containing hydraulic oil drip tray management system. **Spill response arrangements:** • In the event of a spill, emergency response activities are implemented in accordance with the Oil Pollution Emergency Plan (OPEP) or Shipboard Oil Pollution Emergency Plan (SOPEP). • Spill kits positioned in high-risk locations around the MODU and project vessels (near potential spill points such as transfer stations).
Unplanned Discharges: ***Loss of Solid Hazardous and Non-hazardous Wastes (including dropped objects)***	• Accidental loss of hazardous or non- hazardous wastes to the marine environment (excludes sewage, grey water, putrescible waste and bilge water). • Dropped objects resulting in the disturbance of benthic habitat. • Inappropriate disposal of waste generated from infrastructure removal.	• Potential localised impact with no lasting effect arising from: – Reduction in water and sediment quality. – Disruption to marine fauna.	**Preventative:** • Project vessels compliant with Marine Orders for safe vessel operation and to prevent pollution events. • Implement waste management procedures which provide for safe handling and transportation, segregation and storage and appropriate classification of waste generated. • Work procedures in place for the MODU and project vessel lifts, bulk transfers, and cargo loading. **Mitigating:** • Lost waste or dropped objects will be recovered, where safe and practicable.
Unplanned Discharges: ***Drilling and Well Fluids***	• Accidental discharge of WBM or NWBM to the marine environment due to failure of slip joint packers, bulk transfer hose/fitting, emergency disconnect system or from routine MODU operations.	• Potential minor impact with high recovery arising from: – Localised reduction in water quality.	**Preventative:** • Comply with Marine Order 91 – Marine pollution prevention – oil (as appropriate to vessel class). • Where there is potential for loss of primary containment of oil and chemicals on the project vessels, deck drainage must be collected via a deck drainage water management system. • Procedures in place for managing drilling fluid transfers onto, around, and or the MODU.
Physical Presence: ***Introduction of Invasive Marine Species (IMS)***	• Vessels and submersible equipment have the potential to introduce IMS to the Operational Area through marine biofouling (containing IMS), as well as within high-risk ballast water exchange.	• Potential moderate impact with moderate recovery impact arising from: – Introduction and establishment of IMS in the Operational Area.	**Preventative:** • Ballast water and biofouling will be managed according to the Australian Ballast Water Management Requirements and the Australian Biofouling Management Requirements, as applicable. • Internationally sourced project vessels will manage their biosecurity risk associated with biofouling as specified in the Australian Biofouling Management Requirements. • Woodside's IMS risk assessment process will be applied to project vessels and relevant immersible equipment undertaking the Petroleum Activity.

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Potential Impact/Risk	Description of Source of Impact/Risk	Description of Impact/Risk	Proposed Mitigation and/or Management Measure
Unplanned Physical Presence: ***Interaction with Marine Fauna***	· Accidental collision between project vessels/MODU and protected marine fauna.	· Potential minor impact with high recovery arising from: – Injury or death to marine fauna (single individual) including protected species.	**Preventative:** · Project vessels comply with EPBC Regulations 2000 – Part 8 Division 8.1 Interacting with cetaceans. · Project vessels will not travel greater than 6 knots within 300 m of a cetacean. · Stop or deviate from course if pygmy blue whale (or large unidentified whale) is observed during entry of a hybrid/DP MODU and petroleum industry vessel to the Operational Area. · Vessels will not travel greater than 6 knots within 300m of a turtle (caution zone). · Environmental Induction of all relevant vessel crew.
Unplanned Physical Presence: ***Disturbance to Seabed***	· Loss of station-keeping of MODU leading to seabed disturbance.	· Potential localised impact with high recovery arising from: – Localised disturbance to benthic habitat (fish, benthic communities, Key Ecological Features).	**Preventative:** · Specifications and requirements for station-keeping equipment (mooring systems) require that: – Systems are tested and inspected in accordance with API RP 2I. – Systems have sufficient capability such that a failure of any single component will not cause progressive failure of the remaining anchoring arrangement. – Mooring system is tested to recommended tension as per API RP 2SK. **Mitigating:** · · MODU tracking equipment operational when the MODU is unmanned.
	· Dropped objects (including wellhead).	· Potential localised impact with high recovery arising from: – Reduction in water and sediment quality. – Disruption to marine fauna.	**Preventative:** · Refer to Unplanned Discharges: *loss of solid hazardous and non-hazardous wastes (including dropped objects)* for controls

**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 proposed petroleum activities.

If you would like to comment on the proposed activities outlined in this information sheet, please provide feedback to Woodside by **20 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 consultation 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 EP for the proposed activity, which will be submitted to NOPSEMA for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth)* and support other regulatory processes associated with the planned activities (which may or may not be required to be kept confidential).

Personal information collected in the course of consultation will be handled in accordance with Woodside's Environment Plan Privacy Collection Notice. To understand how personal information will be handled, please visit:
woodside.com/what-we-do/consultation-activities

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6.3.2 Summary Information Sheet

Woodside Energy

Summary Consultation Information Sheet
October 2025

Julimar Brunello Plug and Abandonment Environment Plan
(Commonwealth Waters)

Woodside Energy recognises Aboriginal and Torres Strait Islander peoples as Australia's First Peoples. We acknowledge their connection to land, waters and the environment and pay our respects to ancestors and Elders, past and present. We extend this recognition and respect to First Nations peoples and communities around the world.

Have Your Say

We want to talk, share ideas, and yarn with local community who have a deep connection to the land and sea. Your knowledge helps us do our work better!

We want to understand the environments we want to work in. We want to work in a way which manages the environmental impacts and risks of the activities appropriately. By working together, we want to help protect cultural heritage and keep the Land and Sea Country healthy.

We welcome feedback from 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 **20 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

Woodside proposes to undertake the following activities in subsea exploration wells in permit area WA-49-L:

- Permanent plug and abandon (P&A) of three wells using a Mobile Offshore Drilling Unit (MODU).
- Removal or isolation of Non-Water-Based-Mud (NWBM) in one additional well.
- Vessel-based preparation and support activities such as wellhead cleaning and inspections, pre-laying and recovery of moorings and tethering equipment.
- Cutting of wellhead infrastructure as close as reasonably practicable to the mudline and subsequent recovery immediately following P&A activities, or recovery by vessel by Quarter 2 2029.

Location

- Northern Carnarvon Sub-basin, in Commonwealth waters approximately 185 km west north-west of Karratha **(Figure 1)**.

Water Depth

- The wells are in water depths ranging from approximately 135 m to 170 m.
- The depths of the mooring spread around each well will range from approximately 120 m to 210 m.

Timing and Duration

- Wellhead preparatory activities: approximately 1-7 days per well. Earliest start March 2026.
- MODU preparation and support activities: approximately 5-10 days per well. Earliest start March 2026.
- P&A activities including wellhead removal: approximately 10-60 days per well (up to 180 days total). Earliest start April 2026.
- NWBD remediation: 2-20 days. Earliest start April 2026. Planned completion December 2027.

Joint Venture

- Woodside is operator on behalf of the Julimar joint venture participants.
- Participants are Woodside Energy Julimar Pty Ltd and KUFPEC Australia (Julimar) Pty Ltd.

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Activity Location

The EP explains how Woodside will manage environmental risks and impacts while carrying out our activities. These plans help us conduct operations safely and responsibly, with respect for the environment and cultural heritage. The location where the work will be done is known as the Operational Area (**Figure 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.

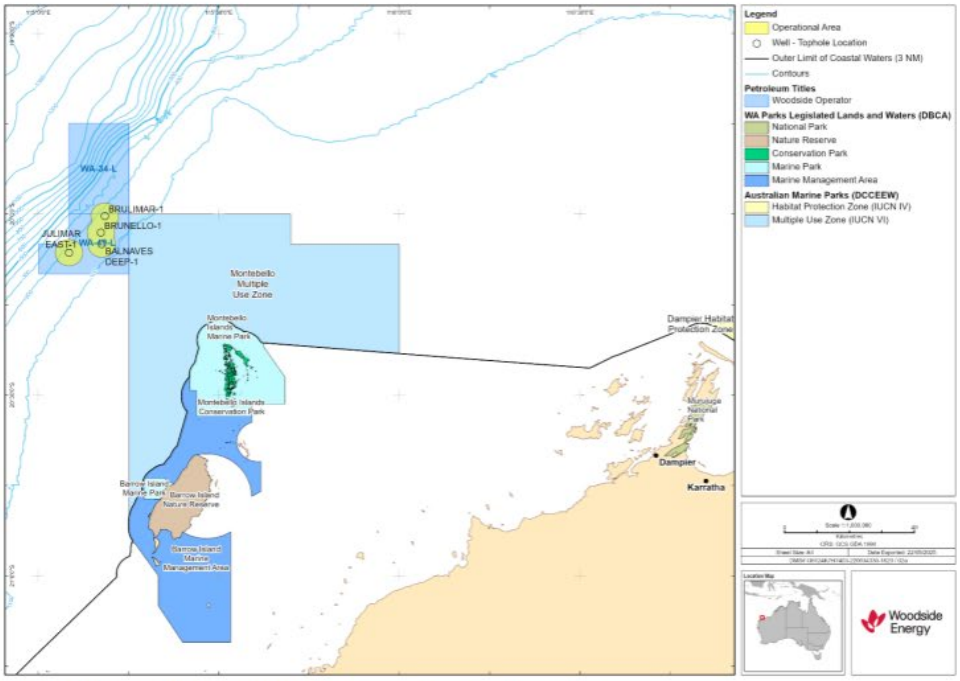

Figure 1: Location of the activity, including Julimar Brunello Operational Area and nearby infrastructure

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 loss of well containment and 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.

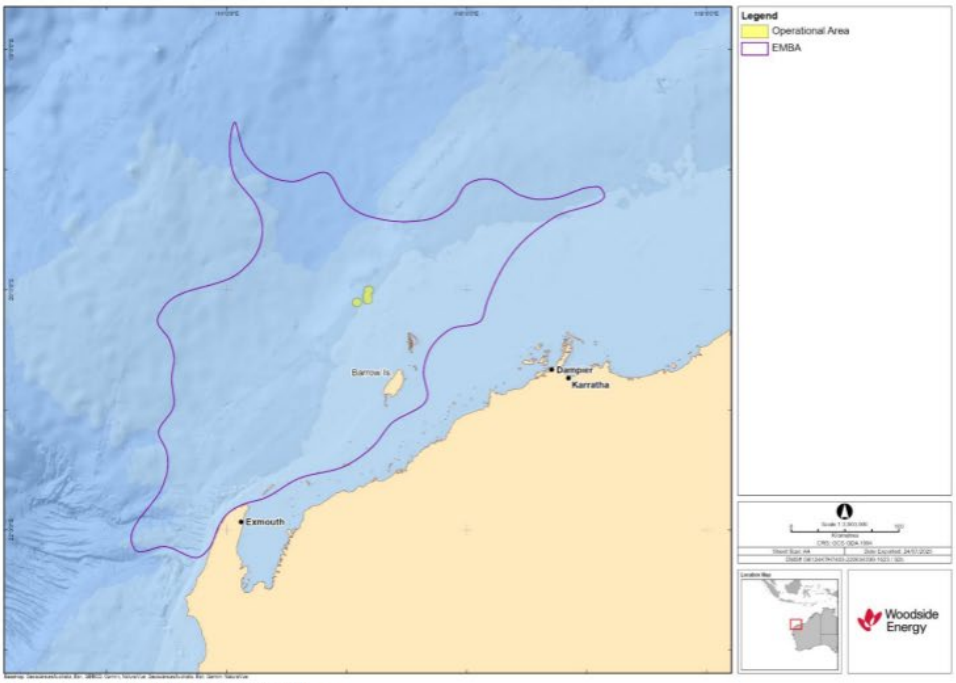

Figure 2: Environment that May Be Affected (EMBA) map

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 sent to on top of initial consultation email to Aquaculture Council of Western Australia (ACWA), Australasian Centre for Corporate Responsibility (ACCR), Australian Border Force (ABF), Australian Conservation Foundation (ACF), Australian Energy Producers (AEP), Australian Fisheries Management Authority (AFMA), Australian Hydrographic Office (AHO), Australian Institute of Marine Science (AIMS), Australian Marine Conservation Society (AMCS), Australian Maritime Safety Authority (AMSA), Australian Maritime Safety Authority (AMSA)–Marine Pollution, Beagle No. 1, Cape Conservation Group (CCG), Carbon CQ, Chevron Australia, City of Karratha, Commonwealth Fisheries Association (CFA), Commonwealth Scientific and Industrial Research Organisation (CSIRO), Conservation Council of WA (CCWA), Curtin University, Department of Agriculture, Fisheries and Forestry (DAFF) – Biosecurity, marine pests, vessels, aircraft and personnel, Department of Agriculture, Fisheries and Forestry (DAFF)–Fisheries, Department of Biodiversity, Conservation and Attractions (DBCA), Department of Climate Change, Energy, the Environment and Water (DCCEEW), Department of Defence (DoD), Department of Industry, Tourism and Trade, Department of Mines, Petroleum and Exploration, Department of Planning, Lands and Heritage, Department of Primary Industries and Regional Development, Department of Transport (DoT), Director of National Parks (DNP), Edith Cowan University (ECU), Exmouth Chamber of Commerce and Industry (Exmouth CCI), Exmouth Community Liaison Group (Exmouth CLG), Exxon Mobil Development, Friends of the Earth, Gascoyne Recreational Marine Users, Greenpeace Australia Pacific (GAP), InCapture, INPEX (EP), JERA Gorgon, JX Nippon, Karratha Community Liaison Group (Karratha CLG), Karratha & Districts Chamber of Commerce and Industry (KDCCI), KATO Energy (WA), Kuwait Foreign Petroleum Exploration Company (KUFPEC), Kyushu Electric Wheatstone, Marine Tourism WA, Maritime Union of Australia (MUA), Melbana Exploration, MidOcean Gorgon, Murdoch University, Ningaloo Coast World Heritage Advisory Committee (NCWHAC), OMV Australia, Onslow Chamber of Commerce and Industry (Onslow CCI), Osaka Gas Gorgon, Pearl Producers Association (PPA), Pelsart Resources N.L., PE Wheatstone, Pilbara/Kimberley Recreational Marine Users, Pilbara Ports, Protect Ningaloo, Recfishwest, Santos, Shell Australia Pty. Ltd., Shire of Ashburton, SK Earthon, Skye Napoleon Pty Ltd, South Coast Recreational Marine Users, Tanami Energy, The Wilderness Society (TWS), University of Western Australia (UWA), WA Game Fishing Association, West Coast Recreational Marine Users, Western Australian Marine Science Institution (WAMSI), Western Australian Museum (WAM), Western Gas – 10 October 2025

Good afternoon,

Following the commencement of consultation on the Julimar Brunello Plug and Abandonment Environment Plan on **11 August 2025** Woodside has updated the activity overview.

An updated Consultation Information Sheet reflecting this update is attached and available on our website.

There are no other changes to the previously provided consultation information.

Updated information

In our initial options assessment for the cutting and recovery of the wellheads, the activity overview stated:

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- Cutting and recovery of wellhead infrastructure *at or below* the mudline following P&A or recovery by vessel at a later date.

On further assessment, the proposed activity has been reviewed and as a contingent option, cutting and recovery may be required as close as reasonably practicable to the mudline. The environmental impacts of the potential cutting outcomes have been assessed in the Environment Plan and there are no additional required mitigation measures beyond those previously presented. The contingent recovery date has also been specified.

The activity overview has been updated and now states:

- Cutting and recovery of wellhead infrastructure *as close as reasonably practicable to the mudline and subsequent recovery immediately following P&A activities, or recovery by vessel by Q2 2029.*

If you have feedback specific to the changes, we would welcome your feedback at consultation@feedback.woodside.com or 1800 442 977 by **20 October 2025.**

Your feedback and our response will be included in our Environment Plan 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 Environment Plan 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.

6.3.4 Email sent to Western Australian Fishing Industry Council (WAFIC) – 10 October 2025

Please see below Activity Update for the Julimar-Brunello Plug and Abandonment Environment Plan. The consultation period is due to close on 20 October 2025.

A revised Consultation Information Sheet is also attached.

Under the fee-for-service agreement Option A, can WAFIC please provide the consultation information to the following fisheries based on active fishing (Fishcube data) in the Operational Area:

- Mackerel Managed Fishery
- Marine Aquarium Fish Managed Fishery
- Onslow Prawn Managed Fishery
- Pilbara Trap Managed Fishery
- Pilbara Line Fishery

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6.3.5 Letter sent to Gascoyne, Pilbara/Kimberley, South Coast and West Coast Recreational Marine Users – 6 October 2025

Please direct all responses/queries to:
Woodside Energy Consultation
t: +61 8 (1)800 442 977
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

06 October 2025

[redacted]

212761 - 3

Dear Stakeholder

JULIMAR BRUNELLO PLUG AND ABANDONMENT ENVIROMENT PLAN – ACTIVITY UPDATE

Dear Stakeholder

Following the commencement of consultation on the Julimar Brunello Plug and Abandonment Environment Plan on **11 August 2024** Woodside has updated the activity overview.

An updated Consultation Information Sheet reflecting this update is attached and available on our website www.woodside.com/what-we-do/consultation-activites.

There are no other changes to the previously provided consultation information.

Updated information

In our initial options assessment for the cutting and recovery of the wellheads, the activity overview stated:

- Cutting and recovery of wellhead infrastructure *at or below* the mudline following P&A or recovery by vessel at a later date.

On further assessment, the proposed activity has been reviewed and as a contingent option, cutting and recovery may be required as close as reasonably practicable to the mudline. The environmental impacts of the potential cutting outcomes have been assessed in the Environment Plan and there are no additional required mitigation measures beyond those previously presented.

The activity overview has been updated and now states:

- Cutting and recovery of wellhead infrastructure *as close as reasonably practicable to* the mudline following P&A or recovery by vessel at a later date.

If you have feedback specific to the changes, we would welcome your feedback at consultation@feedback.woodside.com or 1800 442 977 by **20 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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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 at www.woodside.com/what-we-do/consultation-activites.

Regards

Woodside Energy Consultation

Woodside Energy
Mia Yellagonga
Karlak, 11 Mount Street
Perth WA 6000
Australia

T: 1800 442 977
E: consultation@feedback.woodside.com
www.woodside.com

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6.4 Follow-up to consultation update

6.4.1 Email sent to on top of initial consultation email to Aquaculture Council of Western Australia (ACWA), Australasian Centre for Corporate Responsibility (ACCR), Australian Border Force (ABF), Australian Conservation Foundation (ACF), Australian Energy Producers (AEP), Australian Institute of Marine Science (AIMS), Australian Marine Conservation Society (AMCS), Australian Maritime Safety Authority (AMSA)–Marine Pollution, Beagle No. 1, Cape Conservation Group (CCG), Carbon CQ, Commonwealth Fisheries Association (CFA), Commonwealth Scientific and Industrial Research Organisation (CSIRO), Conservation Council of WA (CCWA), Curtin University, Department of Agriculture, Fisheries and Forestry (DAFF) – Biosecurity, marine pests, vessels, aircraft and personnel, Department of Agriculture, Fisheries and Forestry (DAFF)–Fisheries, Department of Climate Change, Energy, the Environment and Water (DCCEEW), Department of Defence (DoD), Department of Industry, Tourism and Trade, Department of Mines, Petroleum and Exploration, Department of Transport (DoT), Edith Cowan University (ECU), Exmouth Chamber of Commerce and Industry (Exmouth CCI), Exmouth Community Liaison Group (Exmouth CLG), Exxon Mobil Development, Friends of the Earth, Gascoyne Recreational Marine Users, Greenpeace Australia Pacific (GAP), InCapture, INPEX (EP), JERA Gorgon, JX Nippon, Karratha Community Liaison Group (Karratha CLG), Karratha & Districts Chamber of Commerce and Industry (KDCCI), KATO Energy (WA), Kuwait Foreign Petroleum Exploration Company (KUFPEC), Kyushu Electric Wheatstone, Marine Tourism WA, Maritime Union of Australia (MUA), Melbana Exploration, MidOcean Gorgon, Murdoch University, Ningaloo Coast World Heritage Advisory Committee (NCWHAC), OMV Australia, Onslow Chamber of Commerce and Industry (Onslow CCI), Osaka Gas Gorgon, Pearl Producers Association (PPA), Pelsart Resources N.L., PE Wheatstone, Pilbara/Kimberley Recreational Marine Users, Protect Ningaloo, Santos, Shell Australia Pty. Ltd., Shire of Ashburton, SK Earthon, Skye Napoleon Pty Ltd, South Coast Recreational Marine Users, Tanami Energy, University of Western Australia (UWA), WA Game Fishing Association, West Coast Recreational Marine Users, Western Australian Marine Science Institution (WAMSI), Western Australian Museum (WAM), Western Gas – 14 October 2025

Good afternoon,

Following the commencement of consultation on the Julimar Brunello Plug and Abandonment Environment Plan on **11 August 2025,** Woodside advised last week it had updated the activity overview.

An updated Consultation Information Sheet reflecting this update is attached and is also available on Woodside's website.

There are no other changes to the previously provided consultation information.

Updated information

In our initial options assessment for the cutting and recovery of the wellheads, the activity overview stated:

- Cutting and recovery of wellhead infrastructure *at or below* the mudline following P&A or recovery by vessel at a later date.

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On further assessment, the proposed activity has been reviewed and as a contingent option, cutting and recovery may be required as close as reasonably practicable to the mudline. The environmental impacts of the potential cutting outcomes have been assessed in the Environment Plan and there are no additional required mitigation measures beyond those previously presented. The contingent recovery date has also been specified.

The activity overview has been updated and now states:

- Cutting and recovery of wellhead infrastructure *as close as reasonably practicable to the mudline and subsequent recovery immediately following P&A activities, or recovery by vessel by Q2 2029.*

If you have feedback specific to the changes, we would welcome your feedback at consultation@feedback.woodside.com or 1800 442 977 by **20 October 2025.**

Your feedback and our response will be included in our Environment Plan 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 Environment Plan 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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6.4.2 Letter sent to Gascoyne, Pilbara/Kimberley, South Coast and West Coast Recreational Marine Users – 6 October 2025

Please direct all responses/queries to:
Woodside Energy Consultation
t: +61 8 (1)800 442 977
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

14 October 2025

[redacted]

212989 - 1

Dear Stakeholder

JULIMAR BRUNELLO PLUG AND ABANDONMENT ENVIROMENT PLAN – ACTIVITY UPDATE

Dear Stakeholder

Woodside previously provided you with an activity update on the Julimar Brunello Plug and Abandonment Environment Plan (EP).

Following the commencement of consultation on this EP on **11 August 2025,** Woodside has updated the activity overview.

The activity update stated that consultation commenced on **11 August 2024**. The correct date is **11 August 2025**.

An updated Consultation Information Sheet reflecting this update is available on our website at www.woodside.com/what-we-do/consultation-activites.

There are no other changes to the previously provided consultation information.

Updated information

In our initial options assessment for the cutting and recovery of the wellheads, the activity overview stated:

- Cutting and recovery of wellhead infrastructure *at or below* the mudline following P&A or recovery by vessel at a later date.

On further assessment, the proposed activity has been reviewed and as a contingent option, cutting and recovery may be required as close as reasonably practicable to the mudline. The environmental impacts of the potential cutting outcomes have been assessed in the EP and there are no additional required mitigation measures beyond those previously presented.

The activity overview has been **further** updated and now states:

- Cutting and recovery of wellhead infrastructure *as close as reasonably practicable to the mudline and subsequent recovery immediately following P&A activities, or recovery by vessel by Q2 2029.*

If you have feedback specific to the changes, we would welcome your feedback at consultation@feedback.woodside.com or 1800 442 977 by **20 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

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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

Woodside Energy Consultation

Woodside Energy

Woodside Energy
Mia Yellagonga
Karlak, 11 Mount Street
Perth WA 6000

T: 1800 442 977
E: consultation@feedback.woodside.com
www.woodside.com

6.5 Newspaper advertisements

6.5.1 The Australian – 11 August 2025

THE AUSTRALIAN MONDAY, AUGUST 11, 2025

4 THE NATION

Costs force NDIS providers to pull the plug

EXCLUSIVE

SAHAJI SIOW
SENIOR POLITICAL REPORTER

NDIS providers are leaving the sector in droves following a controversial pricing review decision in June, while the not-for-profit sector warns the disability agency must move urgently on long-stalled financial reforms and registration of all providers or suffer a further exodus of services.

As Health and Disability Minister Mark Butler prepares to host his own roundtable on Wednesday to inform Jim Chalmers' economic reform summit later in the month, Disability Intermediaries Australia has revealed nearly 40 support co-ordination businesses have left the market since June.

Jess Harper, chief executive of DIA, the national peak body for support co-ordinators and plan managers, said the "best world-impacts" were being felt from the decision to reduce hourly rates for some support services and slash travel allowances.

"If the NDIA values participant outcomes and long-term productivity, it must address this issue before more damage is done," he said.

"Providers are closing, staff with disability are losing meaningful employment and participants are being left without trusted support."

The question over how to improve the care economy will be a key feature of Labor's three-day economic roundtable, for which dozens of ideas have already been vandalised – from changes to migrive gearing to the need for AI agreements to be struck between employers and businesses.

However, discussion on the $40bn-a-year NDIS has been muted, with many providers and advocates still waiting for further details on the new system of supports Labor has promised to set up for those with milder disabilities.

These "foundational supports" are yet to be agreed with the states.

On top of concerns raised by DIA, which represents for-profit providers, leading peak bodies and not-for-profits have raised alarm over recent announcements from providers Bedford and Annecto that they would shut their doors.

After Bedford said it would go into voluntary administration, the South Australian government said it would intervene with a multimillion-dollar package.

Founding member of the NDIA board Martin Laverty slammed the body for knowing about the problem facing not for-profits for some time, with recommendations for reform contained in three reports over the past three years, but not acting fast enough.

"For services to continue smoothly, price reform is not just urgent, but critical," he said.

He warned not for-profits were facing incredible high regulatory burdens but were made to operate under the same financial standards as registered providers.

As a result, many providers were in deficit and median liquidity ratios had fallen to only one month, compared to the recommended three.

Despite concerns raised across the for-profit and not-for-profit sectors, the NDIA said the market was growing, not shrinking.

The NDIA monitors markets to ensure participants have access to quality supports, continues to receive the supports they need and the market remains sustainable," a spokesperson said.

"The NDIA does not directly fund providers, but allocates funding to NDIS participants and business decisions, including whether to continue offering services through the NDIS, are a matter for individual organisations.

"In the March quarter there were 28,345 active providers delivering services through the NDIS – up from 205,367 in the same quarter a year earlier".

More than 40 groups and experts across the disability, health and aged care sector have been invited to Mr Butler's roundtable, which is being held in Sydney.

Labor ponders flat-fee fix for childcare

Continued from Page 1

pushing the government to begin work on the ideas in the short term.

"A truly universal early childhood education and care system would be one of the most transformative reforms the government could deliver to supercharge productivity," CPD chief executive Andrew Hudson said.

"The returns are enormous – children get the best start in life, parents – especially women – can better balance work and care, workforce participation rises, and the economy gets a major boost.

"We know the government is moving in this direction and encourage them to build further towards a universal system in this term of government."

As part of its recommendation, the CPD urges for a legislated entitlement for all children to access three days of education and care per week at a low set fee, such as $10 a day, or no cost.

Luther must also stall to a new funding model that replaces the subsidy system with "base funding for all providers and additional needs and service-based funding for specific costs", the CPD argues.

According to modelling by organisations including Thrive By Five and the Productivity Commission, overhauling the current model of care and moving to a $10-a-day flat-fee system could cost an additional $8.5bn a year.

While the PC cautioned the government against implementing a flat-fee system, arguing the high-cost change would not benefit those who needed it most, the Australian Competition and Consumer Commission found in mid-2023 that the subsidy model was deeply flawed.

The ACCC's report on childcare affordability found fees rose at nearly double the rate of wages and well above inflation over the four years to 2023.

Calls for the funding system to be overhauled have intensified in recent months, following a series of abuse scandals in childcare centres across the country.

Last year, former childcare worker Ashley Paul Griffith was dubbed "one of Australia's worst pedophiles" after abusing dozens of girls.

The Griffith case shocked the nation, but was followed by a number of other abuse revelations, including a case in recent month that saw 2700 children in Victoria advised to undergo infectious disease testing after a childcare worker was discovered to be sexually abusing infants.

Several Labor MPs who spoke to The Australian said it was time to "do away" with the private, for-profit childcare system, with one senior member of the government declaring the latest scandals made it clear the system was "broken".

"It's a broken model and it's starting to all come undone," one MP said.

Labor sources played down the significance of the CPD report and the discussions being held on the proposal, declaring it was "standard" for the government to receive such reports. "The Albanese Labor government is building universal early education and care pillar by pillar, NDIS Minister Jess Walsh said.

Mr Hudson said moving to a "child-focused funding model", where providers are funded directly by the government rather than operating on a for-profit basis, would deliver higher-quality childcare.

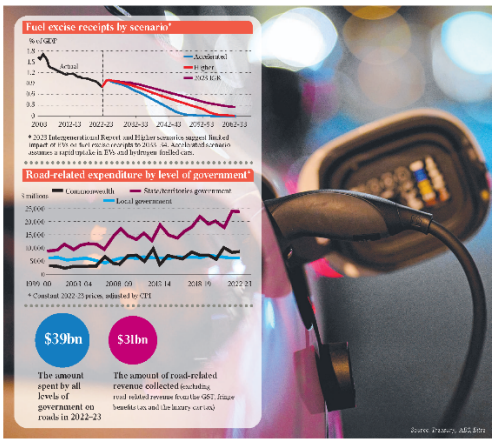
Ahead of the rollout of Labor's $8bn Building Early Education Fund, which will see 160 childcare centres built in coming years, other advocates joined the CPD's calls for the government to adopt a new system of funding.

"The $8bn Building Early Education Fund offers an opportunity to test alternative funding options in areas where the current subsidy model has made early learning services financially unviable – particularly in communities with the greatest need," The Parenthood chief executive Georgie Dent said.

"We don't subsidise parents to send children to school – we directly fund schools. That direct link between funding and outcomes is exactly what we need in early education and care."

Reforms to childcare were among several CPD recommendations for economic reform ahead of the roundtable, with other proposals including for Labor to broaden the tax base and shift the mix away from income and towards land, rents and consumption – including increasing and broadening the GST.

While Mr Albanese has ruled out implementing new taxes this term, Labor sources agreed the government would likely work towards unveiling a new suite of tax reform ahead of the 2028 election.



'End the free ride for EV drivers'

Continued from Page 1

kilometre charge of up to 26c, which equated to about $800 a year. Senior industry sources said "compare that amount to the metallic option on a Tesla, which costs up to $3000".

Amid inaction by successive federal governments, Victoria, NSW and other states pressed ahead with their own road-user charging schemes. Despite the High Court ruling that under section 90 of the Constitution the Commonwealth must impose customs and excise duties, the NSW government has budgeted a road user charge commencing from mid-2027, or when EVs account for 30 per cent of new car sales. Treasury and the Productivity Commission have warned the Albanese government about the widening gap between the failing fuel excise take, impacted by the rise of low-emissions cars, and spiralling road maintenance costs. A commission report last week said "road infrastructure should be funded through user charges ... that reflect the efficient cost of providing and maintaining their infrastructure".

"By giving drivers a clear signal about the cost of infrastructure, they would have an incentive to use it more efficiently," the report said.

After the Albanese government established the New Vehicle Efficiency Standard to accelerate take-up of EVs and low-emissions cars, the commission urged all governments to phase out exemptions for EVs from fringe benefits tax and vehicle stamp duty, and move away from registration discounts.

Mr Pallas, the longest serving stand-alone Victorian treasurer, told The Australian that EVs were "heavier and do more damage to the road network as a consequence than do internal combustion engine vehicles".

"But there is an environmental plus to electric vehicles. So getting that balance right was key to us. The way we figured it, (a road-user charge) came in about half of the equivalent costs of fuel excise and that's not counting the incentives the state was putting into the vehicle purchase or registration for low emissions vehicles," Mr Pallas said.

Mr Pallas said Victoria's road user charge was "about trying to find a fair way, recognising the contribution that low-emissions vehicles make towards our environmental objectives but also recognise that they had a very substantial free ride as it were carved up, potentially based on intrastate versus interstate journeys. Mr Dwyer said "even when electric vehicles didn't exist, fuel excise was a really inefficient way of charging for road use".

"You've got someone in a really heavy car paying a load and someone next to them in a hybrid paying less. There is a fairness issue in that you've got two cars next to each on the road both putting the same service, one paying, one not," Mr Dwyer said.

The Infrastructure Partnerships Australia boss is advocating for a model where "everybody

The charge is on: why all road users must pay their dues

GEOFF CHAMBERS
COMMENT

The free ride for electric vehicle drivers must come to an end for the sake of Australia's roads, budgets and common sense.

Jim Chalmers is finally laying the groundwork to do what his predecessors conveniently kicked down the road from fear of a backlash from inner-city Tesla drivers in teal electorates.

While EVs and hybrids are gradually becoming cheaper, for many years they have been the domain of wealthier Australians who don't live in outer-suburban or regional areas.

Millions of Australians driving petrol or diesel vehicles, which are becoming more efficient, are doing the heavy lifting by paying fuel excise every time they fill up at the bowser. EV drivers have won the taxpayer-funded lottery.

Not only do they not pay a cent for using roads, which in many parts of the country are not up to scratch, they have been handed a bucketload of incentives: exemptions from fringe benefits tax, exemptions from vehicle stamp duty, and discounts on rego bills.

The fairness argument is overwhelming.

The logic argument is just as strong.

The longer Australia puts off implementing a road-user charge, the harder it becomes for governments to put a system in place that anchors long-term road-funding streams as fuel excise revenue shrinks.

As New Zealand and US states streak ahead on road-user charges, successive governments have ignored warnings from their own experts at the Productivity Commission and Treasury.

The inaction in Canberra even forced the hand of Labor state governments, led by Victoria, to press ahead with their own road-user charge.

Transurban chief executive Michelle Jablko, whose company is conducting trials of road-user charging schemes across the US including in California, is right in saying the focus should be on developing a "practical and simple solution that delivers benefits for governments, road users and the broader economy".

ALP elder Tim Pallas, the long-serving former Victorian treasurer who took his road-user charge all the way to the High Court, and Liberal veteran Paul Fletcher, who back in 2013 first pushed the need for a road-user charging system, are on a unity ticket.

Chalmers, who is talking with state and territory treasurers, Chris Bowen and Catherine King about progressing a nationally-led road-user charging system, will face predictable questions about how the levy would blow up EV take-up and drive up emissions.

After three years of generous government incentives and establishment of the New Vehicle Efficiency Standard, there is an imperative to act before EVs become a larger cohort in the national fleet.

The time for action is now, and given the dire warnings from Treasury on the revenue side, a road-user charge is good for the country's roads, economy and productivity.

should contribute and that fair nessis best served by putting distance-based charge on vehicles that don't pay fuel excise".

"The longer you delay doing that, the harder it is to do," Mr Dwyer said. "Fuel excise is now in terminal decline, that money has got to come from somewhere."

Mr Dwyer said across the infrastructure sector, markets where users pay tended to "be the best provided for, the best maintained, the most responsive to customers needs".

"We are in a situation now where the commonwealth has the right to collect the charge but it has limited practical capacity to collect because it doesn't license any drivers or register any vehicles," he said. "Everybody agrees what the answer is. But it moves you on to the implementation question. The danger is we get caught up in the details."

Mr Fletcher – who as urban infrastructure minister in the Turnbull government progressed steps towards a road user charge – said "unless we act, a vital source of road funding will be steadily eroded". The former Bradfield MP, whose Coalition govern ments stalled action on a road-user charge backed such a measure "based on the number of kilometres the vetride drives on the road".

With the share of electric vehicles expected to increase over time – which is a good thing – we need to update the current system," Mr Fletcher said.

"The current arrangements are also unfair – particularly to those petrol and diesel car owners who drive longer distances, in our outer suburbs and in regional and remote Australia.

"As a Liberal, I want to see the lowest possible taxes charged fairly across the broadest possible tax base. If most Australians have no choice but to pay this particular tax – but some can avoid it by buying an expensive vehicle using the latest technology – then we have a problem with the design of the tax."

Julimar-Brunello Plug & Abandonment (P&A) Environment Plan

Woodside has led the development of the LNG industry in Australia and today aims to thrive through the global energy transition.
Woodside consults with relevant persons to gather feedback to inform its Commonwealth Environment Plans.

Julimar-Brunello Plug & Abandonment (P&A) Environment Plan

Environment that May Be Affected (EMBA)

We would like to hear from you

To find out more go to:
www.woodside.com/what-we-do/consultation-activities

consultation@feedback.woodside.com
Toll free: 1800 442 977
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Woodside Energy

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6.5.2 The West Australian – 11 August 2025

The West Australian
Monday, August 11, 2025

Picture: Ibrahim Alshwamin

TIME TO REST AND REFLECT

A simple stop in a mangrove safe haven produced an otherworldly, ethereal image for photographer Ibrahim Alshwamin.

His photo of flamingos resting on their migratory journey through Saudi Arabia earned him runner-up in the Mangrove Photography Awards 2025 for the birds category.

In the Jazan region, the trees are vital coastal habitats that provide a rich food environment for flamingos who feed on algae and small invertebrates like crustaceans and plankton in the shallow waters.

The mangroves offer a refuge, shielding them from predators, making them an ideal rest stop during migration and a key contributor to biodiversity along Saudi Arabia's coastline.

Is RBA cut a rate accompli

ALEX MITCHELL

Australia's central bank is expected to give mortgage holders repayment relief on Tuesday — a month after its surprise decision to keep interest rates on hold.

The Reserve Bank of Australia board, which meets on Monday and Tuesday, is expected to shave 25 basis points off the official cash rate, taking the figure to 3.6 per cent.

Each 25-basis-point cut to interest rates shaves about $90 off monthly repayments on a $600,000 mortgage, assuming banks pass on the reduction in full.

The cash rate was last at 3.6 per cent in April 2023.

The surprise jump in unemployment combined with inflation data within the RBA's target zone should make a cut on Tuesday almost inevitable, Westpac Group chief economist Luci Ellis said.

"Further cuts in November, February 2026 and May 2026 also look increasingly likely," she said.

"We think this is at the lower end of what could be regarded as neutral, and would reflect the RBA's response to a path for underlying inflation that turns out a little lower than what it forecast in May."

In a move that caught analysts and many mortgage holders off guard, the central bank kept the cash rate steady at 3.85 per cent in July.

Economists had pencilled in a 25-basis-point cut because of slowing inflation. The RBA board said price stability and full employment were priorities.

"The board judged that it could wait for a little more information to confirm that inflation remains on track to reach 2.5 per cent on a sustainable basis," the post-meeting statement read.

The latest quarterly inflation data showed the preferred figure of trimmed mean at 2.7 per cent.

"That should be a pleasant surprise as the RBA had unofficially revised up its forecasts based on the April and May monthly CPI reports," CreditorWatch chief economist Ivan Colhoun said.

"(We) expect the RBA board to vote unanimously to deliver another interest rate cut . . . this will be welcome news for both consumers and businesses alike."

The jobless rate rose to 4.3 per cent, surpassing expectations, as the number of unemployed Australians grew.

Financial markets expected the rate to remain steady at 4.1 per cent in June.

KPMG senior economist Terry Rawnsley said there was nothing in the various data points that should prevent a rate cut.

"Australia's labour market remains resilient, despite signs of moderation, with unemployment at 4.3 per cent, its highest level since late 2021, but still historically low . . . this has been critical in helping households navigate the cost-of-living crisis," Mr Rawnsley said.

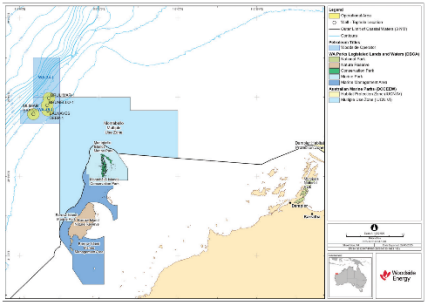
Julimar-Brunello Plug & Abandonment (P&A) Environment Plan

Woodside has led the development of the LNG industry in Australia and today aims to thrive through the global energy transition. Woodside consults with relevant persons to gather feedback to inform its Commonwealth Environment Plans.

Julimar-Brunello Plug & Abandonment (P&A) Environment Plan

Woodside proposes to undertake activities to permanently plug and abandon (P&A) a number of subsea exploration wells in permit area WA-49-L, including:

- Permanent P&A of three wells using a Mobile Offshore Drilling Unit (MODU).
- Remediation (i.e. removal or isolation) of Non-Water-Based-Mud (NWBM) in the annulus of one additional well.
- Vessel-based preparation and support activities (e.g. wellhead cleaning and inspections, pre-laying of moorings and blowout preventer (BOP) tethering equipment, recovery of moorings and tethering equipment).
- Cutting and recovery of wellhead infrastructure at or below the mudline following P&A or recovery by vessel at a later date.



Environment that May Be Affected (EMBA)

The EMBA is the largest geographic area where unplanned activities could potentially have an environmental consequence. The whole EMBA will not be affected.

We would like to hear from you

If you are an individual, organisation or community group and believe your functions, interests or activities may be impacted by the activities under this Environment Plan, we want to hear from you by **8 September 2025**.

To find out more go to:

www.woodside.com/what-we-do/consultation-activities

You can also subscribe via our website to receive future information on upcoming activities.

consultation@feedback.woodside.com
Toll free: 1800 442 977
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6.5.3 Pilbara News – 13 August 2025

Pilbara NEWS
Wednesday, August 13, 2025
pilbaranews.com.au

Fair Game expansion is on the Horizon

CAIN ANDREWS

Fair Game Australia, which runs sporting workshops for at-risk kids, is expanding its program with a new community liaison officer and two recreation co-ordinators as it plans to deliver 30 workshops across the Kimberley, Pilbara and Mid West this year.

The expansion is part of a $150,000 three-year partnership with Horizon Power which will also support volunteer training and management for the teams who deliver the remote community programs.

Fair Game Australia chief executive Nicki Bardwell said the support had been "instrumental in allowing the organisation to expand the geographical reach of its health, education and fitness programs".

"It gives us the operational certainty required to commit to regular program delivery for an increasing number of remote communities across the Kimberley, Pilbara and Mid West," she said.

"The three-year partnership will enable us to co-fund a community liaison officer and two recreation co-ordinators, enhancing our impact, with greater continuity in relationships and increased opportunity to work closely with communities to co-design programming tailored to each one's specific needs."

In 2024, Fair Game also ran weekly after-school programs in Kununurra, Broome and South Hedland in addition to its Fit and Healthy in the Outback program reaching more than 9000 kids in the Kimberley, Pilbara, Mid West and Gascoyne, across 30 remote communities.

Horizon Power acting chief executive Krystal Skinner and Fair Game Australia CEO Nicki Bardwell.

Horizon Power acting chief executive Krystal Skinner said this reflected Horizon Power's confidence in Fair Game's ability to deliver sustainable, community-driven outcomes.

"Fair Game's programs promote healthier lifestyles but also foster social cohesion, cultural inclusion and environmental responsibility — values that are strongly aligned to Horizon Power's guiding principles," she said. This year Fair Game will host activities in Wyndham, Warmun, Fitzroy Crossing, Looma, Port Hedland, Marble Bar, Nullagine, Roebourne, Meekatharra, Wiluna, Cue, Mount Magnet and Yalgoo.

Fair Game also collects and donates pre-loved sports equipment — diverting it from landfill – with almost 15,000 pieces of equipment distributed across WA last year, including footballs, soccer balls and cricket bats.

Julimar-Brunello Plug & Abandonment (P&A) Environment Plan

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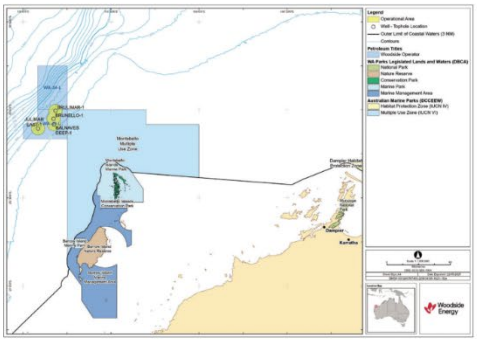

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6.5.4 Northwest Telegraph – 13 August 2025

NORTH WEST Telegraph
Wednesday, August 13, 2025
northwesttelegraph.com.au

Police blitz cracks down on drugs and alcohol

MADELIN HAYES

In a sweeping operation aimed at reducing crime and alcohol-related harm, the WA police liquor enforcement unit travelled to the Pilbara to target the illegal supply of alcohol and drugs.

Between May and July 2025, officers from the unit joined forces with South Hedland and Port Hedland police to intensify policing efforts.

During the most recent operation — a five-day blitz from July 31 to August 4 – officers conducted comprehensive audits, surveillance and enforcement checks on licensed venues.

Across the operations, 33 compliance checks were carried out on licensed venues: along with 27 checks at liquor-restricted premises, resulting in 37 infringements.

Sixty-five vehicle stops were conducted throughout the deployments; two vehicles were impounded, and 31 traffic infringements were issued.

As part of the crackdown on sly grogging — the illegal sale and supply of alcohol — police screened 250 parcels at the South Hedland post office.

Three were found to contain prohibited items, including steroids, chewing tobacco and nicotine vape products.

"We will continue to undertake combined operations with specialist support areas as part of our commitment to stop the unlawful supply of alcohol and drugs into our region; to prevent all types of violent behaviour including family violence and reduce alcohol-fuelled antisocial behaviour," Pilbara district Insp. Matt Froude said.

"In these cases, everything we do is to reduce the significant harm that excessive consumption and irresponsible service of alcohol causes.

Steroids, chewing tobacco and nicotine vape products found in parcels. Pictures: WA Police

Seized alcohol from liquor enforcement unit Pilbara operations.

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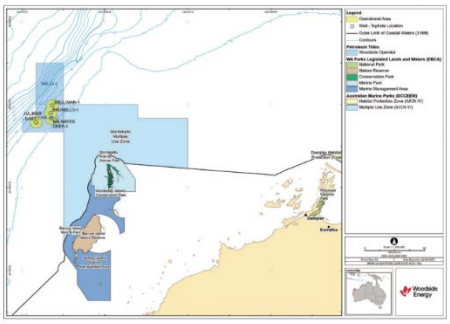

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6.5.5 Northwest Telegraph – 13 August 2025

14 NEWS midwesttimes.com.au Times Wednesday, August 13, 2025

The Mullewa district in full blossom during a previous wildflower season.

Mullewa nears full bloom

JOSEPHINE HINGST

Mullewa's biggest and most beautiful time of year is about to bloom, which brings with it an influx of visitors.

As the 2025 wildflower season draws closer, Mullewa is preparing for its Outback Bloom festival which will coincide with the Mullewa Agricultural Show.

This year entry to the show is free.

Famous for its stunning array of native flora, Mullewa is gearing up to showcase some of the Mid West's most breathtaking natural beauty.

City of Greater Geraldton mayor Jerry Clune said this year's weather conditions should lead to blooms aplenty.

"Mullewa's wildflowers are truly a sight to behold, and thanks to the plentiful rainfall this year, we're expecting an exceptional display," he said.

"If you make the effort to see them each season or have never enjoyed the magic of the Mid West's wildflower season, this is the perfect year to make the journey."

From Thursday, August 28, to Sunday, August 31, visitors to the small town can enjoy the Outback Bloom festival.

Among the many activities to choose from are a range of guided walking tours, flower displays in the town hall, painting workshops, bush tucker, yarns and a photography workshop.

The Mullewa Agricultural Show takes place on Saturday, August 30, at the Recreation Ground.

"Both events (are) highlights on the Mullewa calendar and provide a great opportunity to experience the town," Mr Clune said.

"I also encourage visitors to check out Helen Ansell's gallery and Suzie's Aboriginal art studio to view local artwork inspired by the region, additionally be sure to call into the Mullewa Community Resource Centre for the latest information about what's happening in the area."

More information can be found on the VisitMullewa website.

Nexus says flights safe in Mid West

JOSEPHINE HINGST

WA regional airline Nexus has assured Mid West residents there will be no changes or disruptions to Geraldton flights amid the suspension of its "financially unstable" northern routes.

Nexus flights between Broome, Kununurra, and Darwin will be suspended from Monday, September 1, due to commercial challenges, low sales, and unused capacity.

Nexus managing director Michael McConachy confirmed in a statement on Monday that there would be no changes to any other services — including Geraldton.

"All other Nexus routes including services between Perth and Geraldton, and between Geraldton-Karratha-Port Hedland-Broome continue to perform well and will remain unaffected by this network change," he said.

"This decision affects only the Broome–Kununurra–Darwin route and does not impact any other scheduled or charter services."

In the 2024-25 financial year, just under 54,000 passengers flew in and out of Geraldton on the airline.

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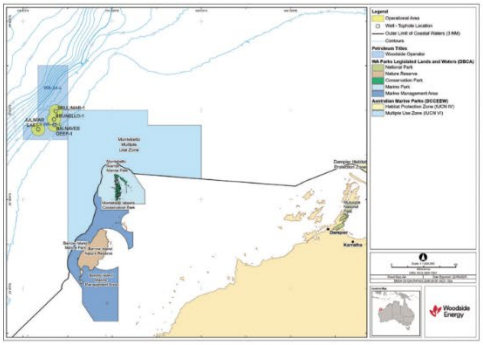

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6.5.6 Koori Mail – 13 August 2025

business

Indigenous range helps families out

By KRIS FLANDERS

A TRUSTED business, HART Sports has been delivering the goods to the Australian public for over 30 years now and was a labour of love for founder Greg Harten.

From footballs, cricket bats to tackling bags and everything a sporting club could possibly need, marketing manager Jayden Hocking believes HART Sports puts the scores on the board.

"We produce over 700 of the products in-house in Brisbane, we have a manufacturing team that do an amazing job with our foam products, they're your big tackle bags, the hit shields, the gym mats and anything foam or vinyl related. Across the board we have over 4,000 pieces of sporting equipment and the range is huge, we don't say it lightly when we say we are Australia's biggest sports equipment provider," Hocking explained.

"We pride ourselves on the quality of products and at a reasonable price. You'll see HART Sports in early-learning centres and kindergartens all the way up to tertiary education, disability organisations also sporting clubs both at the elite and the grassroots levels. Government organisations as well as the private consumer looking to fit out a home gym."

Recently HART Sports combined forces with talented artist Emma Bamblett to come up with the sporting giant's first Indigenous range. They include Aussie Rules footballs, league balls, netballs and mats. For the last three years she's also designed the Indigenous Round guernsey for North Melbourne in the AFL.

Bamblett loves her sports and she says it's surreal to think that Indigenous and non-Indigenous sporting clubs and individuals are using goods with her designs on them.

But she also adds that balls being kicked, passed and mats being used in yoga classes or for stretching exercises is totally satisfying.

"I go back to the experiences that I had at school and they weren't always positive, I was always shamed, didn't really get picked for sports teams and racist experiences. I was really proud to do these designs and things have changed since I was at school and they're acknowledging Aboriginal people today. I hope I can make Aboriginal kids feel strong and have that belief when they use this range, but even if they can make a positive change for anyone too at the end of the day," Bamblett said.

Bamblett is a proud Wemba Wemba woman with connections to the Ngadjonji, Gunditjmara and Taungurung people. She's been painting for nearly 20 years and say it has rescued her and is healing her from past traumatic experiences.

"I've always loved painting and always watched my aunty paint, it was my main inspiration, a calming and relaxing experience. I grew up with family violence and often we had to leave the house and stay with her. There were some really bad times and painting then became a really therapeutic thing for me," Bamblett explained.

With that lived experience, it's why Bamblett and HART Sports have agreed that 5% of sales goes towards Djirra, an organisation in Melbourne that supports women and families going through domestic violence.

"They offer a range of services, legal support and advice. I'm part of their Koori Women's Space and I facilitate sessions where I speak about my own experiences too and also do some arts and crafts activities with them. It's a safe space to come and talk and listen with no judgement and connect with cultural practices. I'm happy that I can help put something towards the important work they do for the community," Bamblett said.

Emma Bamblett.

Jayden Hocking says the Indigenous range has proven more popular than anyone imagined and that HART Sports have worked hard to keep up with the demand.

"We are stoked with what Emma came up with, amazing work, so striking. It's taken a lot of people by surprise, we ordered stock thinking there might be an uptaking and we had a forecast in mind but we basically sold out within the first month. Which shows you that the demand's there and they're really good quality balls and mats," Hocking said.

"Each ball and each piece has a unique angle which we are super happy about and we want to get those stories across. The impact that we can have for people to stay fit and healthy is not lost on us, we take great pride in being able to do that."

HART Sports, first Indigenous range.

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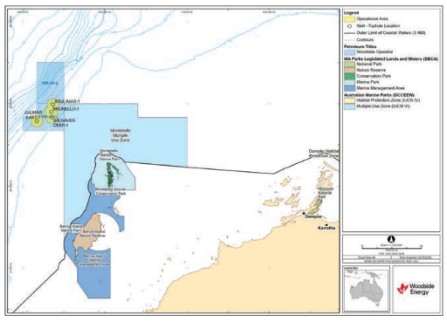

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6.5.7 National Indigenous Times – 13 August 2025

6 NIT NEWS nit.com.au

Concern new SA laws will criminalise young people

DECHLAN BRENNAN

Indigenous justice advocates have condemned new laws proposed in South Australia this month, warning they will criminalise children and make communities less safe.

The State, which currently records some of the lowest crime rates in the country, is expected to debate the legislation in the upcoming parliamentary sitting.

The Government says the laws are aimed at gangs and recidivist young offenders.

Aboriginal Legal Rights Movement chief executive Klynton Wanganeen said the laws would unnecessarily funnel more children into the justice system, in which Indigenous kids are over-represented.

He argued that the Government was pursuing "extreme legislation that will not prevent crime and will harm our children", despite South Australia's low crime rate.

"The South Australian Government is focusing on political point-scoring, and Aboriginal children will suffer as a result," Mr Wanganeen said.

The Narungga and Ngarrindjeri man said the Bill would "overturn core legal protections", including the presumption of innocence, incarceration as a last resort, and the right to bail. He said it would also allow "police control orders for children as young as 10 years old based on what they wear, who they associate with, or even based on allegations that haven't been proven".

"This sounds like a free pass for our kids to be racially profiled and targeted," he said.

"The Bill will lead to more Aboriginal children being thrown into jail. Not only is this damaging for the child, but it actually increases the risk of them cycling in and out of detention, both as a child and as an adult. So it harms children and makes the community less safe."

The State Government has defended the proposal, saying it is narrowly targeted. A spokesperson told InDaily in July the laws "only apply to gangs that exist for the purpose of committing serious criminal offences".

"There is no legislation being proposed in South Australia which would criminalise the wearing of the Aboriginal colours," the spokesperson said.

"We are particularly concerned about a reported trend of adults recruiting children to become involved in criminal activity. This is why the draft Bill includes a specific offence for recruiting another person to become a member of a street gang." National Aboriginal and Torres Strait Islander Legal Services general manager Melissa Clarke said South Australia had joined other States in harmful lawmaking, ignoring evidence, and the voices of Indigenous communities.

She said the State had entered the "race to the bottom".

"The evidence is clear; investing in support that prevents children from interacting with the justice system in the first place is the answer," Ms Clarke said.

"The South Australian Government must work with Aboriginal leaders and communities, and child, medical and legal experts to design youth justice responses that value care, support and prevention over control to ensure the best outcomes for our kids and communities."

> "The South Australian Government is focusing on political point-scoring, and Aboriginal children will suffer as a result."
> Klynton Wanganeen

SA Attorney-General Kyam Maher has previously said the laws were developed in consultation with police.

"These reforms are all about cracking down on street gangs by giving police greater powers, similar to what they have for outlaw motorcycle gangs, to keep the South Australian community safe," he said.

The Government's Young Offender Plan notes in 2023-24, just 20 young people were responsible for 11 per cent of all charges in the Youth Court.

It has also pledged $3 million over three years through the Justice Rehabilitation Fund for specialised initiatives designed to "target recidivism amongst the cohort of serious repeat young offenders and provide effective diversions from the criminal justice system".

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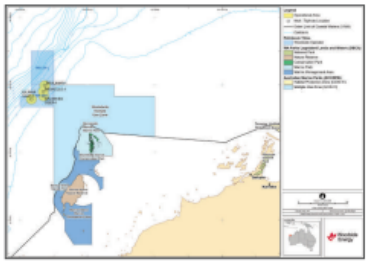

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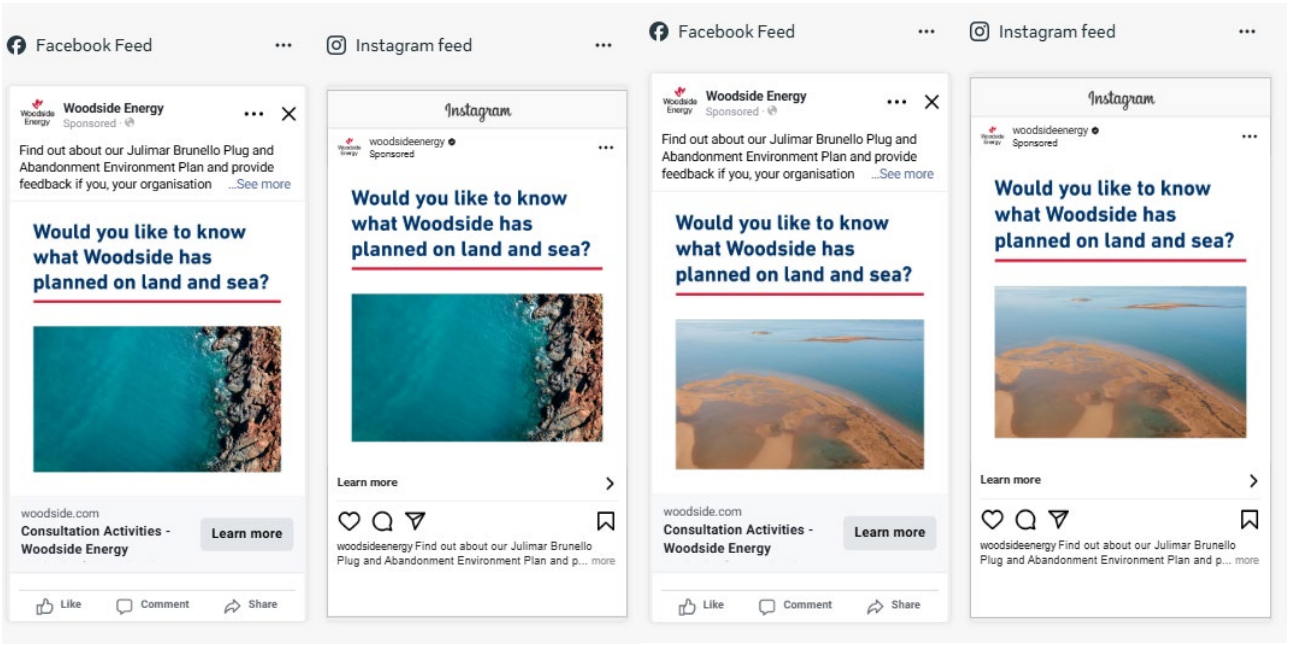
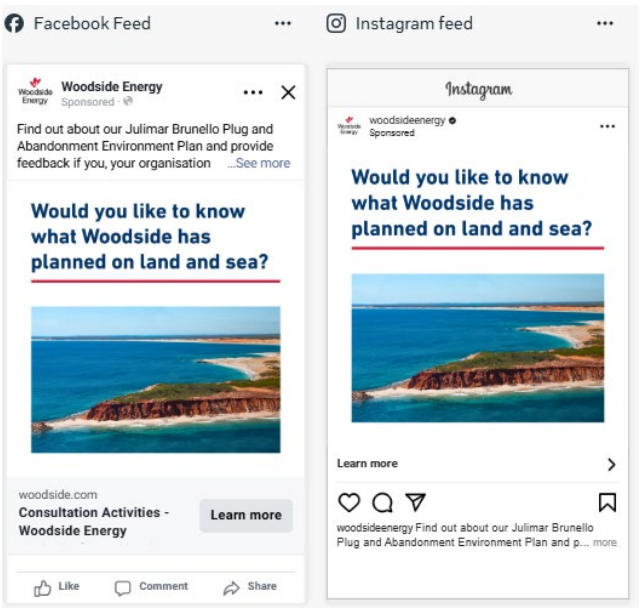
6.6 Social media

6.6.1 Social media EP targeted campaign





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6.7 Community information sessions

The community information sessions that Woodside has conducted are captured below:

6.7.1 Pilbara Region

6.7.1.1 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 Julimar Brunello Plug and Abandonment 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.
Summary of Feedback, Objection or Claim	
• Queries around employment opportunities.	

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- 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).

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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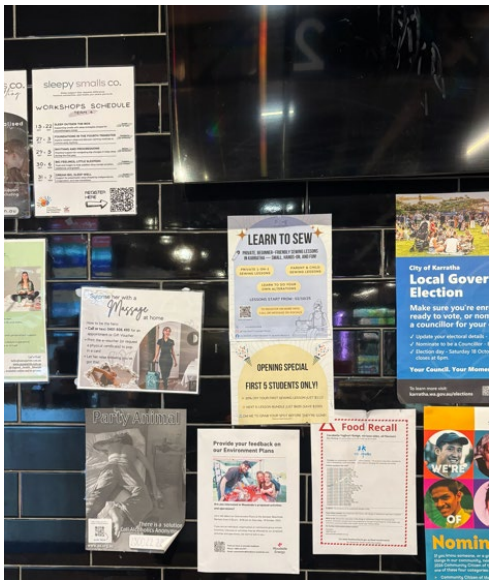
Advertisement **IGA Good Grocer notice board – 15 October 2025**	**Social Media – Woodside North West Facebook post – 18 October 2025**
	
Advertisement - Lo's Cafe, Karratha community notice board – 15 October 2025	**Banner at event – 18 October 2025**

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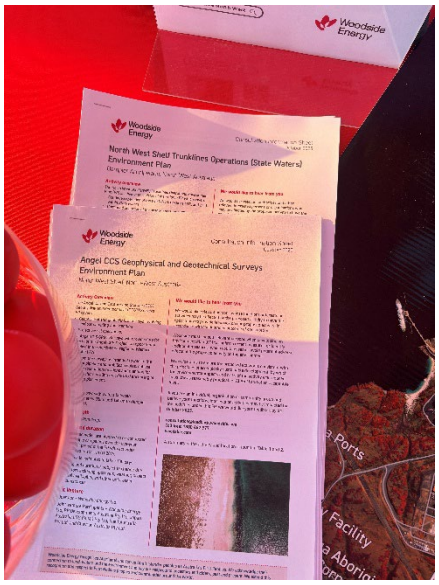
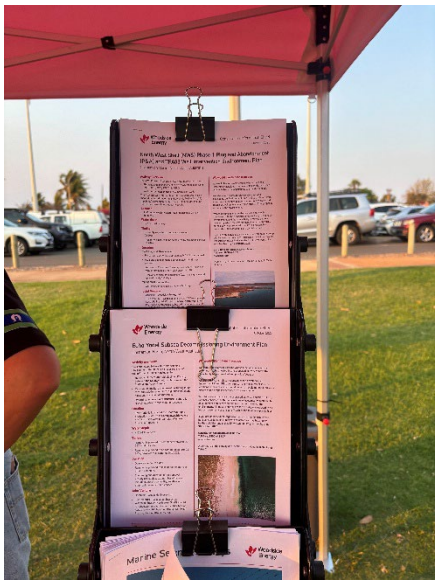
Consultation Information Sheets at event	Consultation Information Sheets at event
	

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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6.7.2 Gascoyne Region

6.7.2.1 Exmouth Community Markets – 5 October 2025

	Location: Exmouth
Activity	Exmouth Community Markets
Date	5 October 2025
Description of consultation	Woodside hosted a stall at the Exmouth Community Markets to engage community members on our activities. The stand was staffed by Woodside Environment and Corporate Affairs representatives. Information on Woodside's activities in the Exmouth region, details of Woodside's community grants program, and fact sheets about marine seismic surveys were available. Woodside also made available printed consultation information sheets on the Julimar Brunello Plug & Abandonment EP
Advertising and invitations	Woodside promoted the market stall on its North West Facebook page.
Estimated number of individuals / organisations consulted	Over 200 community members attended the event. Woodside spoke to many community members, recording approximately 20 conversations.

Summary of Feedback, Objection or Claim

- Interest in Woodside's social contribution activities in Exmouth and potential support for health services infrastructure.
- Conversations about Woodside's approach to cultural heritage management
- Query about Woodside's tax contribution.
- Conversation about Woodside's approach to the energy transition and investment in new energy products and lower carbon services.
- Interest in industry's political influence.
- General queries about Woodside's footprint in Exmouth and the two facilities visible from the coast (Pyrenees and Ngujima-Yin FPSOs).
- General conversations about Woodside's activities in Western Australia, including the North West Shelf.
- Questions relating to the current status of the Browse project and considerations for Scott Reef.
- General interest in Woodside's health, safety and environmental management measures and mitigations, particularly in relation to seismic activities and potential impacts to fauna.

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).

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6.8 Community newsletters

6.8.1 Let's Talk – Our Plans, Your Say

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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6.8.2 Karratha Community Update

Edition Q3 – October 2025

Karratha Community Update

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.

Stay up to date on our continued contribution to the local community **Woodside North West**

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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.

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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 the Julimar-Brunello Plug and Abandonment

Corporate HSE

Hydrocarbon Spill Preparedness

November 2025
Revision 0

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EXECUTIVE SUMMARY

Woodside Energy Ltd (Woodside) has developed its oil spill preparedness and response position for the Julimar-Brunello Plug and Abandonment activities, hereafter known as the Petroleum Activities Program (PAP).

This document demonstrates that the risks and impacts from an unplanned hydrocarbon release, and the associated response operations, are controlled to As Low as Reasonably Practicable (ALARP) and an acceptable level. It achieves this by evaluating response options to address the potential environmental impacts resulting from an unplanned loss of hydrocarbon containment associated with the PAP described in the Environment Plan (EP). This document then outlines Woodside's decisions and techniques for responding to a hydrocarbon release event and the process for determining its level of hydrocarbon spill preparedness.

A summary of the key facts and references to additional detail within this document are presented below.

Table 0-1: Summary of the key details for assessment

Key details of assessment	Summary	Reference to additional detail
Worst Case Credible Scenario	**Credible Scenario-01 (CS-01):** Uncontrolled subsea release due to loss of well control – Julimar East-1 at 20° 6' 23.21" S 115° 5' 7.97" E. 2,679 m^3 over 91 days[1] of Julimar Condensate. 6.5% residual component of 174 m^3	Section 2.2
	Credible Scenario-02 (CS-02): An instantaneous release of marine diesel due to a vessel collision at the Balnaves Deep-1 wellhead location (closest wellhead to Tryal Rocks) at 20° 4′ 58.213″ S 115° 10′ 34.192″ E. Instantaneous release of 500 m^3 of marine diesel oil (MDO). 5% residual component of 25 m^3	
	Credible Scenario-03 (CS-03): Marine fuel loss during fuel bunkering within the Operational Area (not modelled). 24 m^3 released over 15 minutes of MDO or 1.6 m^3 per minute. 5% residual component of 1 m^3	
	Credible Scenario-04 (CS-04): Unplanned subsea release of Synthetic Based Oil from the annulus of Balnaves Deep-1 well at 13° 58' 15.1" S 122° 01' 28.5" E. Instantaneous release of 67 m^3 of Shell Saraline 185V (Synthetic Based Oil/ Non-water Based Mud (NWBM)). 7.8% residual component of 5 m^3	
Hydrocarbon Properties	**Julimar Condensate** Julimar Condensate (API 45.7°) contains a low proportion (~6.5% by mass) of hydrocarbon compounds that will not evaporate at atmospheric temperatures. The unweathered mixture has a dynamic viscosity of 1.39 cP. The pour point of the whole oil (< 24 °C) ensures that it will remain in a liquid state over the annual temperature range observed on the North West Shelf. The mixture is composed of hydrocarbons that have a wide range of boiling points and volatilities at atmospheric temperatures, and which will begin to evaporate at different rates on exposure to the atmosphere. Evaporation rates will increase with temperature, but in general about 43.6% of the oil mass should evaporate within the first 12 hours (BP < 180 °C); a further 22.9% should evaporate within the first 24 hours (180°C < BP < 265 °C); and a further 27.1% should evaporate over several days (265 °C < BP < 380 °C).	Section 6.8.1 of the EP Appendix A of the First Strike Plan

[1] 91 days has been modelled as the worst-case duration for a loss of well containment where mobilisation of a MODU from South East Australia is required for executing a relief well. Mobilisation of a locally available MODU is estimated to result in a loss of well containment duration of ~63 days and, from South East Asia, ~78 days.

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	Marine Diesel Oil (MDO) MDO (API 37.2°) is a mixture of volatile and persistent hydrocarbons with low proportions of highly volatile and residual components. The unweathered mixture has a dynamic viscosity of 4 cP. The mixture is composed of hydrocarbons that have a wide range of boiling points and volatilities at atmospheric temperatures, and which will begin to evaporate at different rates on exposure to the atmosphere. Evaporation rates will increase with temperature, but in general about 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).	
	Shell Saraline 185V (Synthetic Based Oil (SBM)/ Non-water Based Mud (NWBM)) Shell Saraline 185V (API 49.8°) contains a low proportion (~7.8% by mass) of hydrocarbon compounds that will not evaporate at atmospheric temperatures. The unweathered mixture has a dynamic viscosity of 3.124 cP. The pour point of the whole oil (< 20 °C) ensures that it will remain in a liquid state over the annual temperature range observed on the North West Shelf. The mixture is composed of hydrocarbons that have a wide range of boiling points and volatilities at atmospheric temperatures, and which will begin to evaporate at different rates on exposure to the atmosphere. Evaporation rates will increase with temperature, but in general about 1.8% of the oil mass should evaporate within the first 12 hours (BP < 180 °C); a further 28.5% should evaporate within the first 24 hours (180°C < BP < 265 °C); and a further 61.9% should evaporate over several days (265 °C < BP < 380 °C).	
Modelling Results	**Stochastic modelling** A quantitative, stochastic assessment has been undertaken for credible spill scenarios to help assess the environmental risk of a hydrocarbon spill. A total of 100 replicate simulations were completed for the loss of well control and NWBM release scenarios (CS-0] and CS-04) to test for trends and variations in the trajectory and weathering of the spilled oil, with an even number of replicates completed using samples of metocean data that commenced within each calendar quarter (25 simulations per quarter). A total of 200 replicate simulations were completed for the vessel collision scenario (CS-02), with an even number of replicates completed using samples of metocean data that commenced within each calendar quarter (50 simulations per quarter).	Section 2.3
Net Environmental Benefit Analysis	Monitor and evaluate, source control, 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

Woodside Energy Ltd (Woodside) has developed its oil spill preparedness and response position for the Julimar-Brunello Plug and Abandonment activity, hereafter known as the Petroleum Activities Program (PAP). This document outlines Woodside's decisions and techniques for responding to a hydrocarbon loss of containment event and the process for determining its level of hydrocarbon spill preparedness.

1.2 Purpose

This document, together with the documents listed below, meet the requirements of the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Environment Regulations) relating to hydrocarbon spill response arrangements.

- The Julimar-Brunello Plug and Abandonment Environment Plan (EP)
- Hydrocarbon Spill Australia Regulatory Framework
- The Julimar-Brunello Plug and Abandonment Oil Pollution Emergency Plan (OPEP) including
  - Oil Pollution First Strike Plan (FSP)
  - Operational and Scientific Monitoring Bridging Implementation Plan (OSM BIP)
  - Relevant Operations Plans
  - Relevant Tactical Response Plans (TRPs)
  - Relevant Supporting Plans
  - Data Directory.

1.3 Scope

This document demonstrates that the risks and impacts from an unplanned hydrocarbon release, and the associated response operations, are controlled to ALARP and an acceptable level. It achieves this by evaluating response options to address the potential environmental risks and impacts resulting from an unplanned loss of hydrocarbon containment associated with the PAP described in the EP. This document then outlines Woodside's decisions and techniques for responding to a hydrocarbon release event and the process for determining its level of hydrocarbon spill preparedness. It should be read in conjunction with the documents listed in Table 1-1. The location of the PAP is shown in Figure 3-1 of the EP.

1.4 Oil spill response document overview

The documents outlined in Table 1-1 and Figure 1-1 are collectively used to manage the preparedness and response for a hydrocarbon release.

The Oil Pollution First Strike Plan (FSP) contains a pre-operational Net Environmental Benefit Analysis (NEBA) summary, outlining the selected response techniques for this PAP. Relevant Operational Plans to be initiated for associated response techniques are identified in the FSP and relevant forms to initiate a response are appended to the FSP.

The process to develop an Incident Action Plan (IAP) begins once the oil pollution FSP is underway. The IAP includes inputs from monitor and evaluate and operational monitoring activities and the operational NEBA (Section 4). Planning, coordination and resource management are initiated by the Corporate Incident Management Team (CIMT). In some instances, technical specialists may be utilised to provide expert advice. The planning may also involve liaison officers from supporting government agencies.

During each operational period, field reports are continually reviewed to evaluate the effectiveness of response operations. In addition, the operational NEBA is continually reviewed and updated to confirm the response techniques implemented continue to result in a net environmental benefit (Section 4).

The response will continue as described in Section 5 until the response termination criteria have been met.

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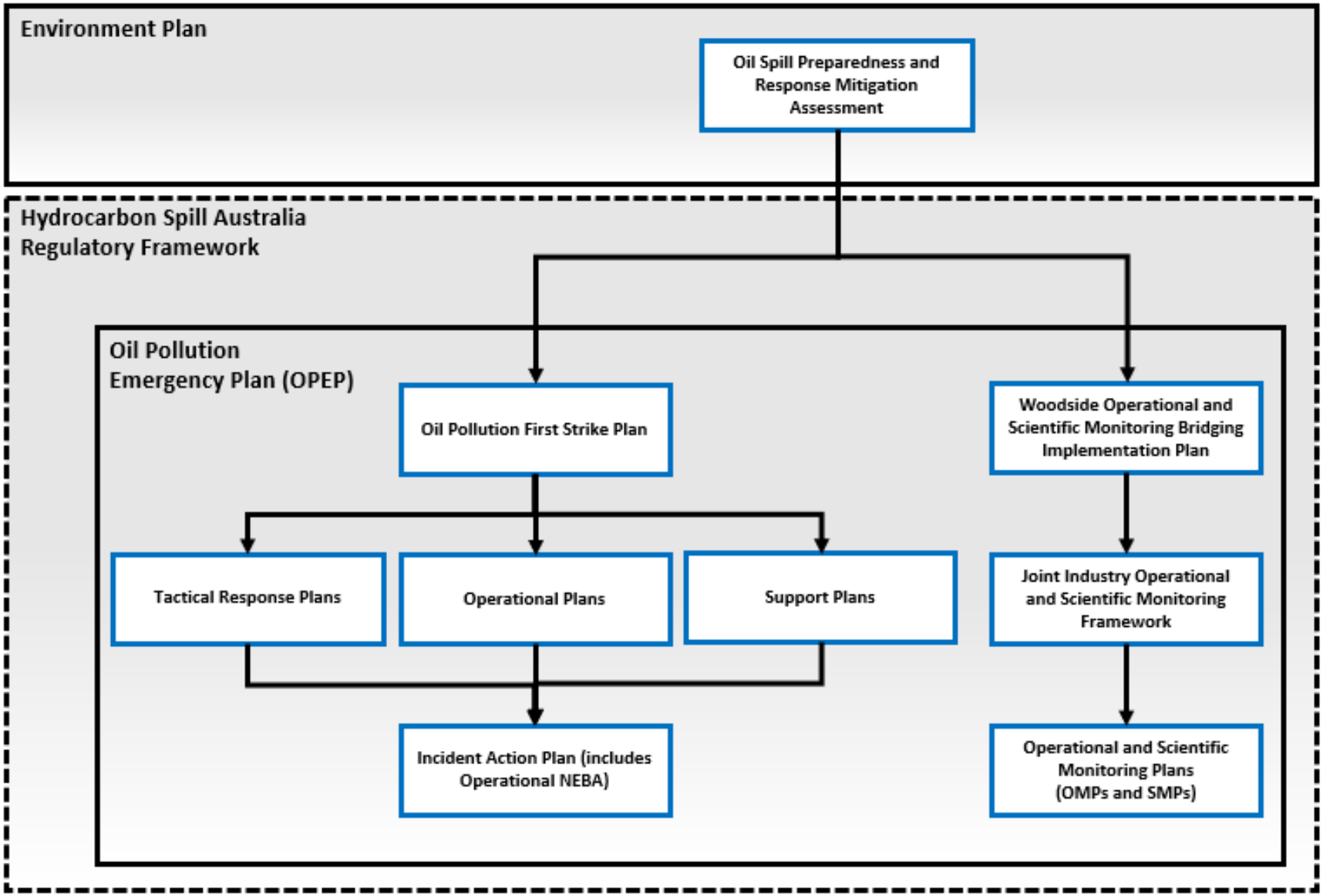

Figure 1-1: Woodside hydrocarbon spill document structure

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Table 1-1: Hydrocarbon Spill preparedness and response – document references

Document	Document overview	Stakeholders	Relevant information	Document subsections (if applicable)
Julimar-Brunello Plug and Abandonment Environment Plan (EP)	Demonstrates that potential adverse impacts on the environment associated with the Julimar-Brunello Plug and Abandonment (during both routine and non-routine operations) are mitigated and managed to As Low As Reasonably Practicable (ALARP) and will be of an acceptable level.	NOPSEMA Woodside internal	EP Section 6 (Identification and evaluation of environmental risks and impacts, including credible spill scenarios) EP Section 6 (Performance outcomes, standards and measurement criteria) EP Section 7 (Implementation strategy – including emergency preparedness and response, and Reporting and compliance)	
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 Julimar-Brunello Plug and Abandonment (this document)	Evaluates response options to address the potential environmental impacts resulting from an unplanned loss of hydrocarbon containment associated with the PAP described in the EP.	Regulatory agencies Corporate Incident Management Team (CIMT): Control function in an ongoing spill response for activity-specific response information.	All Performance outcomes, standards and measurement criteria related to hydrocarbon spill preparedness and response are included in this document.	
Julimar-Brunello Plug and Abandonment Oil Pollution First Strike Plan	Facility specific document providing details and tasks required to mobilise a first strike response. Primarily applied to the first 24 hours of a response until a full Incident Action Plan (IAP) specific to the event is developed. Oil Pollution First Strike Plans are intended to be the first document	Site-based IMT for initial response, activation and notification. CIMT for initial response, activation and notification. CIMT: Control function in an ongoing spill response for activity-specific response information.	Initial notifications and reporting required within the first 24 hours of a spill event. Relevant spill response options that could be initiated for mobilisation in the event of a spill. Recommended pre-planned tactics. Details and forms for use in immediate response. Activation process for oil spill trajectory	

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Document	Document overview	Stakeholders	Relevant information	Document subsections (if applicable)
	used to provide immediate guidance to the responding Incident Management Team (IMT).		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 Plan Source Control Emergency Response Plan Oiled wildlife response Operational and scientific monitoring
Operational and Scientific Monitoring (OSM) Bridging Implementation Plan	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 first-strike scientific monitoring priorities OSM arrangements and capability Permitting and access requirements for OSM	

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Document	Document overview	Stakeholders	Relevant information	Document subsections (if applicable)
Tactical Response Plans	Provides options for response techniques in selected RPAs. Provides site, access and deployment information to support a response at the location.	CIMT: Planning Section to help develop IAPs, and Logistics Section to assist with determining resources required.	Indicative response techniques. Access requirements and/or permissions. Relevant information for undertaking a response at that site. Where applicable, may include equipment deployment locations and site layouts.	For full list of relevant Tactical Plans for the Julimar-Brunello Plug and Abandonment oil spill response, refer to 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 Accommodation & Catering Plan – Australia Transport Management Plan – Australia Waste Management Plan – Australia Health and Safety Support Plan Hydrocarbon Spill Responder Health Monitoring Guidelines People and Global Capability (Surge Labour Requirements) Support Plan (Land Based) Security Support Plan Stakeholder Engagement Support Plan Guidance for Hydrocarbon Spill Claims Management Communications Support Plan – Australia

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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 PAP.

The Julimar-Brunello Plug and Abandonment 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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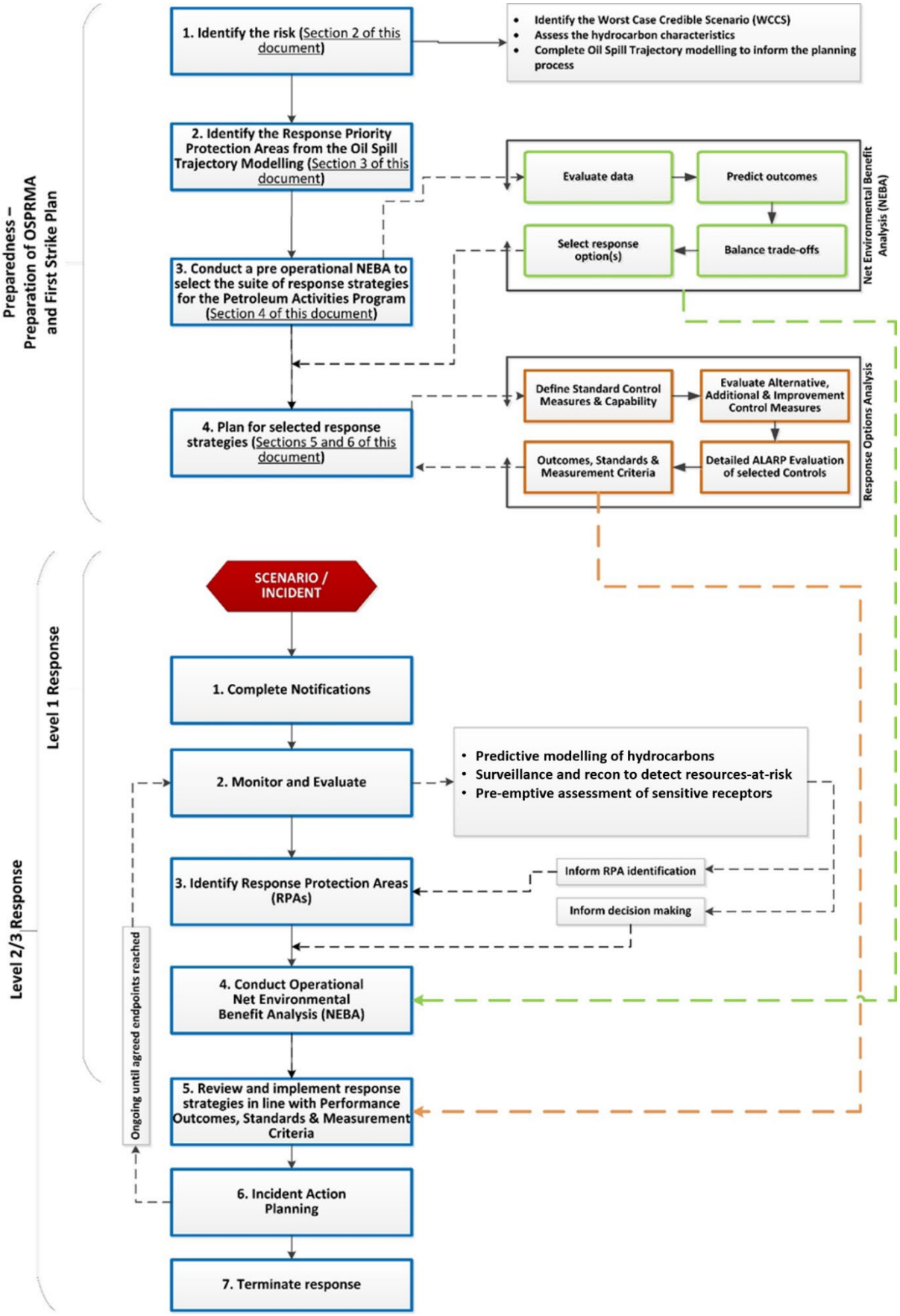

Figure 2-1: Response planning and selection process

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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.

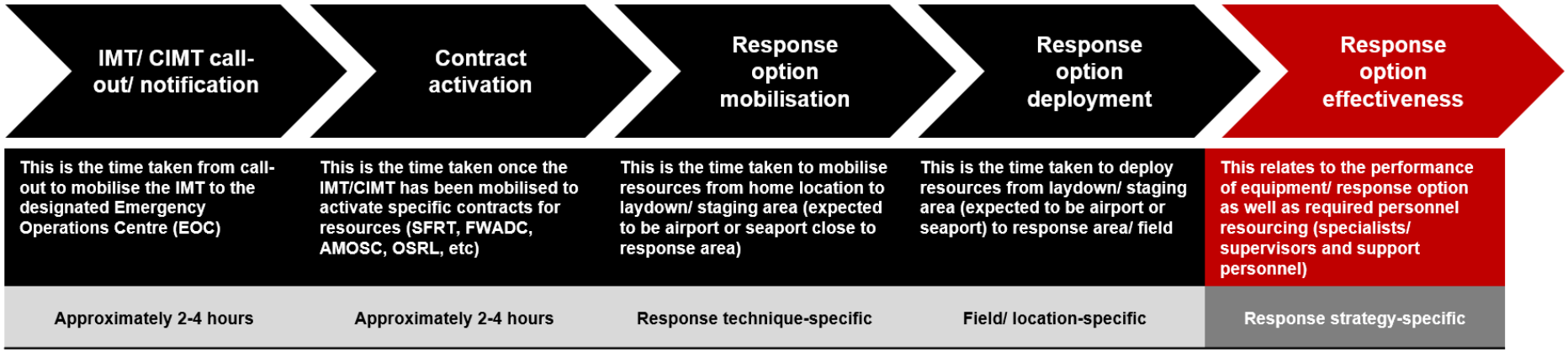

Figure 2-2: Response planning assumption – timing, resourcing and effectiveness

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2.2 Environment plan risk assessment (credible spill scenarios)

Potential hydrocarbon release scenarios from the PAP have been identified during the risk assessment process (Section 6 of the EP). Further descriptions of risk, impacts and mitigation measures (which are not related to hydrocarbon preparedness and response) are provided in Section 6 of the EP. Four unplanned events or credible spill scenarios for the PAP have been selected as representative across types, sources and incident/response levels, up to and including the WCCS.

Table 2-1 presents the credible scenarios for the PAP. The WCCS for the activity is then used for response planning purposes, as all other scenarios are of a lesser scale and extent. By demonstrating capability to manage the response to the WCCS, Woodside assumes other scenarios that are smaller in nature and scale can also be managed by the same capability. Response performance measures have been defined based on a response to the WCCS.

- CS-01, a loss of well control scenario is the largest spill by volume (2,679 m^3); however, given the duration of the modelled scenario (91 days), the spatial extent is confined to within 7 km of the spill location for entrained hydrocarbons at the 100 ppb threshold. Floating hydrocarbons above the 10 g/m^2 threshold were not predicted from modelling.
- CS-02, a surface release of marine diesel caused by vessel collision is considered the worst case when responding to floating hydrocarbons, given the large volume released instantaneously.
- CS-03, marine fuel loss during bunkering has a significantly smaller marine diesel release volume and is considered to be within the risk profile and spill response capability requirements of CS-02.
- CS-04, NWBM release during well plug and abandonment (P&A) activities are also considered to be within the risk profile and spill response capability requirements of CS-02.

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Table 2-1: Petroleum Activities Program credible spill scenarios

Credible Spill Scenarios	Scenario selected for planning purposes	Scenario description	Maximum credible volume released (liquid m^3)[1]	Incident level	Hydrocarbon type	Residual proportion	Residual volume (m^3)
Credible Spill Scenario-01 (CS-01)	Yes	Uncontrolled subsea release due to loss of well control – Julimar East-1	2,679 m^3 over 91 days[2]	3	Julimar Condensate	6.5%	174 m^3 over 91 days (~2 m^3 per day)
Credible Spill Scenario-02 (CS-02) (WCCS)	Yes	An instantaneous release of marine diesel due to a vessel collision at the Balnaves Deep-1 wellhead location (closest wellhead to Tryal Rocks)	Instantaneous release of 500 m^3	3	Marine Diesel Oil	5%	25 m^3 instantaneously
Credible Spill Scenario-03 (CS-03)	No	Marine fuel loss during hydrocarbon bunkering	24 m^3 released over 15 minutes or 1.6 m^3 per minute	2	Marine Diesel Oil	5%	1 m^3 over 15 minutes (0.067 m^3 per minute)
Credible Spill Scenario-04 (CS-04)	Yes	Unplanned subsea release of Synthetic Based Oil from the annulus of Balnaves Deep-1 well	Instantaneous release of 67 m^3	1	Shell Saraline 185V	7.8%	5 m^3 instantaneously

[2] 91 days has been modelled as the worst-case duration for a loss of well containment where mobilisation of a MODU from South East Australia is required for executing a relief well. Mobilisation of a locally available MODU is estimated to result in a loss of well containment duration of ~63 days and, from South East Asia, ~78 days.

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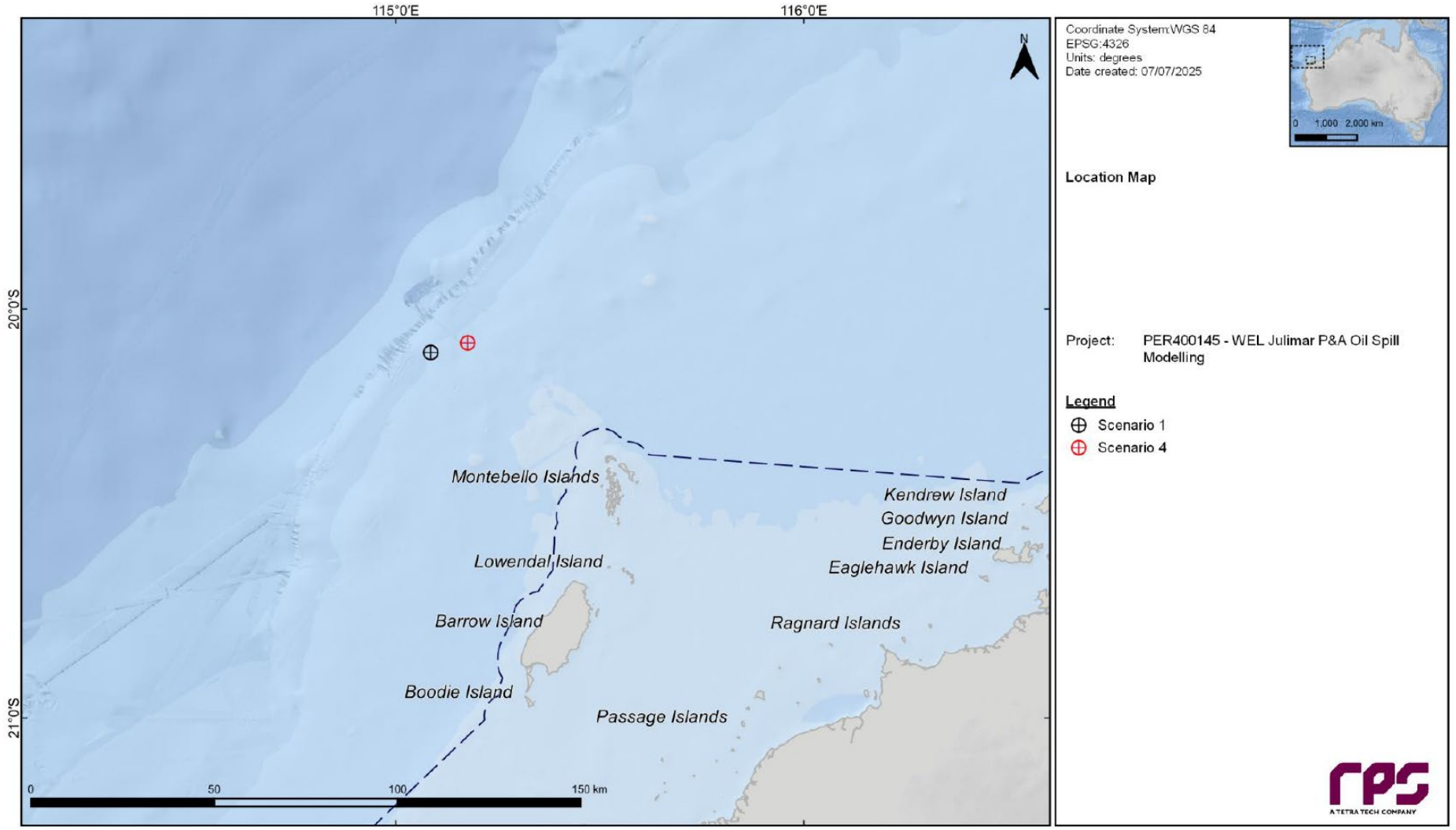

Figure 2-3: The release location for spill scenarios CS-01 and CS-04.

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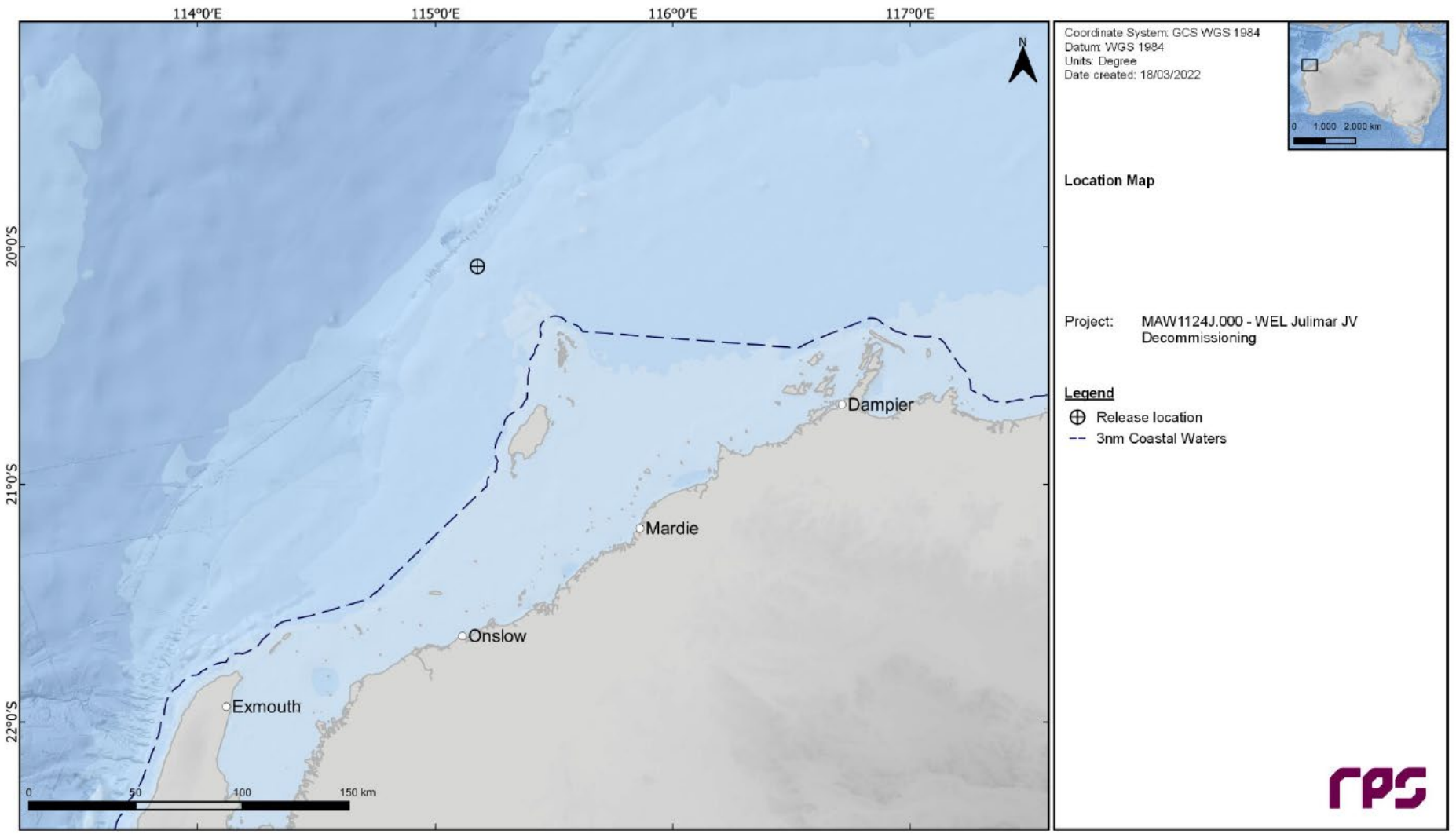

Figure 2-4:Location of the modelled hydrocarbon spill scenario (CS-02) release site.

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2.2.1 Hydrocarbon characteristics

Hydrocarbon characteristics, including modelled weathering data and ecotoxicity, are included in Section 6 of the EP.

Julimar Condensate

Julimar Condensate (API 45.7°) contains a low proportion (6.5% by mass) of hydrocarbon compounds that will not evaporate at atmospheric temperatures. These compounds will persist in the marine environment. The unweathered mixture has a dynamic viscosity of 1.39 cP (1.742 cSt). The pour point (-24 °C) of the whole oil ensures that it will remain in a liquid state over the annual temperature range observed in Northwest Shelf waters.

The mixture is composed of hydrocarbons that have a wide range of boiling points and volatilities at atmospheric temperatures, and which will begin to evaporate at different rates on exposure to the atmosphere. Evaporation rates will increase with temperature, but in general about 43.6% of Julimar Condensate mass has the capacity to evaporate within the first 12 hours (BP < 180 °C); a further 22.9% could evaporate within the first 24 hours (180 °C < BP < 265 °C); and a further 27.1% could evaporate over several days (265 °C < BP < 380 °C).

Selective evaporation of the lower boiling-point components will lead to a shift in the physical properties of the remaining mixture, including an increase in the viscosity and pour point. Although removal of the volatile compounds through evaporation and dissolution will result in an increase in density of the remaining oil, the mixture is unlikely to solidify or sink as it weathers.

The whole oil has low asphaltene content (< 0.5%), indicating a low propensity for the mixture to take up water to form water-in-oil emulsion over the weathering cycle.

Soluble aromatic hydrocarbons contribute approximately 15.4% by mass of the whole oil, with a significant proportion (8.9%) in the C4-C10 range of hydrocarbons. These compounds will evaporate rapidly, reducing the potential for dissolution of a proportion of them into the water.

Marine Diesel Oil

Marine Diesel Oil (MDO) is typically classed as an International Tanker Owners Pollution Federation (ITOPF) Group I/II oil. Group I oils are non-persistent and tend to dissipate completely through evaporation within a few hours and do not normally form emulsions.

Marine diesel is a mixture of volatile and persistent hydrocarbons with low proportions of highly volatile and residual components. In general, about 6% of the oil mass should evaporate within the first 12 hours (BP < 180 °C); a further 35% should evaporate within the first 24 hours (180 °C < BP < 265 °C); and a further 54% should evaporate over several days (265 °C < BP < 380 °C). Approximately 5% of the oil is shown to be persistent. The aromatic content of the oil is approximately 3%.

If released in the marine environment and in contact with the atmosphere (i.e., surface spill), approximately 41% by mass of this oil is predicted to evaporate over the first couple of days depending upon the prevailing conditions, with further evaporation slowing over time. The heavier (low volatility) components of the oil tend to entrain into the upper water column due to wind-generated waves but can subsequently resurface if wind-waves abate. Therefore, the heavier components of this oil can remain entrained or on the sea surface for an extended period, with associated potential for dissolution of the soluble aromatic fraction.

Shell Saraline 185V

Shell Saraline 185 V is a Synthetic Based Oil (SBM)/ Non-water Based Mud (NWBM) (API 49.8°) contains a low proportion (7.8% by mass) of hydrocarbon compounds that will not evaporate at atmospheric temperatures. These compounds will persist in the marine environment. The unweathered mixture has a dynamic viscosity of 3.124 cP (4 cSt). The pour point (-20 °C) of the whole oil ensures that it will remain in a liquid state over the annual temperature range observed in Northwest Shelf waters.

The base oil is composed of hydrocarbons that have a wide range of boiling points and volatilities at atmospheric temperatures, and which will begin to evaporate at different rates on exposure to the atmosphere. Evaporation rates will increase with temperature, but in general about 1.8% of the base oil mass has the capacity to evaporate within the first 12 hours (BP < 180 °C); a further 28.5% could evaporate within the first 24 hours (180 °C < BP < 265 °C); and a further 61.9% could evaporate over several days (265 °C < BP < 380 °C).

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Selective evaporation of the lower boiling-point components will lead to a shift in the physical properties of the remaining mixture, including an increase in the viscosity and pour point. Although removal of the volatile compounds through evaporation and dissolution will result in an increase in density of the remaining oil, the mixture is unlikely to solidify or sink as it weathers.

The whole oil has low asphaltene content (< 0.5%), indicating a low propensity for the oil to take up water to form water-in-oil emulsion over the weathering cycle.

There is a very low amount of soluble aromatic hydrocarbons at approximately 1.1% by mass of the whole oil. These compounds will evaporate rapidly, reducing the potential for dissolution of a proportion of them into the water.

2.3 Hydrocarbon spill modelling

Oil spill trajectory modelling (OSTM) tools are used for environmental impact assessment and during response planning to understand spatial scale and timeframes for response operations. Woodside recognises there is a degree of uncertainty related to the use of modelling data and has subsequently utilised conservative approaches to volumes, weathering, spatial areas, timing and response effectiveness to scale capability to need.

The Oil Spill Model and Response System (OILMAP) and Integrated Oil Spill Impact Model System (SIMAP) models are both used for stochastic and deterministic trajectory modelling. They have been developed over three decades of planning, exercises, actual responses, several peer reviews, and validation studies. OILMAP was originally derived from the United States Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Type A model (French et al. 1996), for assessing marine transport, biological impact and economic damage that was also used under the United States Oil Pollution Act 1990 Natural Resource Damage Assessment (NRDA) regulations. Notable spills where the model has been used and validated against actual field observations include, Exxon Valdez (French McCay 2004), North Cape Oil Spill (French McCay 2003), along with an assessment of 20 other spills (French McCay and Rowe, 2004). In addition, test spills designed to verify fate, weathering and movement algorithms have been conducted regularly and in a range of climate conditions (French and Rines 1997; French et al. 1997; Payne et al. 2007; French McCay et al. 2007).

Further to this, the algorithms have been updated using the latest findings from the Macondo/Deepwater Horizon well blowout in the Gulf of Mexico and validated according to the Deepwater Horizon (DWH) oil spill in support of the NRDA (Spaulding et al. 2015; French McCay et al. 2015, 2016). Finally, the OILMAP and SIMAP models have been used extensively in Australia to prosecute pollution offences, predict discharge locations and likely spill volumes based on weathering and surveillance observations, and has been used as expert witness evidence in Australian court proceedings, aiding the prosecution to determine spill quantum estimates.

2.3.1 Stochastic modelling

Quantitative, stochastic assessments have been undertaken for the credible spill scenarios (refer to Table 2-1) to help assess the environmental consequences of a hydrocarbon spill.

A total of 100 replicate simulations were completed for the loss of well control and NWBM release scenarios (CS-01 and CS-04) to test for trends and variations in the trajectory and weathering of the spilled oil, with an even number of replicates completed using samples of metocean data that commenced within each calendar quarter (25 simulations per quarter). Further details relating to the assessments for the scenarios can be found in Section 6 of the EP.

A total of 200 replicate simulations were completed for the vessel collision scenario (CS-02), 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

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the simulations modelled is defined as the EMBA and is discussed further in Section 6 of the EP. As the weathering of different fates of hydrocarbons (surface, entrained and dissolved) differs due to the influence of the metocean mechanism of transportation, a different EMBA is presented for each fate within the EP.

A conservative approach – adopting accepted accumulation thresholds for impacts on the marine environment – is used to define the EMBA. These hydrocarbon thresholds are presented in Table 2-2 below and described in Section 6 of the EP.

Table 2-2: Summary of thresholds applied to the stochastic hydrocarbon spill modelling to determine the EMBA and environmental impacts

Hydrocarbon	Surface hydrocarbon (g/m^2)	Dissolved hydrocarbon (ppb)	Entrained hydrocarbon (ppb)	Accumulated hydrocarbon (g/m^2)
Condensate	10	50	100	100
Diesel	10	50	100	100
NWBM	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.

Stochastic modelling for CS-01, CS-02 and CS-04 does not predict shoreline contact at the 100 g/m^2 shoreline response threshold or the floating hydrocarbon threshold of 50 g/m^2 in open ocean. Deterministic modelling was therefore not required and stochastic modelling has thus 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 operational and scientific monitoring (OSM), however they do not appropriately represent the thresholds at which an effective response can be implemented. Additional response thresholds are used for response planning and to determine areas where response techniques would be most effective. Deterministic modelling is then used to assess the nature and scale of a response (noting that for the Julimar-Brunello P&A activity there is no shoreline contact with hydrocarbons predicted for any spill scenarios).

In the event of an actual response, existing deterministic modelling would be reviewed for suitability and additional modelling would be conducted using real-time data and field information to inform IMT decisions.

The thresholds used are derived from oil spill response planning literature and industry guidance and are summarised below.

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2.3.3.1 Surface hydrocarbon concentrations

Table 2-3: Surface hydrocarbon thresholds for response planning

Surface hydrocarbon threshold (g/m^2)	Description	Bonn Agreement Oil Appearance Code	Mass per area (m^3/km^2)
>10	Predicted minimum threshold for commencing monitor and evaluate[3]	Code 3 – Dull metallic colours	5 to 50
50	Predicted minimum floating oil threshold for containment and recovery and surface dispersant application [4]	Code 4 – Discontinuous true oil colour	50 to 200
100	Predicted optimum floating oil threshold for containment and recovery and surface dispersant application	Code 5 – Continuous true oil colour	>200
Shoreline hydrocarbon threshold (g/m^2)	**Description**	**National Plan Guidance on Oil Contaminated Foreshores**	**Mass per area (m^3/km^2)**
100	Predicted minimum shoreline accumulation threshold for shoreline assessment operations	Stain	>100
250	Predicted minimum threshold for commencing shoreline clean-up operations	Level 3 – Thin Coating	200 to 1000

The surface thickness of oil at which dispersants are typically effective is approximately 100 g/m^2. However, substantial variations occur in the thickness of the oil within the slick, and most fresh crude oils spread within a few hours, so overall the average thickness is 0.1 mm (or approx. 100 g/m^2 ITOPF 2011). Additionally, the recommended rate of application for surface dispersant is typically one part dispersant to 20 or 25 parts of spilled oil. These figures assume a 0.1 mm slick thickness, averaged over the thickest part of the spill, to calculate a litres/hectare application rate from vessels and aircraft. In practice this can be difficult to achieve as it is not possible to accurately assess the thickness of the floating oil.

Some degree of localised over-dosage and under-dosage is inevitable in dispersant response. An average oil layer thickness of 0.1 mm is often assumed, although the actual thickness can vary over a wide range (from less than 0.0001 mm to more than 1 mm) over short distances (International Petroleum Industry Environment Conservation Association [IPIECA] 2015).

Guidance from the Australian Maritime Safety Authority (AMSA, 2020) indicates spreading of spills of Group II or III products will rapidly decrease slick thickness over the first 24 hours of a spill resulting in the potential requirement of up to a ten (10) fold increase in capability on day 2 to achieve the same level of performance.

Further guidance from the European Maritime Safety Authority (EMSA) states spraying the 'metallic' looking area of an oil slick (Bonn Agreement Oil Appearance Code [BAOAC] 3, approx. 5 – 50 µm) with dispersant from spraying gear designed to treat an oil layer 0.1 mm (100 µm) thick, will inevitably cause dispersant over-treatment by a factor of 2 to 20 times (EMSA 2012).

Therefore, dispersant application should be concentrated on the thickest areas of an oil slick and Woodside intends on applying surface dispersants to only BAOAC 4 and 5. Spraying areas of oil designated as BAOAC Code 4 (discontinuous true oil colour) with dispersant will, on average, deliver approximately the recommended treatment rate of dispersant.

Spraying areas of oil designated as BAOAC Code 5 with dispersant (continuous true oil colour and more than 0.2 mm thick) will, on average, deliver approximately half the recommended treatment rate of dispersant.

[3] Operational monitoring will be undertaken from the outset of a spill whether or not this threshold has been reached. Monitoring is needed throughout the response to assess the nature of the spill, track its location and inform the need for any additional monitoring and/or response techniques. It also informs when the spill has entered State Waters and control of the incident passes to statutory authorities e.g. Western Australia Department of Transport and Major Infrastructure (WA DTMI) or AMSA.

[4] At 50 g/m^2, containment and recovery and surface dispersant application operations are not expected to be particularly effective. This threshold represents a conservative approach to planning response capability and containing the spread of surface oil.

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Repeated application of these areas of thicker oil, or increased dosage ratios, will be required to achieve the recommended treatment rate of dispersant (EMSA 2012).

Guidance from 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).

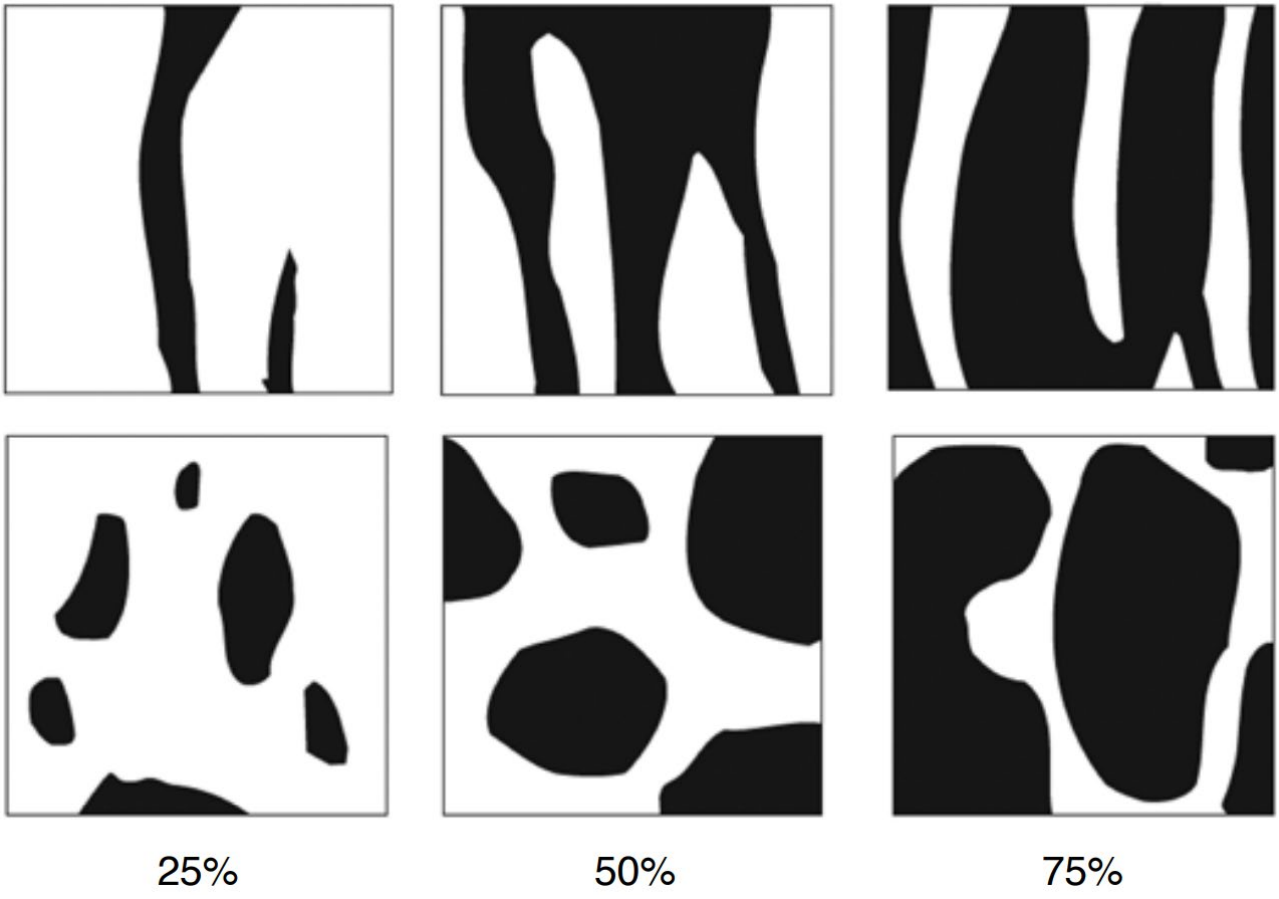

Figure 2-5: Proportion of total area coverage (AMSA, 2014)

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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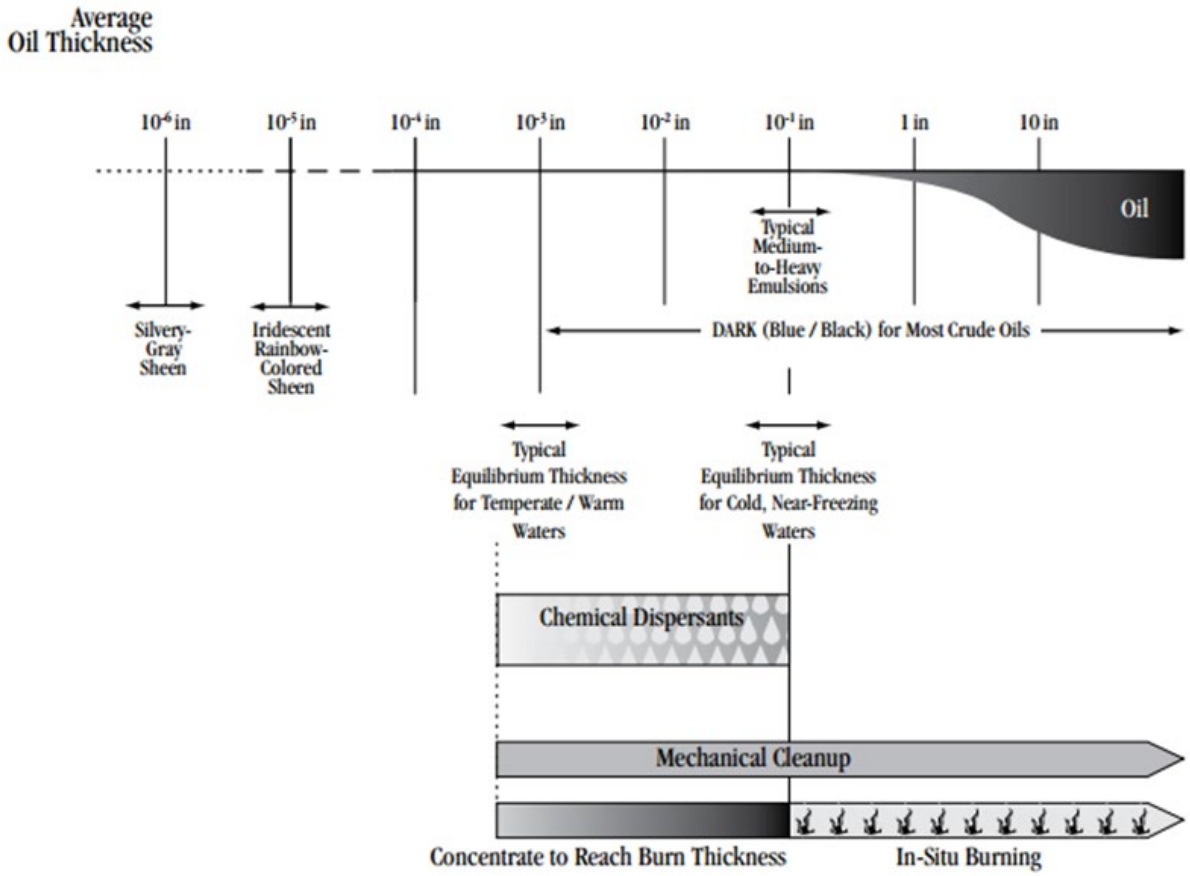

Figure 2-6: Oil thickness versus potential response options (from Allen & Dale 1996)

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.

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.”

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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 in Table 2-5.

Table 2-5: Worst case credible scenario modelling results

Scenario description	Results		
	CS-01:	**CS-02:**	**CS-04:**
WCCS – total volume released Refer to Section 2.2.1 for detailed hydrocarbon characteristics	**CS-01:** Subsea hydrocarbon release caused by the loss of well containment (Julimar East-1) during permanent P&A activities by a Mobile Offshore Drilling Unit (MODU). Subsurface - 2,679 m^3 of Julimar Condensate over 91 days[5]	**CS-02:** A short-term (instantaneous) uncontrolled surface release of marine diesel due to a vessel collision at the Balnaves Deep-1 wellhead location (closest wellhead to Tryal Rocks). Surface – Instantaneous release of 500 m^3 of marine diesel oil (MDO)	**CS-04:** Unplanned subsea release of NWBM contained in the 9-5/8" annulus of the Balnaves Deep-1 well due to a failure of the containment system. Subsurface - Instantaneous release of 67 m^3
WCCS – residual volume remaining post-weathering	6.5% residue of 174 m^3 2 m^3 per day	5% residue of 25 m^3 Instantaneous release	7.8% residue of 5 m^3 Instantaneous release
Location	20° 6' 23.21" S 115° 5' 7.97" E	20° 4′ 58.213″ S 115° 10′ 34.192″ E	13° 58' 15.1" S 122° 01' 28.5" E.
Modelling results			
Surface area of hydrocarbons (>50 g/m^2)	No contact at threshold	No contact at threshold	No contact at threshold
Surface area of hydrocarbons (>50 g/m^2 and <10,000 cSt)	No contact at threshold	No contact at threshold	No contact at threshold
Minimum time to floating hydrocarbon contact with the offshore edge(s) of any shoreline receptor polygon (at a concentration of 10 g/m^2)	No contact at threshold	No contact at threshold	No contact at threshold
Minimum time to commencement of hydrocarbon accumulation at any shoreline receptor (at a concentration of 100 g/m^2)	No contact at threshold	No contact at threshold	No contact at threshold
Maximum cumulative hydrocarbon volume accumulated at any individual	No contact at threshold	No contact at threshold	No contact at threshold

[5] 91 days has been modelled as the worst-case duration for a loss of well containment where mobilisation of a MODU from South East Australia is required for executing a relief well. Mobilisation of a locally available MODU is estimated to result in a loss of well containment duration of ~63 days and, from South East Asia, ~78 days.

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shoreline receptor (at a concentration of 100 g/m^2).			
Maximum cumulative hydrocarbon volume accumulated across all shoreline receptors contacted by accumulated hydrocarbons (at a concentration of 100 g/m^2)	No contact at threshold	No contact at threshold	No contact at threshold
Minimum time to entrained/dissolved hydrocarbon contact with the offshore edges of any receptor polygon (at a threshold of 100 ppb)	No contact at threshold	Montebello Australian Marine Park (AMP) – 6 Hours	Montebello AMP – 4 Hours

The stochastic modelling results for the WCCS have been used as the basis for response planning and are included in Section 4.2.

The stochastic modelling results for Credible Scenario-01 are summarised as follows:

- In the event of the loss of containment scenario occurring, floating oil concentrations exceeding the 1 g/m^2 threshold could potentially be found up to 30 km north-east, from the release location. No floating oil at the 10 g/m^2 threshold is predicted.
- Floating oil at the 1 g/m^2 threshold is predicted to arrive at the surface waters of the Montebello AMP receptor with a probability of 1%.
- No shoreline receptors are predicted to be contacted by floating oil concentrations at any of the assessed thresholds and no accumulation of oil on shorelines is predicted.
- Entrained oil concentrations >10 ppb could potentially travel up to 324 km from the release location. The furthest distance for entrained oil at the 100 ppb threshold is predicted as 7 km.
- No sensitive receptors are predicted to be contacted at the entrained threshold of 100 ppb.
- Dissolved aromatic hydrocarbon concentrations ≥10 ppb were calculated to potentially occur up to 115 km south-west from the release location.
- No sensitive receptors are predicted to be contacted at the dissolved threshold of 50 ppb.

The stochastic modelling results for Credible Scenario-02 are summarised as follows:

- Floating oil is predicted to extend up to approximately 47 km south from the release location at or above the 10 g/m² impact threshold.
- Floating oil at the 1 g/m^2 threshold may extend up to approximately 53 km south from the release site.
- Floating oil at 1 g/m^2 is not predicted to contact any shoreline receptors. The Montebello AMP is the only receptor where floating oil the 1 g/m^2 and 10 g/m^2 thresholds was predicted, with a probability of 4% and 1.5% respectively.
- No receptors are predicted to be contacted by shoreline oil concentrations at or greater than 10 g/m^2.
- The modelling indicates that locations exposed to entrained hydrocarbons at concentrations equal to or greater than the 100 ppb threshold is predicted to be found up to 305 km south-west from the spill site.
- The greatest probabilities of contact by entrained oil concentrations equal to or greater than the 100 ppb threshold are predicted at the Montebello AMP (19.5%), Tryal Rocks (8.5%), Barrow Island Marine Management Area (MMA) (3.5%) and Barrow Island Marine Park (State) (3.5%), as well as several other sensitive receptors with probabilities of, or less than 2.5%.
- Dissolved aromatic hydrocarbon concentrations equal to or greater than the 50 ppb threshold are predicted to be found up to around 166 km south-west from the spill site.

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- The greatest probabilities of contact by dissolved aromatic hydrocarbon concentrations equal to or greater than 50 ppb are predicted at the Montebello AMP (5%) as well as several other sensitive receptors with probabilities of, or less than 0.5%.

The stochastic modelling results for Credible Scenario-04 are summarized as follows:

- In the event of a release of NWBM, floating oil concentrations exceeding the 1 g/m^2, 10 g/m^2 and 50 g/m^2 threshold could potentially be found up to 54 km, 25 km and 1 km from the release location, respectively.
- The Montebello AMP may be contacted by floating oil with a probability of 1% above the 10 g/m^2 threshold and a probability of 4% above the 1 g/m^2 threshold.
- No shoreline locations have potential to experience shoreline accumulation at the 10 g/m^2 threshold.
- At the entrained threshold of 100 ppb, Montebello AMP is predicted to be contacted with a probability of 4%.
- No sensitive receptors are predicted to be contacted by dissolved hydrocarbons.

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3 IDENTIFY RESPONSE PROTECTION AREAS (RPAs)

In a response, monitor and evaluate – including trajectory modelling and vessel/aerial observations – would be used to predict RPAs that may be impacted. For the purposes of planning and appropriately scaling a response, modelling has been used to identify RPAs as outlined below in Figure 3-1.

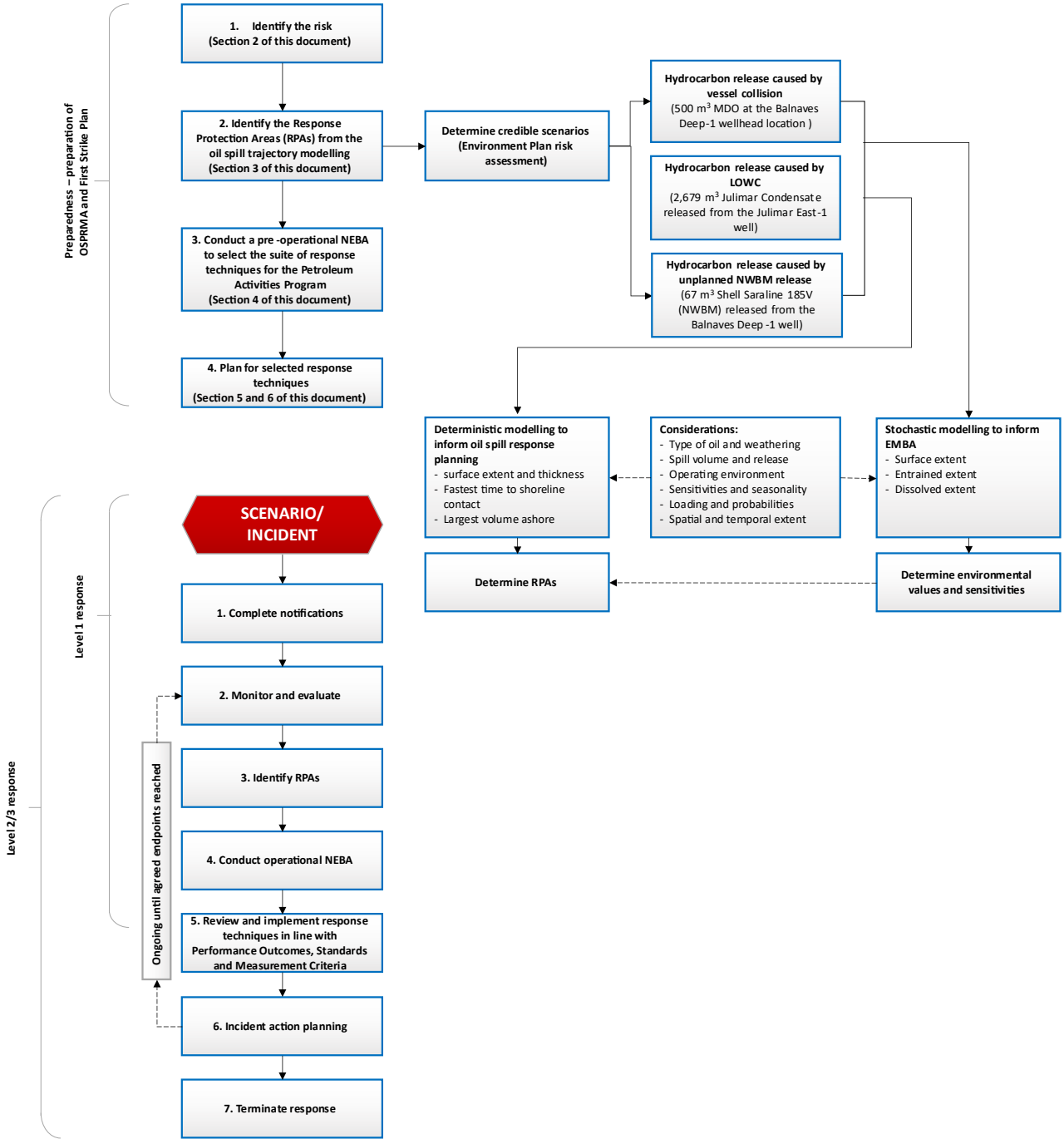

Figure 3-1: Identify Response Protection Areas (RPAs) flowchart

3.1 Identified sensitive receptor locations

Sections 6.9.2, 6.9.3 and 6.9.5 of the EP include the list of sensitive receptor locations that have been identified by stochastic modelling as meeting the requirements outlined below:

- receptors with the potential to incur surface, entrained or shoreline accumulation contact above environmental impact thresholds
- receptors within the EMBA which meet the following:

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- 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 are 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).

Contact from floating hydrocarbons above 10 g/m^2 is not predicted for any shoreline receptor based on the stochastic modelling. Additionally, accumulation above 100 g/m^2 on any shoreline is not predicted and no accumulated volume of hydrocarbons is predicted at any shorelines. Consequently, no RPAs have been selected for response planning.

For this PAP, deterministic modelling was not required because the stochastic spill modelling predicted no shoreline contact from floating oil.

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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.

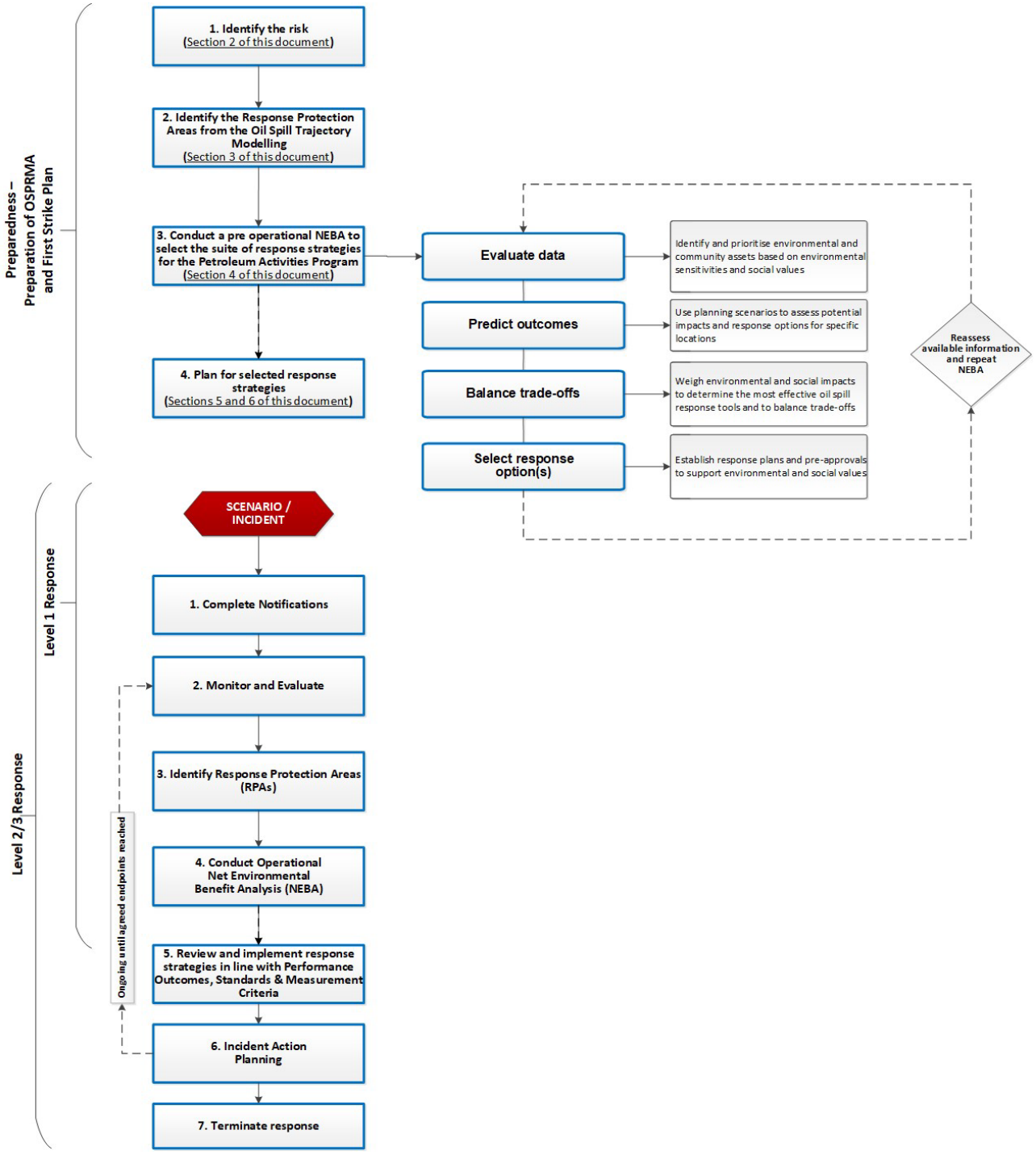

Figure 4-1: Net Environmental Benefit Analysis (NEBA) flowchart

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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 deterministic modelling.

Completing a pre-operational NEBA is a key response planning control that reduces the environmental risks and impacts of implementing the selected response techniques. Comprehensive details of the pre-operational NEBA for this PAP are contained in **ANNEX A**: Net Environmental Benefit Analysis detailed outcomes.

4.2 Stage 1: Evaluate data

Woodside identifies and prioritises environmental and community assets based on environmental sensitivities and social values, informed through the use of trajectory modelling. Interpretation of stochastic oil spill modelling determines the EMBA for the release, which defines the spatial area that may be potentially impacted by the PAP activities.

4.2.1 Define the scenario(s)

Woodside uses scenarios identified from the risk assessment in the EP to assess potential impacts and response options for specific locations. The WCCS is then selected for deterministic modelling and is used for this pre-operational NEBA. Outlier locations with potential environmental impacts, selected from the stochastic modelling may also be included for assessment. Response thresholds are then used to assess the feasibility/effectiveness and scale of the response. Modelling results are available in Table 2-5.

4.3 Stage 2: Predict Outcomes

Woodside uses planning scenarios to assess potential impacts and response options for specific locations. Locations with potential environmental impacts, selected from the stochastic modelling are included for assessment. Response thresholds and deterministic modelling are then used to assess the feasibility/ effectiveness of a response.

4.4 Stage 3: Balance trade-offs

Woodside considers environmental impacts and response effectiveness/ feasibility to determine the most effective oil spill response tools and balance trade-offs, using an automated NEBA tool. The tool considers potential benefits and impacts associated with a response at sensitive receptors and then considers the effectiveness/ feasibility of the response to select the response techniques carried forward to the ALARP assessment. The NEBA can be found in ANNEX A: Net Environmental Benefit Analysis detailed outcomes.

4.5 Stage 4: Select Best Response Options

To select the response technique, all the other stages in the NEBA process are considered and used to establish response plans and any pre-approvals to support protection of identified environmental and social values.

The response techniques implemented may vary according to a particular spill. The hydrocarbon type released, and the sensitivities of the receptors (both ecological and socio-economic) may influence the response. The pre-operational NEBA broadly evaluates each response technique and supports decisions on whether they are feasible and of net environmental benefit. Response techniques that are not feasible or beneficial are rejected at this stage and not progressed to planning.

Further risks and impacts from implementing these selected response options are outlined in Section 7.

4.5.1 Determining potential response options

The available response techniques based on current technology can be summarised under the following headings:

- Monitor and evaluate
- Source control
  - Remotely operated vehicle (ROV) intervention
  - debris clearance and/or removal

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  - capping stack
  - relief well drilling
- Source control via vessel SOPEP
- Subsea dispersant injection
- Surface dispersant application:
  - aerial dispersant application
  - vessel dispersant application
- Mechanical dispersion
- In-situ burning
- Containment and recovery
- Shoreline protection and deflection:
  - protection
  - deflection
- Shoreline clean-up:
  - Phase 1 – mechanical clean-up
  - Phase 2 – manual clean-up
  - Phase 3 – final polishing
- Oiled wildlife response (including hazing)

Support functions may include:

- Waste management
- Operational and scientific monitoring

Table 4-1 and Table 4-2 include scenario-specific assessments of feasible response options and justification for the exclusion of inappropriate options. These options are evaluated against the scenario parameters including oil type, volume, characteristics, prevailing weather conditions, logistical support, and resource availability to determine deployment feasibility.

A shortlist of the feasible response options is then carried forward for the ALARP assessment. This assessment will typically result in a range of available options, that are deployed at different areas (at-source, offshore, nearshore and onshore) and different times during the response. The NEBA process assists in prioritising which options to use where and when, and timings throughout the response.

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Table 4-1: Response technique evaluation – Loss of Well Containment (LOWC) (CS-01)

Response Technique	Effectiveness	Feasibility	Decision	Rationale for the decision
Hydrocarbon: Julimar Condensate				
Monitor and evaluate	Will be effective in tracking the location of the spill, informing when it has entered State Waters, predicting potential impacts and triggering further monitoring and response techniques as required. Monitoring techniques include: • Predictive modelling of hydrocarbons – used throughout spill. 'Ground-truthed' using the outputs of all other monitoring techniques. • Surveillance and reconnaissance to detect hydrocarbons and resources at risk – from outset of spill. • Pre-emptive assessment of sensitive receptors at risk – triggered once monitor and evaluate informs likely RPAs at risk.	Monitoring of a condensate spill is a feasible response technique and an essential element of all spill response incidents. Outputs will be used to guide decision making on the use of other monitoring/response techniques and providing required information to regulatory agencies including AMSA and Western Australia Department of Transport and Major Infrastructure (WA DTMI).	Yes	Monitoring the spill will be necessary to: • validate trajectory and weathering models • determine the location and state of the slick • provide forecasts of spill trajectory • determine appropriate response techniques • determine effectiveness of response techniques • confirm impact pathways to receptors • provide regulatory agencies with required information.
Source control via blowout preventer (BOP) intervention using ROV and hotstab	Controlling a loss of well containment at source via BOP intervention would be the most effective way to limit the quantity of hydrocarbon entering the marine environment.	In the event of the worst-case scenario with a loss of well containment during drilling operations, ROV operations to locally operate the BOP would be attempted.	Yes	The use of source control intervention via ROV may be feasible (depending on local concentration of atmospheric volatiles) and would reduce quantity of hydrocarbons entering the marine environment.
Source control via debris clearance and capping stack	Controlling a loss of well containment at source via capping stack would be an effective way to limit the quantity of hydrocarbon entering the marine environment.	Woodside will have a project specific source control emergency response plan (SCERP) for the Julimar-Brunello Plug and Abandonment activity. Capping the Julimar-Brunello wells is considered feasible based on worst-case discharge rates. Though all capping stack deployment technologies are unproven, in the event of a loss of well containment, the use of a proven subsea deployment method such as a heavy lift vessel, which is more commonly used in industry, is a more reliable and, in turn, ALARP approach. If environmental conditions permit (wind speed, wave height, current and plume radius), deployment of a capping stack would be attempted with a heavy lift vessel. Woodside maintains several frame agreements with various vessel service providers and maintains the ability to call off services with a capping stack and debris clearance agreement. The location of suitable vessels for capping stack deployment are monitored monthly. The supply arrangements and reliability to achieve the required mobilisation time will be revalidated prior to spud. Consideration to mobilise the capping stack from the supplier on a suitable vessel but then hand over to another vessel to conduct the capping activity will also be made to meet response time frames.	Yes	Conventional/vertical capping stack deployment with a heavy lift vessel will be attempted at the discretion of the vessel master on the day, giving due regard to the safety of the vessel and crew. Circumstances that limit the safe execution of this control measure include lower explosive limit (LEL) concentrations, volatile concentrations of hydrocarbons in the atmosphere, weather window, waves and/or sea states and high ambient temperatures.
Source control via relief well drilling	A release of condensate will be over approximately 63 days (for locally sourced MODU) to 78 days (for MODU sourced from South East Asia)[6]. Relief well drilling is one of the primary options to stop the release.	For a spill from the Julimar-Brunello wells, relief well drilling will be a feasible means of stopping a loss of well containment event. Relief well drilling is a widely accepted and utilised technique.	Yes	Relief well drilling will be the main technique employed to control a loss of well containment event.
Subsea dispersant injection	Application of subsea dispersant may reduce the scale and extent of hydrocarbons reaching the surface. SSDI can increase dispersed/entrained hydrocarbons which can potentially have higher toxicity to biota in shallow water than naturally dispersed hydrocarbons. Entrained oil could potentially impact on sensitive shallow-water receptors e.g. corals and fish, which may be otherwise unaffected. Entrained oil plume likely to be increased resulting in greater spatial extent of entrained oil.	The goal of this technique is to reduce oil reaching surface waters in order to lessen exposure of surface-dwelling organisms. Despite the considerable amount of research and experimental work completed since the Deepwater Horizon spill in 2010, efficacy of SSDI remains uncertain however (Quigg et al. 2021). Given floating oil above the 10 g/m^2 threshold and shoreline accumulations are not predicted by modelling for the loss of well control scenario, there is unlikely to be a net environmental benefit from the use of subsea dispersant.	No	Due to the lack of surface and shoreline exposure predicted at RPAs, the use of SSDI is deemed an inappropriate response option.
Surface dispersant application	Application of surface dispersant would likely reduce the volumes of hydrocarbons contacting sensitive surface receptors. Dispersant can also enhance biodegradation and may reduce volatile organic compounds (VOCs) in some circumstances therefore reducing potential health and safety risk to responders.	Surface dispersant application may potentially provide a net environmental benefit where its use would reduce the volume of shoreline oiling in sensitive regions. At certain times it may not provide an environmental benefit, for example, during coral spawning seasons due to coral larvae being highly sensitivity to dispersants (Negri et al, 2018). • Given floating oil above the 10 g/m^2 threshold and shoreline accumulations are not predicted by modelling for the loss of well control scenario, there is unlikely to be a net environmental benefit from the use of surface dispersant.	No	Due to the limited presence of oil at feasible response thresholds predicted by the modelling, the use of surface dispersant for this scenario is not appropriate and would not provide a net environmental benefit.

[6] 91 days has been modelled as the worst-case duration for a loss of well containment where mobilisation of a MODU from South East Australia is required for executing a relief well. Mobilisation of a locally available MODU is estimated to result in a loss of well containment duration of ~63 days and, from South East Asia, ~78 days.

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Response Technique	Effectiveness	Feasibility	Decision	Rationale for the decision
	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.			
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. Furthermore, given floating oil above the 10 g/m^2 threshold from a loss of well control scenario is not predicted by modelling, there is unlikely to be a net environmental benefit from the use of mechanical dispersion.	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. Furthermore, given floating oil above the 10 g/m^2 threshold from a loss of well control scenario is not predicted by modelling, there is unlikely to be a net environmental benefit from the use of in-situ burning.	No	The safety concerns and the predicted low effectiveness associated with implementing an in-situ burning response outweigh the potential environmental benefit.
Containment and recovery	Containment and recovery has an effective recovery rate of 5-10% when a hydrocarbon encounter rate of 25-50% is achieved at BAOAC 4 and 5. It has the potential to reduce the magnitude, probability, extent, contact and accumulation of hydrocarbon on shorelines receptors when suitable encounter rates can be achieved. It also has the potential to reduce the magnitude and extent of contact with submerged receptors by removing oil before further natural entraining/dissolving of hydrocarbons occurs.	Modelling of a condensate spill for the Julimar-Brunello Plug and Abandonment activity predicts that floating oil will be prone to rapid spreading and evaporation and will not reach the required threshold (>50 g/m^2) for containment and recovery to be feasible within any RPA. The volatile nature of Julimar condensate is also likely to lead to unsafe conditions near release location.	No	Containment and recovery would be an ineffective response technique as it requires a hydrocarbon thickness of BAOAC 4-5 with a 50-100% coverage of 100-200 g/m^2. Modelling does not predict any surface hydrocarbons above 50 g/m^2, thus this response strategy is considered ineffective.
Shoreline protection and deflection	Shoreline protection and deflection can be effective at preventing contamination of sensitive resources and can be used to corral oil into slicks thick enough to skim effectively.	Given floating oil above the 10 g/m^2 threshold from a loss of well control scenario is not predicted by modelling and no shoreline accumulation is predicted, there is unlikely to be a requirement for shoreline protection and deflection. If real-time Operational Monitoring activities were to indicate surface hydrocarbons are moving toward shorelines, pre-emptive assessments of sensitive receptors at risk and existing TRPs will be utilised to guide shoreline protection and deflection operations, in agreement with WA DTMI (for Level 2/3 spills). Protection strategies can be used for targeted protection of sensitive resources. Access to sensitive areas may cause more negative impact than benefit.	No	In addition to safety issues and the rapid spreading and evaporation of the Julimar condensate, the modelling undertaken predicts that no shoreline receptors would be contacted by floating oil concentrations at any of the assessed thresholds.
Shoreline clean-up	Shoreline clean-up is an effective means of hydrocarbon removal from contaminated shorelines where coverage is at an optimum level of 250 g/m^2.	Given floating oil above the 10 g/m^2 threshold from a loss of well control scenario is not predicted by modelling and no shoreline accumulation is predicted, there is unlikely to be a requirement for shoreline clean-up. If real-time Operational Monitoring activities were to indicate hydrocarbons will contact shorelines, pre-emptive assessments of sensitive receptors at risk, shoreline assessments and existing TRPs will be utilised to guide shoreline protection and deflection operations, in agreement with WA DTMI (for Level 2/3 spills). Can reduce or prevent impact on sensitive receptors in most cases. Must confirm, through shoreline assessment, that sensitive sites will benefit from clean-up activities as the response itself may cause more negative impact than benefit through disturbance of habitats and species.	No	In addition to safety issues, the modelling undertaken predicts that no shoreline receptors would be contacted by floating oil concentrations at a recoverable threshold and a spill of Julimar condensate is unlikely to accumulate at concentrations appropriate for shoreline clean-up techniques.
Oiled wildlife response	Oiled wildlife response is an effective response technique for reducing the overall impact of a spill on wildlife. This is mostly achieved through hazing to prevent additional wildlife from being contaminated and through rehabilitation of those already subject to contamination.	In the event that wildlife are at risk of contamination, oiled wildlife response will be undertaken in accordance with the Wildlife Response Operational Plan as and where required. In addition, any rehabilitation could only be undertaken by trained specialists. Due to the likely volatile atmospheric conditions surrounding a Julimar condensate spill, response options may be limited to hazing to ensure the safety of response personnel.	Yes	This technique may prevent impact to and/or treat oiled wildlife providing net environmental benefit.

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Table 4-2: Response technique evaluation – MDO release from vessel collision (CS-02)

Response Technique	Effectiveness	Feasibility	Decision	Rationale for the decision
Operational Monitoring	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 operational monitoring informs likely RPAs at risk.	Monitoring of a marine diesel spill is a feasible response technique and outputs will be used to guide decision making on the use of other monitoring/response techniques and providing information to regulatory agencies including AMSA and WA DTMI. Practicable techniques that could be used for this scenario include predictive modelling, surveillance and reconnaissance and monitoring of hydrocarbon presence in water. Modelling does not predict impact of any shoreline receptors at threshold, however, pre-emptive assessment of sensitive receptors at risk and monitoring of contaminated resources would be utilised if any sensitive shoreline receptors are deemed to be at risk of impact.	Yes	Monitoring the spill will be necessary to: • validate trajectory and weathering models • determine the location and state of the slick • provide forecasts of spill trajectory • determine appropriate response techniques • determine effectiveness of response techniques • confirm impact pathways to receptors • provide regulatory agencies with required information.
Source control via vessel SOPEP	Controlling a spill of diesel at source would be the most effective way to limit the quantity of hydrocarbon entering the marine environment.	A spill of diesel from a vessel collision will be instantaneous and source control will be limited to what the vessel or facility can safely achieve whilst responding to the incident.	Yes	Ability to stop the spill at source will be dependent upon the specific spill circumstances and whether or not it is safe for response personnel to access/isolate the source of the spill.
Surface dispersant application	Application of surface dispersant would likely reduce the volumes of hydrocarbons contacting sensitive surface receptors. Dispersant can also enhance biodegradation and may reduce VOCs in some circumstances therefore reducing potential health and safety risk to responders. Dispersant can increase dispersed/entrained hydrocarbons which can potentially have higher toxicity to biota in shallow water than naturally dispersed hydrocarbons. Subsurface oil plume likely to increase in size resulting in greater spatial extent of entrained oil. Entrained oil could potentially impact on sensitive shallow-water receptors e.g. corals, which otherwise may have been unaffected.	This technique is not suitable for MDO spills as this hydrocarbon is prone to rapid spreading and evaporation and are not considered effective when applied on thin surface films such as marine diesel as the dispersant droplets tend to pass through the surface films without binding to the hydrocarbon resulting in the unnecessary addition of chemicals to the marine environment. The volatile nature of MDO is also likely to lead to unsafe conditions in the vicinity of fresh hydrocarbon thus this response technique is deemed inappropriate.	No	The application of dispersant to marine diesel is unnecessary as the diesel will rapidly evaporate and would thus unnecessarily introduce additional chemical substances to the marine environment. The additional entrainment would also increase exposure of subsea species and habitats to hydrocarbons.
Mechanical dispersion	Mechanical dispersion involves the use of a vessel's prop wash and/or fire hose to target surface hydrocarbons to achieve dispersion into the water column. However, this technique is of limited benefit in an open ocean environment where wind and wave action are likely to deliver similar advantages.	Although the technique is feasible, highly volatile hydrocarbons are likely to weather, spread and evaporate quickly. The volatile nature of the oil likely to lead to unsafe conditions in the vicinity of fresh hydrocarbon. Additionally, any vessel used for mechanical dispersion activities would be contaminated by the hydrocarbon and could potentially cause secondary contamination of unimpacted areas when exiting the spill area. The decontamination of a vessel used for mechanical dispersion activities would result in additional quantities of oily waste requiring appropriate handling and treatment.	No	Given the limited benefit of mechanical dispersion over natural wind and wave action, secondary contamination and waste issues, and the associated safety risk of implementing the response for this activity, this strategy is deemed unsuitable.
In-situ burning	In-situ burning is only effective where minimum slick thickness can be achieved.	Use of in-situ burning as a response technique for marine diesel is unfeasible as the minimum slick thickness cannot be attained due to rapid spreading. In addition, there is a limited window of opportunity in which this technique can be applied (prior to evaporation of the volatiles) which is unlikely to be achieved. Furthermore, entering a volatile environment to undertake this technique would be unsafe for response personnel and its used would unnecessarily cause an increase the release of atmospheric pollutants.	No	Diesel characteristics are not appropriate for the use of in-situ burning and would unnecessarily cause an increase the release of atmospheric pollutants.
Containment and recovery	Containment and recovery has an effective recovery rate of 5-10% when a hydrocarbon encounter rate of 25-50% is achieved at BAOAC 4 and 5 with a 50-100% coverage of 100 g/m^2 to 200 g/m^2.	This technique is not suitable for MDO spills as it is prone to rapid spreading and evaporation and is deemed unsuitable for effective containment and recovery operations. The volatile nature of marine diesel is also likely to lead to unsafe conditions in the vicinity of the hydrocarbon thus this response technique is deemed inappropriate.	No	Containment and recovery would be an inappropriate response technique for a spill of marine diesel. Corralling a volatile hydrocarbon such as MDO is deemed unsafe for response personnel thus this response strategy is not considered feasible. In addition to the safety issues, most of the spilled diesel would have been subject to rapid evaporation prior to the

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Response Technique	Effectiveness	Feasibility	Decision	Rationale for the decision
				commencement of containment and recovery operations.
Shoreline protection and deflection	Shoreline protection and deflection can be effective at preventing contamination of at-risk areas.	A marine diesel spill would be prone to rapid spreading and evaporation and modelling predicts that no shoreline receptors will be contacted at threshold. Furthermore, the volatile nature of marine diesel is also likely to lead to unsafe conditions in the vicinity of the hydrocarbon. Operational monitoring will, however, be deployed from the outset of a spill to track the spill location and fate in real-time.	No	In addition to safety issues and the rapid spreading and evaporation of the diesel, the modelling undertaken predicts that no shoreline receptors would be contacted by floating oil concentrations at any of the assessed thresholds.
Shoreline clean-up	Shoreline clean-up is an effective means of hydrocarbon removal from contaminated shorelines where coverage is at an optimum level of 250 g/m2.	A marine diesel spill would be prone to rapid spreading and evaporation and the modelling predicts that no shoreline receptors will be contacted at threshold – any minor contact is significantly below any threshold concentration that would allow a response to be feasible. Furthermore, the volatile nature of marine diesel is also likely to lead to unsafe conditions in the vicinity of the hydrocarbon. Operational monitoring will, however, be deployed from the outset of a spill to track the spill location and fate in real-time.	No	In addition to safety issues, the modelling undertaken predicts that no shoreline receptors would be contacted by floating oil concentrations at a recoverable threshold and a spill of marine diesel is unlikely to accumulate at concentrations appropriate for shoreline clean-up techniques.
Oiled wildlife response	Oiled wildlife response is an effective response technique for reducing the overall impact of a spill on wildlife. This is mostly achieved through hazing to prevent additional wildlife from being contaminated and through rehabilitation of those already subject to contamination.	Due to the likely volatile atmospheric conditions surrounding a diesel spill, response options may be limited to hazing to ensure the safety of response personnel. The modelling undertaken predicts that no sensitive areas will be impacted thus it is unlikely that this technique would be required. Monitor and evaluate will, however, be deployed from the outset of a spill to track the spill location and fate in real-time. Thus, in the event that wildlife are at risk of contamination, oiled wildlife response will be undertaken in accordance with the Wildlife Response Operational Plan as and where required. In addition, any rehabilitation could only be undertaken by trained specialists.	Yes	The modelling undertaken predicts that no sensitive areas will be impacted thus it is unlikely that this technique would be required. However, in the event that wildlife are at risk of contamination, oiled wildlife response will be undertaken as and where required.

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Table 4-3: Response technique evaluation – NWBM release from the annulus of Balnaves Deep-1 well (CS-04)

Response Technique	Effectiveness	Feasibility	Decision	Rationale for the decision
Hydrocarbon: NWBM				
Operational Monitoring	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 operational monitoring informs likely RPAs at risk.	Monitoring of a NWBM spill is a feasible response technique and outputs will be used to guide decision making on the use of other monitoring/response techniques and providing information to regulatory agencies including AMSA and WA DTMI. Practicable techniques that could be used for this scenario include predictive modelling, surveillance and reconnaissance and monitoring of hydrocarbon presence in water. Modelling does not predict impact of any shoreline receptors at threshold, however, pre-emptive assessment of sensitive receptors at risk and monitoring of contaminated resources would be utilised if any sensitive shoreline receptors are deemed to be at risk of impact.	Yes	Monitoring the spill will be necessary to: • validate trajectory and weathering models • determine the location and state of the slick • provide forecasts of spill trajectory • determine appropriate response techniques • determine effectiveness of response techniques • confirm impact pathways to receptors • provide regulatory agencies with required information.
Source control	Controlling a spill of NWBM at source would be the most effective way to limit the quantity of hydrocarbon entering the marine environment	A spill of NWBM from the annulus of Balnaves Deep-1 well is assumed to be an instantaneous, fixed volume release with no connection to the reservoir. Source control is not a feasible option due to the limited volume of the release.	No	Source control is not feasible for this scenario.
Surface dispersant application	Application of surface dispersant would likely reduce the volumes of hydrocarbons contacting sensitive surface receptors. Dispersant can also enhance biodegradation and may reduce VOCs in some circumstances therefore reducing potential health and safety risk to responders. Dispersant can increase dispersed/entrained hydrocarbons which can potentially have higher toxicity to biota in shallow water than naturally dispersed hydrocarbons. Subsurface oil plume likely to increase in size resulting in greater spatial extent of entrained oil. Entrained oil could potentially impact on sensitive shallow-water receptors e.g. corals, which otherwise may have been unaffected.	This technique is not suitable for NWBM spills as this hydrocarbon is expected to spread rapidly and is not considered effective when applied on thin surface films such as NWBM 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.	No	The application of dispersant to NWBM is unnecessary as the NWBM will rapidly spread and would thus unnecessarily introduce additional chemical substances to the marine environment. The additional entrainment would also increase exposure of subsea species and habitats to hydrocarbons.
Mechanical dispersion	Mechanical dispersion involves the use of a vessel's prop wash and/or fire hose to target surface hydrocarbons to achieve dispersion into the water column. However, this technique is of limited benefit in an open ocean environment where wind and wave action are likely to deliver similar advantages.	Although the technique is feasible, highly volatile hydrocarbons are likely to weather, spread and evaporate quickly. The volatile nature of the oil likely to lead to unsafe conditions in the vicinity of fresh hydrocarbon. Additionally, any vessel used for mechanical dispersion activities would be contaminated by the hydrocarbon and could potentially cause secondary contamination of unimpacted areas when exiting the spill area. The decontamination of a vessel used for mechanical dispersion activities would result in additional quantities of oily waste requiring appropriate handling and treatment.	No	Given the limited benefit of mechanical dispersion over natural wind and wave action, secondary contamination and waste issues, and the associated safety risk of implementing the response for this activity, this strategy is deemed unsuitable.
In-situ burning	In-situ burning is only effective where minimum slick thickness can be achieved.	Use of in-situ burning as a response technique for NWBM is unfeasible as the minimum slick thickness cannot be attained due to rapid spreading. In addition, there is a limited window of opportunity in which this technique can be applied (prior to evaporation of the volatiles) which is unlikely to be achieved. Furthermore, entering a volatile environment to undertake this technique would be unsafe for response personnel and its used would unnecessarily cause an increase the release of atmospheric pollutants.	No	NWBM characteristics are not appropriate for the use of in-situ burning and would unnecessarily cause an increase the release of atmospheric pollutants.
Containment and recovery	Containment and recovery has an effective recovery rate of 5-10% when a hydrocarbon encounter rate of 25-50% is achieved at BAOAC 4 and 5 with a 50-100% coverage of 100 g/m^2 to 200 g/m^2.	This technique is not suitable for NWBM spills as it is prone to rapid spreading and is deemed unsuitable for effective containment and recovery operations.	No	Containment and recovery would be an inappropriate response technique for a spill of NWBM. Most of the spilled NWBM would have been subject to rapid spreading prior to the commencement of containment and recovery operations.

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Response Technique	Effectiveness	Feasibility	Decision	Rationale for the decision
Shoreline protection and deflection	Shoreline protection and deflection can be effective at preventing contamination of at-risk areas.	A NWBM spill would be prone to rapid spreading and evaporation and modelling predicts that no shoreline receptors will be contacted at threshold. Operational monitoring will, however, be deployed from the outset of a spill to track the spill location and fate in real-time.	No	In addition to safety issues and the rapid spreading and evaporation of the NWBM, the modelling undertaken predicts that no shoreline receptors would be contacted by floating oil concentrations at any of the assessed thresholds.
Shoreline clean-up	Shoreline clean-up is an effective means of hydrocarbon removal from contaminated shorelines where coverage is at an optimum level of 250 g/m2.	A NWBM spill would be prone to rapid spreading and evaporation and the modelling predicts that no shoreline receptors will be contacted. . Operational monitoring will, however, be deployed from the outset of a spill to track the spill location and fate in real-time.	No	In addition to safety issues, the modelling undertaken predicts that no shoreline receptors would be contacted by floating oil concentrations at a recoverable threshold and a spill of NWBM is unlikely to accumulate at concentrations appropriate for shoreline clean-up techniques.
Oiled wildlife response	Oiled wildlife response is an effective response technique for reducing the overall impact of a spill on wildlife. This is mostly achieved through hazing to prevent additional wildlife from being contaminated and through rehabilitation of those already subject to contamination.	Due to the likely volatile atmospheric conditions surrounding a NWBM spill, response options may be limited to hazing to ensure the safety of response personnel. The modelling undertaken predicts that no sensitive areas will be impacted thus it is unlikely that this technique would be required. Monitor and evaluate will, however, be deployed from the outset of a spill to track the spill location and fate in real-time. Thus, in the event that wildlife are at risk of contamination, oiled wildlife response will be undertaken in accordance with the Wildlife Response Operational Plan as and where required. In addition, any rehabilitation could only be undertaken by trained specialists.	Yes	The modelling undertaken predicts that no sensitive areas will be impacted thus it is unlikely that this technique would be required. However, in the event that wildlife are at risk of contamination, oiled wildlife response will be undertaken as and where required.

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5 HYDROCARBON SPILL ALARP PROCESS

Woodside's hydrocarbon spill ALARP process is aligned with guidance provided by NOPSEMA in *ALARP Guidance Note N-04300-GN0166* (2022) and *Oil Spill Risk Management Guidance Note N-04750-GN1488 A382148* (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. If shorelines are contacted, a shoreline assessment survey (SCAT) will be completed to guide effective shoreline clean-up operations per arrangements detailed in Woodside's Operational and Scientific Monitoring Bridging Implementation Plan (OSM-BIP) (see Section 5.6). This plan includes the process for the CIMT to mobilise resources depending on the nature and scale of the spill.

The proximity of Dampier/ Karratha and Port Hedland 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 and Port Hedland. However, in the unlikely event of an extended spill with potential to impact receptors further afield, monitoring activities may also be mobilised from Exmouth or 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:

- Floating surface oil in sufficient concentrations for effective operational monitoring is expected to be present in open waters with surface concentrations of 50 g/m^2 up to 26 km from the location of CS-02 and up to 1 km from the well location for CS-04. No floating oil at 50 g/m^2 is expected for CS-01.
- No shoreline contact or accumulation is predicted at threshold concentrations for any scenario.
- The time to contact for oil at concentrations of entrained hydrocarbons greater than 100 ppb at shoreline receptors is 6 hours at Montebello AMP for CS-02 and 4 hours at Montebello AMP for CS-04.
- 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.

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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 5.8)**
1	Oil spill trajectory modelling	1.1	Initial modelling available within 6 hours using the Rapid Assessment Tool	1, 3B, 3C, 4
		1.2	Detailed modelling available within 4 hours of RPS receiving information from Woodside	
		1.3	Detailed modelling service available for the duration of the incident upon contract activation	
2	Tracking buoy	2.1	Tracking buoy located on facility/ lead vessel and ready for deployment 24/7	1, 3A, 3C, 4
		2.2	Deploy tracking buoy from facility/ lead vessel within 2 hours as per the First Strike Plan.	1, 3A, 3B, 4
		2.3	Contract in place with service provider to allow data from tracking buoy to be received 24/7 and processed.	1, 3B, 3C, 4
		2.4	Data received to be uploaded into Woodside common operating picture (COP) daily to improve the accuracy of other Operational Monitoring techniques.	1, 3B, 4
3	Satellite imagery	3.1	Contract in place with 3rd party provider to enable access and analysis of satellite imagery. Imagery source/type requested on activation of service.	1, 3C, 4
		3.2	3rd party provider will confirm availability of an initial acquisition within 2 hours	1, 3B, 3C, 4
		3.3	First image received with 24 hours of Woodside confirming to 3rd party provider its acceptance of the proposed acquisition plan.	1
		3.4	3rd party provider to submit report to Woodside per image. Report is to include a polygon of any possible or identified slick(s) with metadata.	1
		3.5	Data received to be uploaded into Woodside COP daily to improve accuracy of other Operational Monitoring techniques.	1, 3B, 4
		3.6	Satellite Imagery services available and employed during response	1, 3C, 4
4	Aerial surveillance	4.1	2 trained aerial observers available to be deployed by day 1 from resource pool.	1, 2, 3B, 3C, 4
		4.2	1 aircraft available for two sorties per day, available for the duration of the response from day 1	1, 3C, 4
		4.3	Observer to compile report during flight as per FSP. Observers report available to the IMT within 2 hours of landing after each sortie.	1, 2, 3B, 4
5	Pre-emptive assessment of sensitive receptors	5.1	10 days prior to any predicted impact, in agreement with WA DTMI (for Level 2/3 incidents), deployment of 2 specialists from resource pool in establishing the status of sensitive receptors.	1, 2, 3B, 3C, 4
		5.2	Daily reports provided to IMT on the status of the receptors to prioritise Response Protection Areas (RPAs) and maximise effective utilisation of resources.	1, 3B, 4

The control measures and capability of Woodside and its third-party service providers are shown to support monitor and evaluate activities up to and including the identified WCCS. This is demonstrated by the following:

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- Woodside has a documented, structured and tested capability for Operational Monitoring operations including internal trajectory modelling capabilities, tracking buoys located offshore and contracted aerial observation platforms with access to trained observers.
- Woodside and its third-party service providers seek to maintain sufficient capability for the duration of the response.
- Woodside has assessed the existing capability available and considered potential alternative, additional and improved control measures. Where control measures have been selected and implemented, they are included in Section 6.1.

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5.2 Source control and well intervention

The worst-case credible scenario for a loss of well containment is considered to be an uncontrolled subsurface release to the environment during P&A. All of the PAP wells have cement plugs installed, isolating the reservoir. These cement plugs will remain in place during P&A operations. The credible release scenario represents a conservative scenario where the cement plug has developed cracks through the entire length of the plug and reservoir fluids are able to pass through a significantly reduced aperture within the cement plug. The associated low release rate results in a maximum total condensate release volume of 2,679 m^3 over the 91-day duration of the release. In the event of a loss of well containment, the primary response would be relief well drilling.

Woodside is a signatory to a MoU between Australian offshore operators to provide mutual aid to facilitate and expedite mobilising a MODU and drilling a relief well. If a loss of well containment incident were to occur, the MoU commits the signatories to share rigs, equipment, personnel and services to assist another operator in need.

5.2.1 Response need based on predicted consequence parameters

The following statements identify the key parameters upon which a response need can be based:

- Prior to any source control activities, Woodside will implement protocols to confirm that the site is safe including subsea ROV surveys and surface air monitoring.
- Hydrocarbons will flow from the well until one of the following interventions can be made:
  - direct intervention by ROV to close BOP
  - a capping stack is deployed
  - a relief well is drilled and first attempt at well kill within 63 days (for locally sourced MODU), 78 days (for MODU sourced from South East Asia) or up to 91 days (for MODU source from South East Australia).
- Arrangements for support organisations who provide specialist services or resources should be tested regularly.
- Plans, procedures and support documents need to be in place for Operational and Support Sections. These should be reviewed and updated regularly.
- The duration of the spill may extend up to 91 days[7].

In addition, a number of assumptions are required to estimate the response need for source control. These assumptions have been described in the table below.

Table 5-2: Response Planning Assumptions – Source Control

Response planning assumptions	
Safety considerations	Source control operations cannot be implemented if the safety of response personnel cannot be guaranteed. This requires an initial and ongoing risk assessment of health and safety hazards and risks at the site, in accordance with the Woodside Management System (WMS). Personnel safety issues may include: • hydrocarbon gas and/or liquid exposure • high winds, waves and/or sea states • high ambient temperatures.
Feasibility considerations	Woodside's primary source control option would be ROV intervention followed by relief well drilling for a loss of containment for the Julimar-Brunello wells within the PAP. The following approaches outline Woodside's hierarchy for relief well drilling; • Primary – Review internal drilling programs and MODU availability to source an appropriate rig operating within Australia with an approved Safety Case; • Alternate – Source and contract a MODU through Australian Energy Producers' Memorandum of Understanding (AEP MOU) that is operating within Australia with an approved Safety Case; • Contingency – Source and contract a MODU outside Australia with an approved Australian Safety Case

[7] 91 days has been modelled as the worst-case duration for a loss of well containment where mobilisation of a MODU from South East Australia is required for executing a relief well. Mobilisation of a locally available MODU is estimated to result in a loss of well containment duration of ~63 days and, from South East Asia, ~78 days.

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5.2.2 Environmental performance based on need

Table 5-3: Environmental Performance – Source Control

Environmental Performance Outcome		To stop the flow of hydrocarbons into the marine environment		
Control measure		**Performance Standard**		**Measurement Criteria (Section 5.8)**
6	Subsea First Response Toolkit (SFRT)	6.1	Oceaneering support staff available all year round, via contract, to assist with the mobilisation, deployment, and operation of the SFRT equipment.	1, 3B, 3C
		6.2	Intervention vessel with minimum requirement of a working class ROV and operator.	1, 3C
		6.3	Mobilised to site for deployment within 11 days.	1, 3B, 3C
		6.4	Open communication line to be maintained between IMT and infield operations to confirm awareness of progress against plan(s).	1, 3A, 3B
7	Well intervention	7.1	Frame agreements with ROV providers in place to be mobilised upon notification. ROV equipment deployed within 7 days.	1, 3B, 3C
		7.2	Source control vessel will have the following minimum specifications: • active heave compensated crane, rated to at least 150 T in shallower water and 250 T in deeper water. • at least 90 m in length • deck has water/electricity supply • deck capacity to hold at least 110 T of capping stack.	1, 3B, 3C
		7.3	Identify source control vessel availability within 24 hours and begin contracting process. Vessel mobilised to site for deployment within 16 days for conventional capping.	1, 3B, 3C
		7.4	ROV available on MODU ready for deployment within 48 hours to attempt initial BOP well intervention.	1, 3B, 3C
		7.5	Hot Stab and/or well intervention attempt made using ROV and SFRT within 48 days.	1, 3B, 3C
		7.6	Capping stack on suitable vessel mobilised to site within 16 days. Deployment and well intervention attempt will be made once plume size is acceptable and safety and metocean conditions are suitable.	1, 3C
		7.7	Contract in place for access to equipment and staff to assist with the mobilisation, deployment, and operation of well intervention equipment.	1, 3B, 3C
		7.8	MODU mobilised to site for relief well drilling within 21 days for a locally available rig, up to 36 days for a rig from South East Asia or 49 days for a rig from South East Australia	1, 3C
		7.9	First well kill attempt completed within 63 days for locally sourced MODU, 78 days for MODU sourced from South East Asia or 91 days for a MODU sourced from South East Australia[8]	1, 3B, 3C
		7.10	Open communication line(s) to be maintained between IMT and infield operations to confirm awareness of progress against plan(s).	1, 3A, 3B

[8] 91 days has been modelled as the worst-case duration for a loss of well containment where mobilisation of a MODU from South East Australia is required for executing a relief well. Mobilisation of a locally available MODU is estimated to result in a loss of well containment duration of ~63 days and, from South East Asia, ~78 days.

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Environmental Performance Outcome		To stop the flow of hydrocarbons into the marine environment		
Control measure		**Performance Standard**		**Measurement Criteria (Section 5.8)**
		7.11	Relief Well Peer review undertaken during well design which includes screening and identification of suitable MODU(s) with in-force Australian safety cases for relief well drilling.	1, 3C
		7.12	Monthly monitoring of the availability of MODUs through existing market intelligence including current Safety Case history, to meet specifications for relief well drilling. Titleholders of suitable MODUs notified.	3C
8	Support vessels	8.1	Access to 24/7 vessel tracking software to monitor availability of suitable vessels to meet specifications for source control.	3C
		8.2	Frame agreements for installation support vessels (ISVs) require vessels to maintain in-force safety case approvals covering ROV operations and provide support in the event of an emergency.	1, 3B, 3C
		8.3	MODU and vessel contracts include clause outlining requirement for support in the event of an emergency	1, 3C
9	Safety Case	9.1	Woodside will prioritise MODU or vessel(s) for intervention work(s) that have an existing safety case	1, 3C
		9.2	Woodside Planning, Logistics, and Safety Officers (on roster/Call 24/7) to assist in expediting the safety case assessment process as far as practicable.	1, 3C
		9.3	Woodside will maintain minimum safe operating standards that can be provided to MODU and vessel operators for Safety Case guidance.	1, 3C

The resulting source control capability has been assessed against the WCCS. The range of techniques provide a feasible and viable approach to relief well drilling operations to stop the well flowing.

- The health and safety, financial, capital and operations/maintenance costs of implementing the alternative, additional or improved control measures identified and not carried forward are considered grossly disproportionate to the insignificant environmental benefit gained and/or not reasonably practicable for this PAP.
- Woodside has assessed the existing capability available and considered potential alternative, additional and improved control measures. Where control measures have been selected and implemented, they are included in Section 6.2.

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5.3 Source Control via vessel Shipboard Oil Pollution Emergency Plan (SOPEP)

Vessel source control will be conducted, where feasible and in accordance with MARPOL 73/78 Annex I, by the Vessel Master under the Shipboard Oil Pollution Emergency Plan (SOPEP) triggered by any loss of containment from the PAP vessels.

The SOPEP provides guidance to the Master and Officers on board the vessel with respect to the extra steps to be taken when an unexpected pollution incident has occurred or is likely to occur. The SOPEP contains all information and operational instructions required by IMO Resolution MEPC.54 (32) adopted on 6 March 1992, as amended by resolution MEPC.86 (44) adopted on 13 March 2000.

Its purpose is to set in motion the necessary actions to stop or minimise oil discharge and mitigate its effects and outlines responsibilities, pollution reporting requirements, procedures and resources needed in the event of a hydrocarbon spill from vessel activities.

In the event of the WCCS vessel collision event, the vessel master may engage precautionary marine manoeuvres to avoid collision or commence pumping operations to transfer marine diesel and thus minimise the release.

5.3.1 Environmental performance based on need

Woodside has established control measures, environmental performance outcomes, performance standards and measurement criteria to be used for vessel-source oil spill response during the PAP which are detailed in Section 6.7 of the EP. The vessel master's roles and responsibilities are described in EP Section 7.3.

Performance standards for each contracted PAP vessel are detailed in the vessel's specific SOPEP.

These standards maintain availability of sufficient resources and are adequately tested for successful implementation of the SOPEP in the event of a hydrocarbon spill.

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5.4 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.

5.4.1 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 5-4 outlines the wildlife response areas for this activity. At the time of a spill, identification and allocation of wildlife RPA's should also take into consideration any key biological activities. Additional detail regarding species and their key biological activities within the vicinity of the PAP are described in Section 4 of the Julimar-Brunello Plug and Abandonment 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 5-4: Key at-risk species potentially in Montebello AMP and open ocean

Species	Open Ocean	Montebello AMP
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:

- Modelling predicts floating oil with surface concentrations of 10 g/m^2 up to 47 km from the location of CS-02 and up to 25 km from the well location for CS-04. No floating oil at 10 g/m^2 is expected for CS-01.
- Floating oil at >10 g/m^2 is predicted at Montebello AMP within 13 hours for CS-02 and 9 hours for CS-04.
- No shoreline receptors are predicted to be contacted by floating oil concentrations at any of the assessed thresholds and no accumulation of oil on shorelines is predicted.
- At sea there are likely to be low numbers of at risk or impacted wildlife, and limited opportunities to rescue wildlife, given the distribution and behaviour of animals in the open marine environment. At sea, continued wildlife reconnaissance, carcass recovery, sampling of carcasses that cannot be retrieved and operational and scientific monitoring are more likely to be the focus of response efforts.
- As the surface oil approaches shorelines and as oil accumulates on the shoreline, potential for oiled wildlife impacts is likely to increase as well as opportunities to rescue wildlife.
- It is estimated that the wildlife impact would be between medium and high, as defined in the WAOWRP (DBCA, 2022a) (Table 5-5).

Table 5-5: WAOWRP Guide for rating wildlife impact of an oil spill (DBCA, 2022)

Wildlife Impact Rating	Low	Medium	High
What is the likely duration of the wildlife response?	<3 days	3-10 days	>10 days
What is the likely total intake of animals?	<10	11-25	>25
What is the likely daily intake of animals?	0-2	2-5	>5
Are threatened species, or species protected by treaty, likely to be impacted, either directly or by pollution of habitat or breeding areas?	No	Yes – possible	Yes – likely
Is there likely to be a requirement for building primary care facility for treatment, cleaning and rehabilitation?	No	Yes – possible	Yes – likely

Tactics

Where there is imminent or actual impact to wildlife, Woodside will activate the Wildlife Division and follow the oiled wildlife incident management framework and implementation plan outlined in the Woodside *Oiled Wildlife Operational Plan*.

In Commonwealth waters, Woodside will be responsible for the planning and implementation of the OWR in its entirety. Noting that at sea, and in comparison to the shoreline, there are likely to be less wildlife impacted by an oil spill and limited opportunities to rescue wildlife, given the distribution and behaviour of animals in the open marine environment. At sea, continued wildlife reconnaissance, carcass recovery, sampling of carcasses

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that cannot be retrieved and integration with operational and scientific monitoring are more likely to be the focus of the OWR.

In State waters, Woodside will conduct the initial first-strike response actions for wildlife and continue to manage those operations until DBCA is activated as the lead agency for wildlife response and formal handover occurs. Following formal handover, Woodside will function as a support organisation for the OWR and will be expected to continue to provide planning and resources as required.

If a protracted response is likely, requiring preventative actions and/or wildlife rescue, and formal hand over to the Control Agency (in State waters) has not yet occurred, the Wildlife Division will be responsible for the development of the Wildlife Division portion of the IAP. Preventative actions, such as hazing, along with capture, intake and treatment require a higher degree of planning, approval (licenses) and skills and will be planned for and carried out under the IAP as outlined in the *Oiled Wildlife Operational Plan* and in accordance with the WAOWRP (DBCA, 2022a) and WA OWR Manual (DBAC, 20022b).

The oiled wildlife response technique targets key wildlife populations at risk within Commonwealth open waters and the nearshore waters as described in Section 4 of the EP.

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5.4.2 Environmental performance based on need

Table 5-6: 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 5.8)**
10	Wildlife response arrangements	10.1	Oiled Wildlife Operational Plan in place and utilised during a response to plan, coordinate, implement and terminate operations	1, 3A, 4
		10.2	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
11	Wildlife response equipment	11.1	Maintain contract with AMOSC for immediate access to oiled wildlife response equipment.	1, 3C, 4
		11.2	Maintain contract with OSRL to access additional oiled wildlife response equipment.	1, 3C, 4
12	Wildlife responders	12.1	Two Oiled Wildlife Team Members to supervise the oiled wildlife operations who have completed an OWR Management course.	1, 2, 3B
		12.2	Maintain contract with AMOSC for immediate access to trained oiled wildlife response specialists	1, 3B, 3C
		12.3	Maintain contract with OSRL to access additional trained OWR specialists	1, 3B, 3C
		12.4	Open communication line to be maintained between IMT and infield operations to ensure awareness of progress against plan(s).	1, 3A, 3B
13	Management of environmental impacts of response risks	13.1	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
		13.2	Teams will segregate liquid and solid wastes at the earliest opportunity.	1, 3A, 3B, 3C, 4

The resulting wildlife response capability has been assessed against the WCCS. The range of techniques provide an ongoing approach to response at identified RPAs.

Under optimal conditions, during the subsea or surface release, the capability available meets the need identified. It indicates that, the wildlife response capability has the following expected performance:

- undertake OWR first strike response:
  - mobilisation of monitor and evaluate and/or OMP: Marine Fauna Assessment to identify wildlife and RPAs contacted or at imminent risk of contact by hydrocarbons.
- availability and mobilisation of trained OWR personnel to supervise OWR activities.
- access to wildlife resources (personnel and equipment) to meet the needs where there are medium or high levels of wildlife impact.

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5.5 Waste Management

Waste management is considered a support technique to wildlife response. Waste generated and collected during the response that will require handling, management and disposal may consist of:

- Liquids (hydrocarbons and contaminated liquids) collected during wildlife response, and/or
- Solids/semi-solids (oily solids, garbage, contaminated materials) collected during 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.

5.5.1 Response need based on predicted consequence parameters

Table 5-7: Response Planning Assumptions – Waste Management

Response planning assumptions: Waste management	
Waste loading per m^3 oil recovered (multiplier)	Oiled wildlife response – approximately 1 m^3 of oily solid and liquid waste generated for each wildlife unit cleaned

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5.5.2 Environmental performance based on need

Table 5-8: 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 5.8)**
14	Waste Management	14.1	Contract with waste management services for transport, removal, treatment and disposal of waste	1, 3A, 3B, 3C, 4
		14.2	Access to at least 50 m^3 of solid and liquid waste storage available within 1 week upon activation of 3rd party contract.	
		14.3	Recovered hydrocarbons and wastes will be transferred to licensed treatment facility for reprocessing or disposal.	
		14.4	Waste management provider support staff available year-round to assist in the event of an incident with waste management as detailed in contract.	
		14.5	Open communication line to be maintained between IMT and waste management services to ensure the reliable flow of accurate information between parties.	1, 3A, 3B
		14.6	Waste management to be conducted in accordance with Australian laws and regulations	1, 3A, 3B, 3C, 4
		14.7	Waste management services available and employed during response	

The resulting waste management capability has been assessed against the WCCS. The range of techniques provide an ongoing approach to waste management from oiled wildlife response.

It indicates that the waste management capability has the following expected performance:

- 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.
- The waste management requirements are within Woodside's and its service providers existing capacity.

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5.6 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), 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 5-9 lists the Joint Industry OMPs and SMPs that are relevant to the Julimar-Brunello Plug and Abandonment Petroleum Activities Program (PAP). 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 PAP, 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 PAP credible spill scenarios, including monitoring priorities, implementation timeframes and capability is provided in ANNEX C: PAP 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 5-9: Joint industry OSM plans relevant to the PAP 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	✓
OM04b: Dispersant Effectiveness Monitoring (Surface)	×	SM5: Marine mega-fauna Assessment	✓
OM5: Rapid Marine Fauna Surveillance	✓	SM6: Benthic habitat Assessment	✓
OM6: Shoreline Clean-up Assessment (SCAT)	×	SM7: Marine fish and elasmobranch assemblages assessment	✓
		SM8: Fisheries Impact Assessment	✓
		SM9: Heritage Features Assessment	✓
		SM10: Social Impact Assessment	✓

5.6.1 Summary – operational and scientific monitoring

A detailed OSM preparedness assessment is provided in ANNEX C: PAP OSM Activity Specific Assessment.

The ALARP assessment for operational and scientific monitoring (Section 6.6) 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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5.6.2 Environmental performance based on need

Table 5-10: 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 5.8)**
15	OSM arrangements	15.1	Maintain access to OSM expertise qualified to fulfil OSM Implementation Lead role during a Level 2/3 spill event per Joint Industry OSM Framework requirements.	3A, 3B, 3C, 4
		15.2	OSM Implementation Lead responsible for overseeing implementation of OMP and SMP components in accordance with the Woodside OSM Bridging Implementation Plan.	
16	Access to adequate OSM capability to provide both initial and ongoing monitoring	16.1	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 requirements described in Section 8-10 of the OSM BIP and the activity specific capability assessment in Table C - 7 and Table C - 8	3A, 3B, 3C, 4
		16.2	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	
		16.3	Annual testing of OSM Service Provider standby arrangements and activation process	
17	Baseline studies assurance	17.1	Annual review of environmental baseline data for all locations where spill modelling has predicted contact at relevant hydrocarbon thresholds within 7 days	3C
18	OSM response	18.1	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
		18.2	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	
		18.3	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	
		18.4	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	
		18.5	OSM to be conducted in accordance with the Woodside OSM-BIP and, where relevant to the activity, the assessment detailed in ANNEX C: PAP OSM Activity Specific Assessment	
		18.6	Monitoring prioritisation will be undertaken in accordance with the process and checklist provided in Table 13-1 of the OSM-BIP, informed by the guidance in Section C.2 of the OSPRMA	

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		18.7	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	
		18.8	Implementation of OSM will comply with the minimum standards listed in Appendix A of the Joint Industry OSM Framework	
		18.9	Once Scientific Monitoring data reports are drafted they will be peer reviewed by an expert panel for data integrity	
		18.10	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)	
19	OSM-BIP maintenance	19.1	Annual review of the OSM-BIP will be conducted according to the criteria in Section 11 of the OSM-BIP	3A, 3B, 3C, 4
20	Management of Environmental Impact of the response risks	20.1	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
		20.2	Trained unit leader's brief personnel of the risks prior to operations	
		20.3	Oversight by trained personnel who are aware of the risks	

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5.7 Incident Management System (IMS)

The Incident Management System (IMS) is both a control measure and a measurement criteria. As a control measure the IMS function is to prompt, facilitate and record the completion of three key response planning processes detailed below. As a measurement criteria the IMS records the evidence of the timeliness of all response actions included in the environmental performance standards and the plans used of the PAP.

As the IMS does not directly remove hydrocarbons spilt into the marine environment there is no direct relationship to the response planning need.

5.7.1 Incident action planning

The CIMT will be required to collect and interpret information from the scene of the incident to determine support requirements to the site-based IMT, develop an IAP and assist the IMT with the execution of that plan. The site-based IC may request the CIMT to complete notifications internally within Woodside, to relevant persons/ organisations and government agencies as required. Depending on the type and scale of the incident either the CIMT DM or IC will be responsible for ensuring the development of the IAP. Incident Action Planning is an ongoing process that involves continual review to confirm the appropriateness of techniques to control the incident for the situation at the time.

5.7.2 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 Joint Industry OSM Framework (APPEA, 2021). In effect the operational NEBA will determine whether there is net environmental benefit to continue response operations.

5.7.3 Consultation engagement process

Woodside will consult relevant persons/ organisations are engaged during the spill response in accordance with internal standards. This process requires that Woodside will:

- Undertake all required notifications (including government notifications) for relevant persons/ organisations in the region (identified in the First Strike Plan). This includes notification to mariners to communicate navigational hazards introduced through response equipment and personnel.
- In the event of a response, identify and engage with relevant persons/ organisations and continually assess and review.

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5.7.4 Environmental performance based on need

Table 5-11: 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 5.8)**
21	Operational SIMA	21.1	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
		21.2	Record the evidence and justification for any deviation from the planned response activities.	
		21.3	Record the information and data from operational and scientific monitoring activities used to inform the SIMA.	
22	Stakeholder engagement	22.1	Prompt and record all notifications (including government notifications) for persons/ organisations in the region are made	
		22.2	In the event of a response, identification of relevant persons/ organisations will be re-assessed throughout the response period.	
		22.3	Undertake communications in accordance with: • Functional Support Team Guideline – Reputation • External Communication and Continuous Disclosure Procedure	
23	Personnel required to support any response	23.1	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
		23.2	A duty roster of trained and competent people will be maintained to maintain minimum manning requirements are met all year round.	3C
		23.3	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
		23.4	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.	
		23.5	S&EM advisors will be integrated into CIMT to monitor performance of all functional roles.	
		23.6	Continually communicate the status of the spill and support Woodside to determine the most appropriate response by delivering on the responsibilities of their role.	

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Environmental Performance Outcome		To support the effectiveness of all other control measures and monitor/record the performance levels achieved.		
Control measure		**Performance Standard**		**Measurement Criteria (Section 5.8)**
		23.7	Follow the Hydrocarbon Spill Australia Regulatory Framework, Operational Plans, FSPs, support plans and the IAPs.	1, 2, 3A, 4
		23.8	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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5.8 Measurement criteria for all response techniques

Woodside measures compliance with environmental performance outcomes and standards through four primary mechanisms. The aforementioned performance tables identify which of these four mechanisms monitors the readiness and records the effectiveness and performance of the control measures adopted.

1. The Incident Management System

The Incident Management System (IMS) supports the implementation of the Crisis and Emergency and Crisis Management Procedure Standard. The IMS provides a near real-time, single source of information for monitoring and recording an incident and measuring the performance of those control measures.

The Crisis and Emergency and Crisis Management Procedure Standard defines the management framework, including roles and responsibilities, to be applied to any size incident (including hydrocarbon spills). The organisational structure required to manage an incident is developed in a modular fashion and is based on the specific requirements of each incident. The structure can be scaled up or down. The IAP process formally documents and communicates the:

- Incident objectives
- Status of assets
- Operational period objectives
- Response techniques (defined during response planning)
- The effectiveness of response techniques.

The information captured in the IMS (including information from personal logs and assigned tasks/close outs) confirms the response techniques implemented remain appropriate to reduce the consequences of the spill. The system also records all information and data that can be used to support the site-based IMT, development and the execution of the IAP.

2. The CEM Competency Dashboard

The CEM competency dashboard records the number of trained and competent responders that are available across Woodside to participate in a response.

This number varies dependent on expiry of competency certificates, staff attrition, internal rotations, leave and other absences. As such the Dashboard is designed to identify the minimum manning requirements and to identify sufficient redundancy to cater for the variances listed above.

Figure 5-1 shows the minimum manning numbers for the different hydrocarbon spill response roles and the number of qualified persons against those roles.

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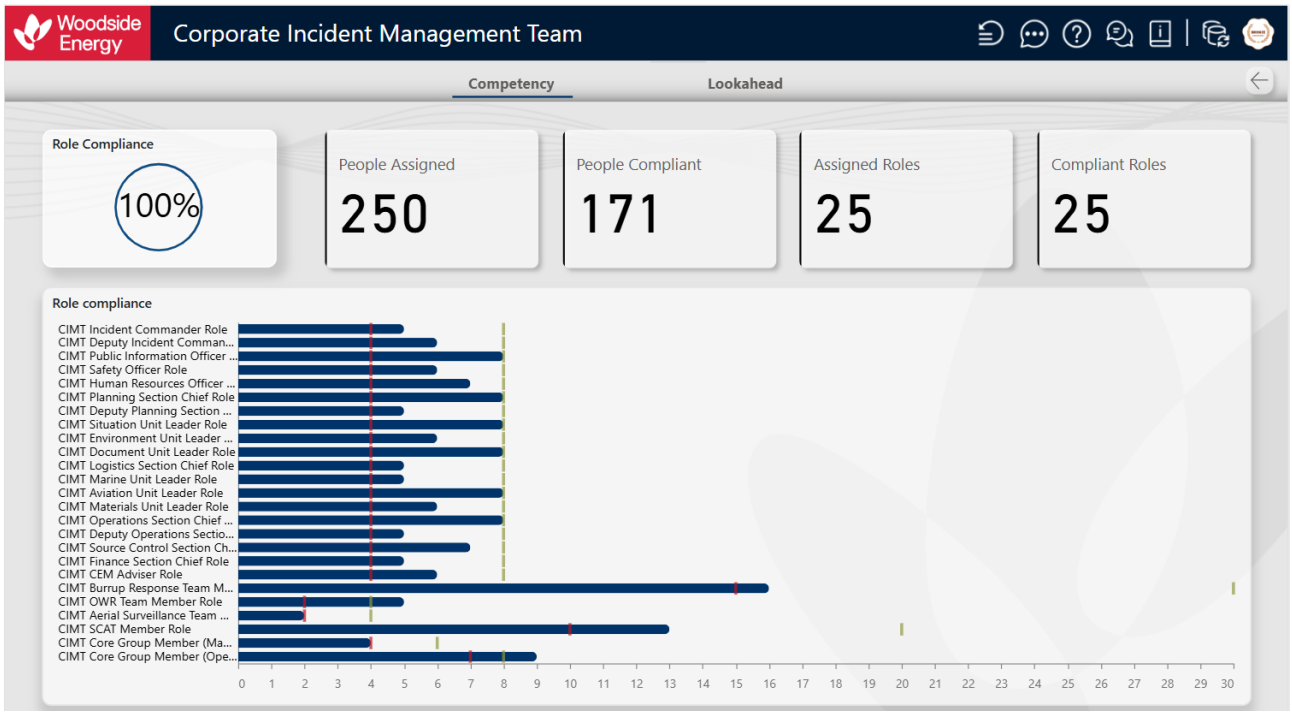

Figure 5-1: Example screenshot of the CEM dashboard

The Dashboard is one of Woodside's key means of monitoring its readiness to respond. It also demonstrates Woodside's ability to meet the requirements of the environmental performance standards that relate to filling certain response roles.

Figure 5-2 shows an example of the SCAT role and the training modules required to show competence.

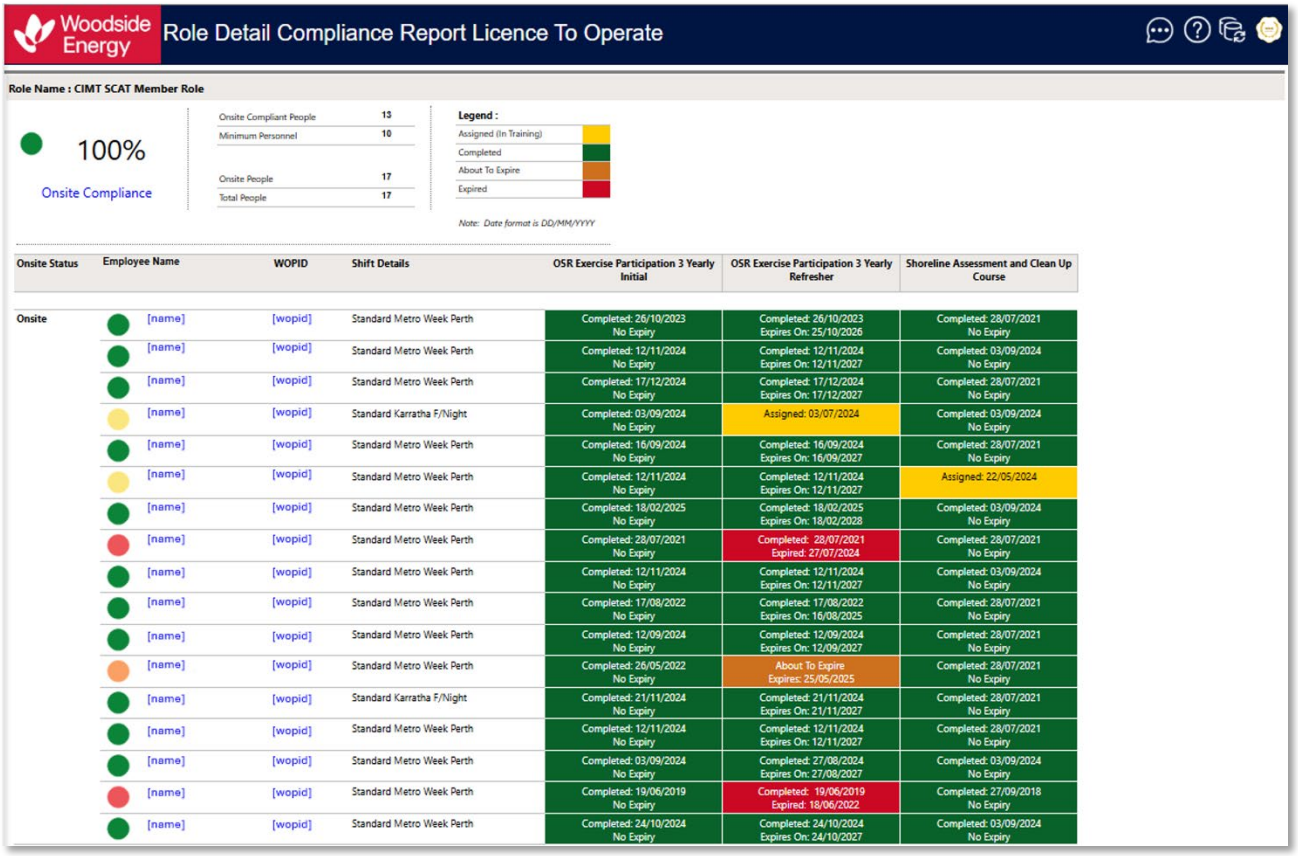

Figure 5-2: Example screenshot for the SCAT role

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Woodside also maintains a pool of trained responders which is composed of but not limited to personnel from the following organisations:

- Australian Marine Oil Spill Centre (AMOSC) core group
- AMOSC
- Oil Spill Response Limited (OSRL)
- Marine Spill Response Corporation (MSRC)
- Woodside contracted workforce

3. The Hydrocarbon Spill Preparedness Assurance Process

The Hydrocarbon Spill Response Team uses Woodside's assurance process to track compliance over four 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[9] vessel schedule, dispersant availability, rig/vessels monitoring, equipment stockpiles, tracking buoy locations and the CIMT duty roster.

The assurance process records how each commitment listed in the performance tables above is managed for ongoing compliance monitoring. The level of compliance can be reviewed in real time and is reported on a monthly basis through the CEM Function.

4. The Hydrocarbon Spill Planning Standard, Hydrocarbon Spill Planning Work Instruction (Australia), Hydrocarbon Spill Capability and Competency Standard, and Hydrocarbon Spill Response Standard

The Hydrocarbon Spill Planning Standard sets out how to plan and prepare for a liquid hydrocarbon spill to the marine environment. (Note, this standard does not apply to scenarios relating to gas releases in the marine environment). This standard details the requirement for an 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
- 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.

[9] The Integrated fleet consists of vessels from multiple operators that have been contracted to Woodside to undertake a number of duties including hydrocarbon spill response.

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The Hydrocarbon Spill Response Standard details requirements for appropriate hydrocarbon spill response standards including:

- safeguarding the safety and health of people (responders and communities)
- stopping the source of the spill as quickly as possible
- minimising the environmental and community impact

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6 ALARP EVALUATION

This Section should be read in conjunction with Section 5 which is the capability planned for this activity.

6.1 Monitor and evaluate – ALARP Assessment

Alternative, additional and improved options have been identified and assessed against the base capability described in Section 5.1 with those that have been selected for implementation highlighted in green. Items highlighted in red have been considered and rejected on the basis that they are not feasible, the costs are clearly disproportionate to the environmental benefit, and/or the option is not reasonably practical. Control measures where there is not a clear justification for their inclusion or exclusion may be subject to a detailed ALARP assessment.

6.1.1 Monitor and evaluate – Control Measure Options Analysis

6.1.1.1 Alternative Control Measures

Alternative Control Measures considered *Alternative control measures including potentially more effective and/or novel control measures are evaluated as replacements for an adopted control*					
Option considered	**Environmental consideration**	**Feasibility**	**Approximate Cost**	**Assessment conclusions**	**Implemented**
Aerostat (or similar inflatable observation platform) for localised aerial surveillance.	Lead time to Aerostat surveillance is disproportionate to the environmental benefit. The system also provides a very limited field of visibility around the vessel it is deployed from.	Long lead time to access (>10 days). Each system would require an operator to interpret data and direct vessels accordingly. Requires multiple systems for shoreline use.	Purchase cost per system is approximately A$300,000.	This option is not adopted as the minimal environmental benefit gained is disproportionate to the cost and complexity of its implementation.	**No**
Use of Autonomous Underwater Vehicles (AUVs) for hydrocarbon presence and detection.	Use of AUVs may be feasible and may provide an environmental benefit in assessing inaccessible areas for presence of hydrocarbons in the water however cost of purchase is disproportionate to the environmental benefit when compared to the monitoring types in place.	AUVs may be considered as an additional method of monitoring, should remote systems be required for health and safety reasons.	Cost $10,000 for mobilisation and $15,000 a day when deployed.	This option is not adopted as the minimal environmental benefit gained is disproportionate to the cost and complexity of its implementation.	No

6.1.1.2 Additional Control Measures

Additional Control Measures considered *Additional control measures are evaluated in terms of them reducing an environmental impact or an environmental risk when added to the existing suite of control measures*					
Option considered	**Environmental consideration**	**Feasibility**	**Approximate Cost**	**Assessment conclusions**	**Implemented**
Additional personnel trained to use systems.	Current arrangement provides an environmental benefit in the availability of trained personnel facilitating access to Monitor and evaluate data used to inform all other response techniques. No improvement required.	Woodside considers no improvement can be made, all personnel in technical roles e.g. intelligence unit are trained and competent on the software systems. Personnel are trained and exercised regularly. Use of the software and systems forms part of regular work assignments and projects.	Cost for training in-house staff would be approximately A$25,000.	This option is not adopted as the current capability meets the need.	**No**
Additional satellite tracking buoys to enable greater area coverage.	Increased capability does not provide an environmental benefit compared to the disproportionate cost in having an additional contract in place.	Tracking buoy on location at manned facility and additional needs are met from Woodside-owned stocks in King Bay Support Facility (KBSF) and Exmouth or can be provided by service provider.	Cost for an additional satellite tracking buoy would be A$200 per day or A$6000 to purchase.	This option is not adopted as the current capability meets the need, but additional units are available if required.	**No**
Additional trained aerial observers.	Current capability meets need. Woodside has access to a pool of trained, competent observers at strategic locations to allow timely and sustainable response. Additional observers are available through current contracts with AMOSC and OSRL.	Aviation standards and guidelines confirm all aircraft crews are competent for their roles. Woodside maintains a pool of trained and competent aerial observers with various home base locations to be called upon at the time of an incident. Regular audits of oil spill response organisations maintain training and competency.	Cost for additional trained aerial observers would be A$2000 per person per day.	This option is not adopted as the current capability meets the need, but additional observers are available via	**No**

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				response contractors if required.	

6.1.1.3 Improved Control Measures

Improved Control Measures considered *Improved control measures are evaluated for improvements they could bring to the effectiveness of adopted control measures in terms of functionality, availability, reliability, survivability, independence and compatibility*					
Option considered	**Environmental consideration**	**Feasibility**	**Approximate Cost**	**Assessment conclusions**	**Implemented**
Faster turnaround time from modelling contractor.	Improved control measure does not provide an environmental benefit compared to the disproportionate cost in having an additional contract in place.	External contractor on CIMT roster to be called as soon as required. However initial information needs to be gathered by CIMT team to request an accurate model. External contractor has person on call to respond from their own location.	Modelling service with a faster activation time would be achieved via membership of an alternative modelling service at an annual cost of A$50,000 for 24hr access plus an initial A$5000 per modelling run.	This option is not adopted as the minimal environmental benefit gained is disproportionate to the cost and complexity of its implementation.	**No**
Nighttime aerial surveillance.	The risk of undertaking the aerial observations at night is disproportionate to the limited environmental benefit. The 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 PAP.

- alternative
  - none selected
- additional
  - none selected
- improved
  - none selected.

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6.2 Source Control – ALARP Assessment

Woodside has based its response planning on the worst-case credible scenarios (as described in Section 2.2). This includes the following selection of primary source control and well intervention techniques which would be conducted concurrently:

- direct ROV intervention on BOP
- debris clearance and/or removal
- capping stack
- relief well drilling.

6.2.1 ROV Intervention

Following confirmation of an emergency event, Woodside would mobilise ROVs to assess the status of the wellhead. The ROV available on the MODU can be deployed for this purpose within 48 hours.

As Woodside holds Frame Agreements for vessels along with contracts for ROV providers and pilots, inspection activities using ROVs are expected to commence within seven days.

A hydraulic accumulator contained as part of the SFRT can be mobilised and deployed with well intervention attempted within 11 days.

Table 6-1: ROV timings

	Estimate ROV inspection duration for Julimar-Brunello Plug and Abandonment (days)
Source and mobilise vessel with work class ROV	2 days
Liaise with Regulator regarding risks and impacts*	4 days
Undertake ROV Inspection	1 day
TOTAL	**7 days***

** Based on timings from the Report into the Montara Commission of Enquiry, submission and discussion of revised documentation for limited activities inside the Petroleum Safety Zone (water deluge operations) to manage personnel risks and impacts was up to 20 days.*

6.2.1.1 Safety Case considerations

Woodside has assessed against the NOPSEMA safety case guidance (NOPSEMA N-09000-GN1661), confirming that vessels conducting subsea intervention operations are not classified as an "associated offshore place" but as a facility and therefore require the appropriate Safety Case arrangements to be in place. In the event of an emergency, Woodside has access to suitable vessels (ISVs) for well intervention through existing frame agreements. The frame agreements for ISV vessels require the vessels to maintain in-force safety case approval covering a range of subsea activities. This would cover the requirement for intervention operations such as subsea manifold installation, maintenance and repair, commissioning, cargo transfer (including bulk liquids) and ROV operations. With frame agreements in place, the credible Safety Case Scenario from those presented in Figure 6-3 for implementing this response would be "no safety case revision required". Timeframes for well intervention are detailed in Figure 6-2 and would be implemented concurrently to the actions required by the "no Safety Case" revision scenario detailed in Figure 6-3, therefore, the Safety Case scenario will have no impact on the delivery of the strategy.

6.2.2 Debris clearance and/or removal

The Woodside Source Control Response Procedure details the mobilisation and resource requirements for implementing this strategy. Debris clearance may be required as a prerequisite to deployment of the capping stack. The AMOSC SFRT would be mobilised from Fremantle. The mobilisation of the SFRT would take place in parallel with mobilisation of the capping stack to ensure initial ROV surveys and debris clearance have commenced before the arrival of the capping stack. The SFRT comprises ROV-deployed cutters and tools that are used to remove damaged or redundant items from the wellhead and allow improved access to the well. The SFRT can be mobilised and deployed with well intervention attempted within 11 days.

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6.2.2.1 Safety Case considerations

Woodside has assessed against the NOPSEMA safety case guidance (NOPSEMA N-09000-GN1661) and can confirm that vessels conducting debris clearance and removal operations are not classified as an "associated offshore place" but as a facility and therefore require the appropriate Safety Case arrangements in place. In the event of an emergency, Woodside has access to suitable ISVs for these operations through existing frame agreements. The frame agreements for ISVs require the vessels to maintain in-force safety case approval covering a range of subsea activities. This would cover the requirement for debris clearance and removal operations such as subsea manifold installation, commissioning, cargo transfer (including bulk liquids) and ROV operations. With frame agreements in place, the credible Safety Case Scenario, from those presented in Figure 6-3 for implementing this response would be "no safety case revision required". Timeframes for debris clearance and removal equipment deployment are detailed in Figure 6-2 and would be implemented concurrently to the actions required by the "No Safety Case" revision scenario detailed in Figure 6-3, therefore, the Safety Case scenario will have no impact on the delivery of the strategy.

6.2.3 Capping stack

The Activity Source Control Emergency Response Planning (SCERP) details the mobilisation and resource requirements for implementing this strategy. A capping stack is designed to be installed on a subsea well and provides a temporary means of sealing the well, until a permanent well kill can be performed through either a relief well or well re-entry.

In the event of a loss of well containment, the use of a subsea deployment method such as a heavy lift vessel, which is more commonly used in industry, is a more reliable and, in turn, ALARP approach. If environmental conditions permit (wind speed, wave height, current and plume radius), deployment of a capping stack with a heavy lift vessel with a 150 T crane capacity in shallower waters or 250 T crane in deeper waters could be feasible.

Woodside assumes that sourcing conventional capping stack deployment vessels would be per the Activity SCERP. This plan has pre-identified vessel specifications for the capping stack deployment and Woodside monitors the availability and location of these vessels on a monthly basis. Woodside maintain several frame agreements with various vessel service providers and maintains the ability to call off services with a capping stack and debris clearance agreement. The supply arrangements and reliability to achieve the required mobilisation time will be revalidated prior to commencement. Consideration to mobilise the capping stack from the supplier on a suitable vessel but then hand over to another vessel to conduct the capping activity will also be made to meet response time frames.

A capping stack will be mobilised to site within 16 days. Woodside will monitor the conditions around the wellsite and deployment for well intervention attempt will be undertaken once plume size is acceptable and safety and metocean conditions are suitable.

6.2.3.1 Safety Case considerations

Woodside has assessed against the NOPSEMA safety case guidance (NOPSEMA N-09000-GN1661) and can confirm that vessels conducting capping stack are not classified as an "associated offshore place" but as a facility and therefore require the appropriate Safety Case arrangements in place.

The 16-day timeframe to mobilise the vessel is based on the following assumptions:

- existing frame agreement vessel, located outside the region with approved Australian Safety Case
- a safety case revision and scope of validation is required
- vessel meets the technical requirements for deploying capping stack as per the Source Control Emergency Response Planning Guideline
- vessel has an active heave compensated crane, rated to at least 150 T for shallow waters or 250 T in deeper waters and at least 90 m in length and a deck capacity to hold at least 110 T of capping stack.

Timeframes for capping stack deployment detailed in Figure 6-2 would be implemented concurrently with the actions required for the Safety Case revision development scenarios detailed in Figure 6-3 and

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Table 6-3.

Woodside will execute the capping stack response in the fastest possible timeframe, provided the required safety and metocean conditions allow. Woodside has considered a broad range of alternate, additional, and improved options as outlined later in Section 6.2.5, Section 6.2.6 and Section 6.2.7.

6.2.4 Relief well drilling

The options analysis detailed in this section considers options to source, contract and mobilise a MODU and ensure necessary regulatory approvals are in place to meet timelines for relief well drilling. The screening for relief well drilling MODUs is based on the following and the process used for the Julimar-Brunello Plug and Abandonment activity is illustrated in Figure 6-1:

- Primary – review Woodside internal and external/ third party MODU-based programs to source and, if required, contract a suitable MODU operating within closest proximity to the activity location (likely South East Asia).
- Alternate – source and contract a MODU through AEP MOU that is operating further afield from the activity location, but within Australian waters (likely from South East Australia). If primary option is unconfirmed, sourcing and contracting the alternate option would be performed concurrently with the primary option.
- Contingency – source and contract a MODU from further afield than South East Asia or South East Australia. If primary and alternate options are unconfirmed, sourcing and contracting the contingency option would be performed concurrently.

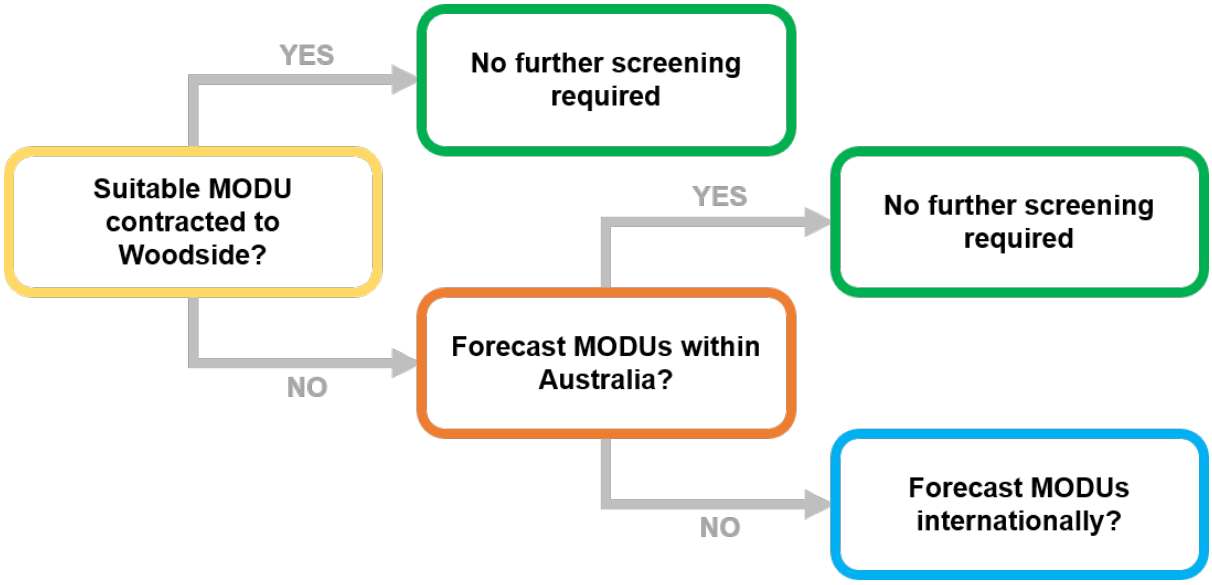

Figure 6-1: Julimar-Brunello Plug and Abandonment activity process for sourcing relief well MODU

Due to low MODU activity within the region, monthly monitoring of suitable relief well MODUs has been expanded to include those located within the South East Asia region. Due to the known constraints around MODU availability in the NWS region of Australia, additional controls will be implemented as detailed in Section 6.2.6.3.

Based on the detail provided, mobilisation of a suitable and available MODU from South East Asia is expected to be achieved within 36 days and up to 49days for a MODU from South East Australia. If a MODU was made available within the region, the mobilisation is expected to be achieved within 21 days.

The internal and external availability of moored MODUs, plus MODU activities of registered operators and MODUs with approved safety cases, are tracked by Woodside on a monthly basis to ensure that the best available option can be sourced and utilised in the event of the worst-case credible scenario. Woodside will execute relief well drilling in the fastest possible timeframe.

The detail of these arrangements demonstrates that the risks have been reduced to ALARP and Acceptable levels through the control measures and performance standards outlined in Section 5.2.

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6.2.4.1 Relief Well drilling timings

The duration of a blowout (from initiation to a successful kill) is assessed as 63 days (for locally sourced MODU), 78 days (for MODU sourced from South East Asia) and 91 days (for MODU sourced from South East Australia)[10] for the Julimar-Brunello wells. Relief wells for other wells within the field are expected to be similar duration.

Details on the steps and time required to drill a relief well is shown in Table 6-2. A moored MODU is suitable for the PAP and has therefore been used as the basis for the time estimates below.

To validate the effectiveness of the relief MODU supply arrangements through the AEP MoU, an exercise to test the mobilisation period forms part of Woodside's three-yearly Hydrocarbon Spill Arrangements Testing Schedule. Testing of these arrangements is facilitated by an external party and includes timing for suspension of the assisting operator's activities, contracting the MODU, safety case revision and transit to location.

Table 6-2: Relief well drilling timings

Estimated Relief Well Duration	Days (local MODU)		Days (regional MODU – SE Asia)		Days (Australian MODU – SE Australia)	
Secure and suspend well. Complete Relief well design. Secure relief well materials.	8.0	21 days	8.0	36 days	8.0	49 days
Transit to location	2.0		17.0		30.0	
Backload and loadout bulks and equipment, complete internal assurance of relief well design.	2.0		2.0		2.0	
Contingency for unforeseen event	9.0		9.0		9.0	
Mooring activities and relief well construction operations	**28 days**		**28 days**		**28 days**	
Drill out shoe, conduct formation integrity test and drill towards intersection point	1.5		1.5		1.5	
Execute well-specific ranging plan to accurately intersect wellbore in minimum timeframe	9.5		9.5		9.5	
Pump kill weight drilling fluid per the relief well plan. Confirm well is static with no further flow	0.5		0.5		0.5	
Contingency for unforeseen technical issues	2.5		2.5		2.5	
Total discharge duration	**63 days**		**78 days**		**91 days**	

The following conditions and assumptions are applicable:

- A dynamically positioned MODU is not suitable.
- A pre-lay mooring spread is required to moor the MODU over subsea infrastructure. Installation would occur in parallel to MODU mobilisation.

Woodside has considered a broad range of alternate, additional, and improved options as outlined in Section 6.2.6 and 6.2.7.

Intersect and kill duration is estimated at 14 days. This is a moderately conservative estimate. During the intersect process, the relief well will be incrementally drilled and logged to accurately approach and locate the existing well bore. This will result in the highest probability of intersecting the well on the first attempt and thus will reduce the overall time to kill the well. During the Montara incident, it took five attempts to achieve a successful intersect.

[10] 91 days has been modelled as the worst-case duration for a loss of well containment where mobilisation of a MODU from South East Australia is required for executing a relief well. Mobilisation of a locally available MODU is estimated to result in a loss of well containment duration of ~63 days and, from South East Asia, ~78 days.

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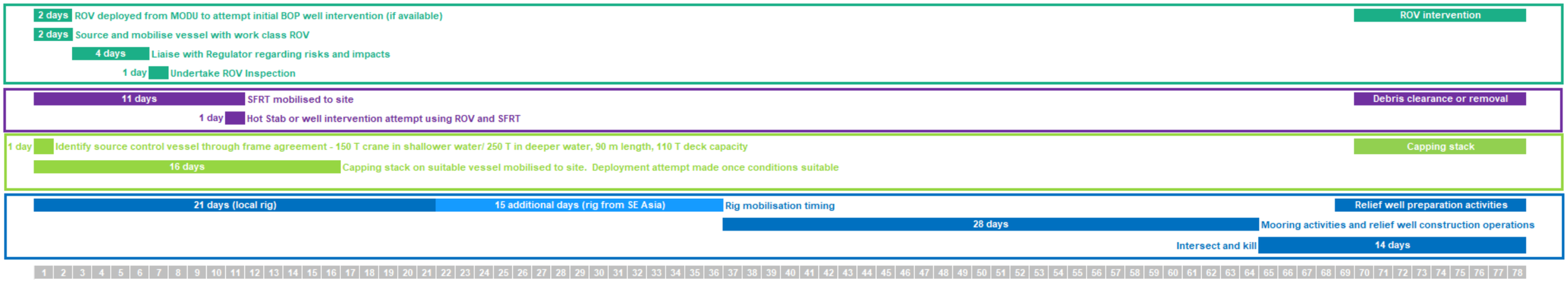

Figure 6-2: Source control and well intervention response strategy deployment timeframes for the Julimar-Brunello Plug and Abandonment

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6.2.4.2 Safety Case considerations

Woodside recognises that it will not be the Operator or holder of the Safety Case for the MODU and/or vessels involved in relief well activities. In the event that a revision to the Operator's Safety Case is required for relief well drilling, Woodside has identified measures to ensure timely response and optimise preparedness as far as practicable that can be undertaken to expedite a straightforward Safety Case revision for a MODU/ vessel to commence drilling a relief well. Performance standards associated with these measures have been included in Section 5.2. Section 6.2.6.3 details ALARP controls to improve activation and mobilisation arrangements including maintenance of an 'Emergency Response Tactical Response Plan' to assist in accelerating Safety Case revision(s).

These include:

- Access to Safety and Risk discipline personnel with specialist knowledge.
- Monitoring internal and external MODUs and vessel availability in the region and extended area through contracted arrangements on a monthly basis, with a two-year lookahead.
- Prioritisation of MODUs/vessels with current or historical contracting arrangements. Woodside maintains records of previous contracting arrangements and companies. All current contracts for vessels and MODUs are required to support Woodside in the event of an emergency.
- Leverage mutual aid arrangements such as the AEP MOU for vessel and MODU support.
- Woodside Planning and Logistics, and Safety Officers (on-Roster/Call 24/7) which can articulate need for, and deliver Woodside support, in key delivery tasks including sitting with potential outside operators.
- Ongoing strategic industry engagement and collaboration with NOPSEMA to work toward time reductions in regulatory approvals for emergency events.

Woodside has identified three safety case revision development and submission scenarios for a MODU and plotted these alongside the relief well preparation activities in Figure 6-3. The assumptions for each of the cases are detailed in Table 6-3.

A relief well Safety Case Revision for the identified MODU would leverage the previously accepted Safety Case Revision for the Julimar-Brunello P&A activity, including the associated site-specific well hazards. As such, there is less new detail for the regulator to review and should present a short review timeframe with no impact expected to the commencement of relief well drilling activities.

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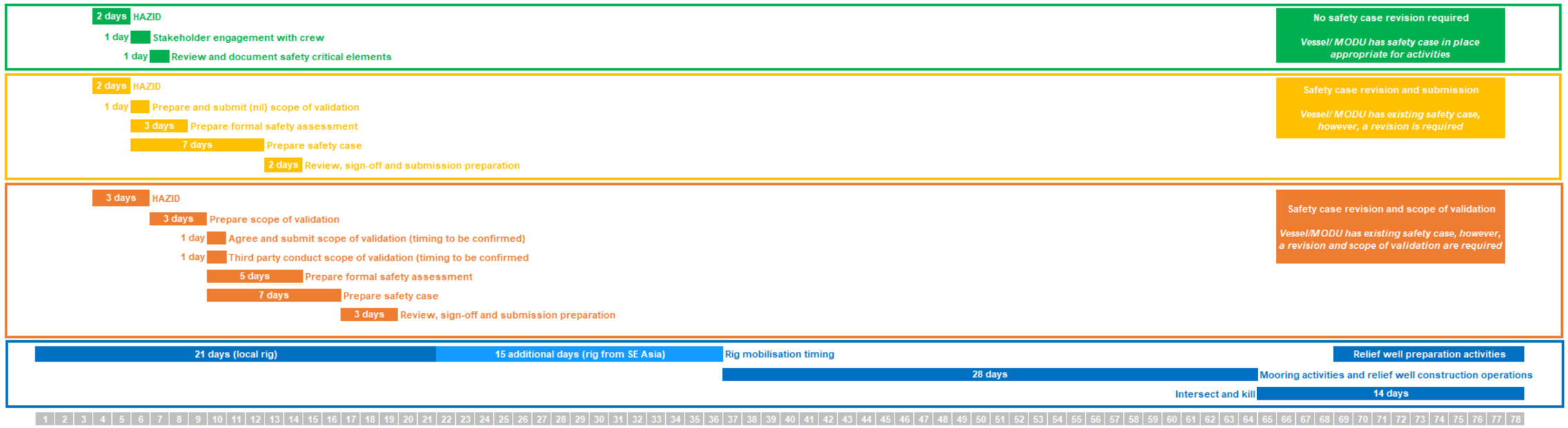

Figure 6-3: Timeline showing safety case revision timings alongside other relief well preparation activity timings for Julimar-Brunello Plug and Abandonment

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Table 6-3: Safety case revision conditions and assumptions

Case	No safety case revision required	Safety case revision and submission	Safety case revision and scope of validation
Description	Vessel/MODU has a safety case in place appropriate for activities.	Vessel/MODU has an existing safety case, however, a revision is required.	Vessel/MODU has an existing safety case, however, a revision is required plus scope of validation.
Conditions/ assumptions	Assumes that existing vessel/MODU safety case covers working under the same conditions or the loss of containment is not severe enough to result in any risk on the sea surface.	Safety case timing assumes vessel/MODU selected and crew and available for workshops and safety case studies.	Safety case timing assumes vessel/ MODU selected and crew and available for workshops and safety case studies.
		Assumes nil scope of validation. This assumes that the vessel for source control allows for working in a hydrocarbon environment and control measures are already in place in the existing safety case. For MODU, it assumes that the relief well equipment is already part of the MODU facility and MODU safety case.	Validation will be required for new facilities only. The time needed for the validator to complete the review (from the last document received) and prepare validation statement is undetermined. This is not accounted for here as the safety case submission is not dependent on the validation statement, however the safety case acceptance is.
		Assumes safety case preparation is undertaken 24/7.	Assumes safety case preparation is undertaken 24/7.

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6.2.5 Source Control – Control Measure Options Analysis

The assessment described in Section 6.2.1, 6.2.2, 6.2.3 and 6.2.4 outline the primary and alternate approach respectively that Woodside would implement for relief well drilling.

Woodside has outlined the options considered against the activation, mobilisation (improved options), deployment (alternate and additional options) process described in Section 2.1.1 that provides an evaluation of:

- predicted cost associated with adopting the option
- predicted change/environmental benefit
- predicted effectiveness/feasibility of the option

Alternative, Additional and Improved options have been identified and assessed against the base capability described in Section 5 with those that have been selected for implementation highlighted in green. Items highlighted in red have been considered and rejected on the basis that they are not feasible, the costs are clearly disproportionate to the environmental benefit, and/or the option is not reasonably practical.

- Alternative options, including potentially more effective and/or novel control measures are evaluated as replacements for an adopted control.
- Additional control measures are evaluated in terms of their ability to reduce an impact or risk when added to the existing suite of control measures.
- Improved control measures are evaluated for improvements they could bring to the effectiveness of adopted control measures in terms of functionality, availability, reliability, survivability, independence and compatibility

Options where there is not a clear justification for their inclusion or exclusion may be subject to a detailed assessment.

6.2.6 Activation/Mobilisation – Control Measure Options Analysis

Alternative, additional and improved options have been identified and assessed against the base capability described in Section 5.2 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.

6.2.6.1 Alternative Control Measures

Alternative Control Measures considered *Alternative control measures including potentially more effective and/or novel control measures are evaluated as replacements for an adopted control*					
Option considered	**Environmental consideration**	**Feasibility**	**Approximate Cost**	**Assessment conclusions**	**Implemented**
Contract and run a rig on standby or warm stack on the north-west shelf, shared for all Woodside activities.	A standby MODU shared across all Woodside activities is likely to provide a moderate environmental benefit as it will maintain or may reduce the 21-day sourcing, contracting and mobilisation time. This could reduce the volume and duration of the release through shorter time to kill the well and thus may reduce impacts on receptors and sensitivities.	This option is not considered feasible for all Woodside activities as there are a large range of well depths, complexities, geologies and geophysical properties across all Woodside's operations. The large geographic area of Woodside activities also means that the MODU is unlikely to be in the correct location at the right time when required.	Estimate for 12 months of operations: US$ 500k/day (0.66FX) plus A$ 30M startup would total A$307M. This is considered disproportionate to the environmental benefit potentially achieved by reducing mobilisation time. Further, there are additional health, safety and environmental impacts associated with running a rig on standby.	The costs and complexity of having a MODU and maintaining this arrangement for the duration of the Petroleum Activities Program are disproportionate to the environmental benefit gained.	**No**
Standby MODU shared across AEP MOU Titleholders	A standby MODU shared across all titleholders who are signatories to the AEP MOU is likely to provide a minor environmental benefit as it will maintain or may reduce the 21-day sourcing, contracting and mobilisation time. This could reduce the volume and duration of the release through shorter time to kill the well and thus may reduce impacts on receptors and sensitivities. Running a MODU on standby together with the required support vessels/ aircraft, however, will result in increased atmospheric emissions from burning fuel. The MODU may also increase seabed damage. Deployment of such resources will also increase SIMOPs complexity and elevate health and safety risks to personnel.	This option is not considered feasible for a number of Titleholders due to the remote distances and regions in which Titleholders operate within Australia, as well as a substantial range of well depths, types, complexities, geologies and geophysical properties across the range of Titleholders.	Costs are dependent upon the number of AEP MOU Titleholders involved. Additional costs and complexity involved given commercial arrangements that would need to be addressed.	The costs and complexity of having a MODU and maintaining a shared arrangement for the duration of the Petroleum Activities Program , together with increased environmental, SIMOPs and health and safety risks, are disproportionate to the environmental benefit gained. .	**No**
Relief well rig mobilised from South East Asia region	South East Asia region identified as fastest mobilisation region (36 days). Potential for reduced environmental consequence associated with relief well drilling timeframe compared with sourcing relief well rig from other regions.	This option is considered feasible.	Lower cost of mobilisation compared with mobilising relief well rigs from regions further afield.	This is the preferred option for relief well mobilisation.	**Yes**
Mobilise Equinox MODU from Victoria with associated additional time	Longer mobilisation duration than 36 days (estimated 49 days), leading to increased relief well drilling timeframe.	This option is considered feasible, however it would result in longer mobilisation timeframes.	Potential for higher cost of mobilisation compared with relief well rigs from South East Asia.	Considered not to be the primary option given increased mobilisation timeframes compared with mobilising a rig from South East Asia. Possible that this option could be activated in parallel with the	**Evaluate**

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impact and water depth limitations				South East Asia mobilisation, or in the event South East Asia rig mobilisation is unsuccessful.	
Mobilise relief well rig from further afield than South East Asia: Africa, GOM with associated additional mobilisation time impact	Longer mobilisation duration than 49 days (Victoria mobilisation), leading to increased relief well drilling timeframe.	This option is considered feasible, however it would result in longer mobilisation timeframes.	Potential for higher cost of mobilisation compared with relief well rigs from South East Asia or Victoria.	Considered not to be the primary option given increased mobilisation timeframes compared with mobilising a rig from South East Asia or Victoria. Possible avenue in the event that attempts to mobilise a rig from South East Asia or Victoria are not successful.	**Evaluate**
Stop GWS operations. Demobilise rig or warm-stack until a suitable rig is contracted locally by another operator and then recommence scope.	Eliminate risk of loss of well control.	Not feasible, would result in an inability to meet program objectives. Not practicable, suitable rig mobilisation by others may never eventuate. outweighs the benefit gained.	Disproportionate cost from loss of commercial opportunity.	Given the extremely low likelihood of a loss of well control due to the systematic implementation of Woodside's policies, standards, procedures and processes relating to drilling activities, the cost/sacrifice outweighs the benefit gained.	**No**

6.2.6.2 Additional Control Measures

Additional Control Measures considered *Additional control measures are evaluated in terms of them reducing an environmental impact or an environmental risk when added to the existing suite of control measures*					
Option considered	**Environmental consideration**	**Feasibility**	**Approximate Cost**	**Assessment conclusions**	**Implemented**
Implement and maintain minimum standards for Safety Case development	Woodside's contingency planning consideration would be to source a rig from outside Australia. This would require development and approval of a safety case revision and potentially base safety case for the rig and activities prior to commencing well kill operations.	This option is considered feasible and would require Woodside to develop minimum standards for safe operations for relevant Safety Case input along with maintaining key resources to support review of Safety Cases. Woodside would not be the operator for relief well drilling and would therefore not develop or submit the Safety Case revision. Woodside's role as Titleholder would be to provide minimum standard for safe operations that MODU operators would be required to meet and/or exceed.	Woodside has outlined control measures and performance standards regarding template Safety Case documentation and maintenance of resources and capability for expedited Safety Case review.	This option has been selected based on its feasibility, low cost and the potential environmental benefits it would provide.	**Yes**

6.2.6.3 Improved Control Measures

Improved Control Measures considered *Improved control measures are evaluated for improvements they could bring to the effectiveness of adopted control measures in terms of functionality, availability, reliability, survivability, independence and compatibility*					
Option considered	**Environmental consideration**	**Feasibility**	**Approximate Cost**	**Assessment conclusions**	**Implemented**
Monitor internal drilling programs for rig availability	Woodside may be conducting other campaigns that overlap with the Petroleum Activities Program, potentially providing availability of a relief well drilling rig within Woodside. The environmental benefit of monitoring other drilling programs internally is for Woodside to understand what other rigs may be rapidly available for relief well operations if required, potentially reducing the time to drill the relief well, resulting in less hydrocarbon to the environment.	Woodside monitors vessel and MODU availability through market intelligence services for location. Woodside will continually monitor other drilling and exploration activities within Australia and as available throughout the region to track rigs and explore rig availability during well intervention operations.	Associated cost of implementation is minimal to the environmental benefit gained. Woodside has outlined control measures and performance standards.	This option is a low-cost control measure with potential to reduce the volume of hydrocarbon released to the environment.	**Yes**
Monitor external activity for rig availability	The environmental benefit achieved by monitoring drilling programs and rig movements across industry provides the potential for increased availability of suitable rigs for relief well drilling. Additional discussions with other Petroleum Titleholders may	Woodside will source a relief well drilling rig in accordance with the AEP MOU on rig sharing in the unlikely event this is required. Commercial and operational provisions do not allow WEL to discuss	Associated cost of implementation is moderate to the environmental benefit gained. Woodside will continually engage with other Titleholders and Operators regarding activities within Australia and as available throughout the region to track rigs and	This option is a low-cost control measure with potential to reduce the volume of hydrocarbon released to the environment.	**Yes**

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	be undertaken to potentially gain faster access to a rig and reduce the time taken to kill the well and therefore volume of hydrocarbons released.	current and potential drilling programs in detail with other Petroleum Titleholders.	explore rig availability during well intervention operations.		
Monitor status of Registered Operators/ Approved Safety cases for rigs located within Australia	Woodside can monitor the status of Registered Operators for rigs operating within Australia (and therefore safety case status) on a monthly basis. This allows for a prioritised selection of rigs in the event of a response with priority given to those with an existing safety case.	The environmental benefit of monitoring rigs is for Woodside to understand what other rigs may be rapidly available for relief well operations if required, potentially reducing the time to drill the relief well, resulting in less hydrocarbon to the environment.	The cost is minimal.	This option is a low-cost control measure with potential to reduce the volume of hydrocarbon released to the environment.	**Yes**
Create an 'Emergency Response Tactical Response Plan' focused explicitly on meeting the requirements of rig permissioning under accelerated timeframe requirements of a relief well scenario.	NOPSEMA require Safety Case(s) in the event of a relief well scenario. Preparing an Emergency Response Tactical Response Plan with sample Scope of Validations for a variety of rig types and additional required equipment to support relief well drilling (i.e. critical services) may streamline the process for obtaining a Safety Case in the event of a loss of well control scenario.	This option is considered feasible.	Minor administrative cost associated with the development of an Emergency Response Tactical Response Plan and maintaining its currency overtime.	This option provides benefit in terms of streamlining the process for obtaining a Safety Case in the event of relief well rig mobilisation from South East Asia. The ER Tactical Response Plan will contain sample Scope of Validations for a variety of rig types and would include any additional equipment to support relief well drilling (e.g critical services) as well as dynamic kill such as pumps. These samples will then be maintained in a submit ready state to match up with the rig of opportunity. The framework will not be populated with rig specifics, these would be updated at the time of source control event.	**Yes**

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6.2.7 Deployment – Control Measure Options Analysis

6.2.7.1 Alternative Control Measures

Alternative Control Measures considered *Alternative control measures including potentially more effective and/or novel control measures are evaluated as replacements for an adopted control*					
Option considered	**Environmental consideration**	**Feasibility**	**Approximate Cost**	**Assessment conclusions**	**Implemented**
No reasonably practical alternative control measures identified					

6.2.7.2 Additional Control Measures

Additional Control Measures considered *Additional control measures are evaluated in terms of them reducing an environmental impact or an environmental risk when added to the existing suite of control measures*					
Option considered	**Environmental consideration**	**Feasibility**	**Approximate Cost**	**Assessment conclusions**	**Implemented**
Offset capping alternative to conventional capping stack deployment	While the use of an offset capping system could also reduce the quantity of hydrocarbon entering the marine environment, conventional capping is feasible for the PAP wells therefore its use would not be required. Furthermore, the feasibility and SIMOPS issues surrounding an offset capping deployment for the PAP wells, together with mobilisation lead times for both a cap and required vessels/ support equipment, would minimise any environmental benefit gained.	Technical feasibility: • The base case considerations for offset installation equipment (OIE) requires a coordinated response by 4 to 7 vessels working simultaneously outside of the 500 m exclusion zone. In the event of a worst-case discharge, use of the OIE may introduces health and safety and SIMOPs issues with numerous vessels working at 180 degrees from one another. Other factors: • Due to the OIE's size and scale, fabrication of equipment, e.g. mooring anchors, outside of the contractor's scope of supply, is likely to require engagement of international suppliers, further increasing complexity and uncertainty in associated time frames. • Screening indicates that mobilising some components of the OIE, based in Italy, can only be done so by sea and is likely to erode any time savings realised through killing the well via a relief well. The March 2019 OSRL exercise in Europe tested deployment of the OIE and highlighted that it will require a 600+MT crane vessel for deployment to ensure there is useable hook height for the crane to conduct the lift of the carrier. Vessels with such capability and a current Australian vessel safety case are not locally or readily available.	Due to conventional capping being feasible, plus the risks, uncertainty and complexity of this option, and the inability to realise any environmental gains, any cost would be disproportionate to the benefits gained.	OIE would not be required as conventional capping is feasible for the PAP wells. Implementation of OIE has been assessed as a complex SIMOPs operation which may result in increased health and safety risks to response personnel. Implementation of a novel technology such as OIE is also considered to have an unproven or low certainty of success. . Woodside tracks availability of suitable relief well MODUs available locally and regionally to meet the required drilling time frame. Deployment of the OIE capping system would provide no temporal advantage over relief well drilling (using a locally available MODU or MODU sourced from South East Asia), and a very minimal temporal advantage versus a MODU sourced from South East Australia. Coupled with the SIMOPS complexities and equipment fabrication requirements, OIE is not considered to provide an environmental benefit and, as such, the primary source control response and ALARP position remains to be conventional capping and drilling a relief well.	**No**
Dual vessel capping stack deployment	While the use of dual vessel to deploy the capping system could also reduce the quantity of hydrocarbon entering the marine environment, conventional capping is feasible for the PAP wells therefore its use would not be required Additionally, this is an unproven technology and the feasibility issues surrounding a dual vessel capping deployment for the PAP wells, together with mobilisation lead times for both a cap and required vessels/ support equipment, would minimise any environmental benefit gained.	A dual vessel deployment is somewhat feasible provided a large enough deck barge can be located. Deck barges of 120 m are not, however, very common and will present a logistical challenge to identify and relocate to the region. Further, the longer length barges may need mooring assist to remain centred over the well. The capping stack would be handed off from a crane vessel to the anchor handler vessel (AHV) work wire outside of the exclusion zone. The capping stack would actually be lowered on the AHV work wire so a crane would not be required on the barge.	Due conventional capping being feasible, plus there being minimal environmental benefits gained by the prolonged lead times needed to execute this technique, together with a potential increase in safety issues, any cost would be disproportionate to the benefits gained.	Dual vessel capping stack deployment would not be required as conventional capping is feasible for the PAP wells. Additionally, given there is minimal environmental benefit and an increase in safety issues surrounding SIMOPS, this option would not provide an environmental or safety benefit.	**No**
Subsea Containment System alternative	While the use of a subsea containment system could also reduce the quantity of hydrocarbon entering the marine environment, conventional	The timing for mobilisation, deployment and activation of the subsea containment system, based on the location, size and scale of the equipment required, including	Woodside has investigated the logistics of reducing this timeframe by pre-positioning equipment but the costs of purchasing	This option is not predicted to provide an environmental benefit.	**No**

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to capping stack deployment	capping is feasible for the PAP wells therefore its use would not be required Additionally, this is an unproven technology. which is unlikely to be feasibly deployed and activated for at least 90 days following a blowout due to equipment requirements and logistics. This would therefore provide no temporal advantage over conventional capping stack deployment or relief well drilling (63 days using a locally available MODU or 78 days using a MODU sourced from South East Asia), and whilst there is a very minimal temporal advantage in using the subsea containment system versus relief well with a MODU sourced from South East Australia (90 days versus 91 days), this may reduce hydrocarbon discharge by only ~29 m^3. When coupled with the unproven technology and logistics complexities, this is unlikely to provide a net benefit.	seabed piles that can only be transported by vessel, is likely to be longer (>90 days)than the expected relief well drilling timeframe of 63 days (using a locally available MODU) or 78 days (using a MODU sourced from South East Asia). There may be very minimal temporal advantage in using the subsea containment system versus relief well with a MODU sourced from South East Australia (90 days versus 91 days),	dedicated equipment by Woodside for this Petroleum Activities Program is not considered reasonably practical and are considered disproportionate to the environmental benefit gained, particularly as conventional capping is feasible for the PAP wells.		
Pre-drill and suspend relief well overburden section, for each well.	Whilst this option may potentially decrease relief well drilling timing, it represents additional environmental impacts associated with discharge of additional drill cuttings and fluids along with benthic habitat disturbance.	This option is not considered feasible due to the uncertainties related to the location and trajectory of the intervention well, which may vary according to the actual conditions at the time the loss of containment event occurs. Top-hole may have to be relocated, due to location being unsafe or unsuitable and further works will be required each year to maintain the top holes.	Not practicable: Cost estimated at ~ $40M per well. Further, the control would not be effective as no relief well rig would be available while drilling pre-drill wells. Significant HSE impact due to increase in drilling and completions operations associated with pre-drilling relief wells.	This option would not provide an environmental benefit due to the additional environmental impacts coupled with a lack of significantly improved relief well timings.	**No**
Purchase and maintain mooring system	In theory, may provide some environmental benefit as it may reduce equipment sourcing time. However, due to the continued need for specialists to install the equipment plus the need to source a vessel suitable for installing the mooring system, the timeframe reduction would be minimal. Furthermore, this process would typically take place in parallel with relief well rig mobilisation.	Woodside is not a specialist in installing and maintaining moorings so would require specialists to come in to install the moorings and would also require specialist vessels to be sourced to undertake the work.	The cost of purchasing, storing and maintaining pre-lay mooring systems with anchors, chains, buoys and ancillary equipment is considered disproportionate to the environmental benefit gained.	This option would not provide an environmental benefit as timeframe reductions would be minimal given vessels suitable for the installation of the mooring system would still be required, and this would take place in parallel with rig mobilisation..	**No**
Contract in place with Wild Well Control and Oceaneering	Woodside has an agreement in place with Wild Well Control Inc and Oceaneering to provide trained personnel in the event of an incident. This will ensure that competent personnel are available in the shortest possible timeframe.	Having contracts in place to access trained, competent personnel in the event of an incident would reduce mobilization times. This option is considered reasonably practicable.	Minimal cost implications – Woodside has standing contract in place to provide assistance across all activities.	This control measure is adopted as the costs and complexity are not considered disproportionate to any environmental benefit that might be realised.	**Yes**

6.2.7.3 Improved Control Measures

Improved Control Measures considered

Improved control measures are evaluated for improvements they could bring to the effectiveness of adopted control measures in terms of functionality, availability, reliability, survivability, independence and compatibility

Option considered	Environmental consideration	Feasibility	Approximate Cost	Assessment conclusions	Implemented
Maintaining relief well drilling supplies	There is not predicted to be any reduction in relief well timing or spill duration from Woodside maintaining stocks of drilling supplies (mud, casing, cement, etc.)	Some relief well drilling supplies such as casing could be sourced, however specific composition of cement and mud would be dependent on the nature of the well. Further, the mobilisation of these supplies is included in the estimated time for sourcing and mobilising a rig.	The capital cost of Woodside purchasing relevant drilling supplies is expected to be approximately A$600K with additional costs for storage and ongoing costs for replenishment. These costs are considered disproportionate to the environmental benefit gained.	This option would not provide an environmental benefit.	**No**

6.2.8 Selected Control Measures

Following review of alternative, additional and improved control measures as outlined above, the following controls were selected for implementation for the PAP.

- alternative
  - relief well rig mobilised from South East Asia region

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  - mobilise Equinox MODU from Victoria with associated additional time impact and water depth limitations (**EVALUATE**)
  - mobilise relief well rig from further afield than South East Asia: Africa, GOM with associated additional mobilisation time impact (**EVALUATE**)
- additional
  - implement and maintain minimum standards for Safety Case development
  - contract in place with Wild Well Control and Oceaneering to supply trained, competent personnel
- improved
  - monitor internal drilling programs for MODU availability
  - monitor external activity for MODU availability
  - monitor status of Registered Operators / Approved Safety cases for MODUs located within Australia
  - create an 'Emergency Response Tactical Response Plan' focused explicitly on meeting the requirements of rig permissioning under accelerated timeframe requirements of a relief well scenario.

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6.3 Source Control via Vessel SOPEP – ALARP Assessment

Alternative, additional and improved options have been identified and assessed against the base capability described in Section 5.3with 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 Source Control via Vessel SOPEP – Control Measure Options Analysis

6.3.1.1 Alternative Control Measures

Alternative Control Measures considered
Alternative control measures including potentially more effective and/or novel control measures are evaluated as replacements for an adopted control

Option considered	Environmental consideration	Feasibility	Approximate Cost	Assessment conclusions	Implemented
No reasonably practical alternative control measures identified					

6.3.1.2 Additional Control Measures

Additional Control Measures considered
Additional control measures are evaluated in terms of them reducing an environmental impact or an environmental risk when added to the existing suite of control measures

Option considered	Environmental consideration	Feasibility	Approximate Cost	Assessment conclusions	Implemented
No reasonably practical additional control measures identified					

6.3.1.3 Improved Control Measures

Improved Control Measures considered
Improved control measures are evaluated for improvements they could bring to the effectiveness of adopted control measures in terms of functionality, availability, reliability, survivability, independence and compatibility

Option considered	Environmental consideration	Feasibility	Approximate Cost	Assessment conclusions	Implemented
No reasonably practical improved control measures identified					

6.3.2 Selected control measures

Following review of alternative, additional and improved control measures, the following controls were selected for implementation for the PAP.

- alternative
  - none selected
- additional
  - none selected
- improved
  - none selected.

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6.4 Oiled Wildlife Response – ALARP Assessment

Alternative, additional and improved options have been identified and assessed against the base capability described in Section 5.4with 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 – 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.

6.4.2 Oiled Wildlife Response – Control Measure Options Analysis

6.4.2.1 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**

6.4.2.2 Additional Control Measures

Additional Control Measures considered *Additional control measures are evaluated in terms of them reducing an environmental impact or an environmental risk when added to the existing suite of control measures*					
Option considered	**Environmental consideration**	**Feasibility**	**Approximate Cost**	**Assessment conclusions**	**Implemented**
Additional wildlife treatment systems	The selected delivery options provide access to call-off contracts with selected specialist providers. The agreements ensure that these resources can be mobilised to meet the required response objectives, commensurate with the progressive nature of environmental impact and the time available to monitor hydrocarbon plume trajectories. Provides response equipment and personnel by Day 3. The additional cost in having a dedicated oiled wildlife response (equipment and personnel) in place is disproportionate to environmental benefit. These selected delivery options provide capacity to carry out an oiled wildlife response if contact is predicted; and to scale up the response if required to treat widespread contamination. Current capability meets the needs required and there is no additional environmental benefit in adopting the improvements.	Although hydrocarbon contact above wildlife response threshold concentrations (>10 g/m^2) with offshore waters is expected from day one (CS-01), given the low likelihood of such an event occurring and that the current capability meets the need, the cost of implementing measures to reduce the mobilisation time is considered disproportionate to the benefit. Additionally, the remote offshore location of the release site, with no predicted shoreline contact, allows sufficient opportunity for the ongoing monitoring and surveillance operations to inform the scale of the response. Numbers of oiled wildlife are expected to be low in the remote offshore setting of the oiled wildlife response, given the distance from known aggregation areas. Oiled wildlife response capacity would be addressed for open Commonwealth waters through the AMOSC arrangements, as informed by monitor and evaluate. The cost and organisational complexity of this approach is moderate, and the overall delivery effectiveness is high.	Additional wildlife response resources could total A$1,700 per operational site per day.	This option is not adopted as the existing capability meets the need.	**No**
Additional trained wildlife responders	Numbers of oiled wildlife are expected to be low in the remote offshore setting of the oiled wildlife response, given the distance from known aggregation areas.	Current numbers meet the needs required and additional personnel are available through existing contracts with oil spill response organisations and environmental panel contractors. Additional equipment and facilities would be required to support ongoing response, depending	Additional wildlife response personnel cost A$2,000 per person per day	This option is not adopted as the existing capability meets the need.	**No**

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	The potential environmental benefit of training additional personnel is expected to be low.	on the scale of the event and the impact to wildlife and maybe sourced via existing contracts with OSROs. Materials for holding facilities, portable pools, enclosures and rehabilitation areas would be sourced as required.			

6.4.2.3 Improved Control Measures

Improved Control Measures considered *Improved control measures are evaluated for improvements they could bring to the effectiveness of adopted control measures in terms of functionality, availability, reliability, survivability, independence and compatibility*					
Option considered	**Environmental consideration**	**Feasibility**	**Approximate Cost**	**Assessment conclusions**	**Implemented**
Faster mobilisation time for wildlife response	Response time is limited by specialist personnel mobilisation time. Current timing is sufficient for expected first shoreline contact. This control measure provides increased effectiveness through faster mobilisation of specialists. However, no significant net environmental benefit is expected due to shoreline stranding times.	Pre-positioning vessels or equipment would reduce mobilisation time for oiled wildlife response activities. However, given the effectiveness of an oiled wildlife response is expected to be low, an earlier response would provide a marginal increase in environmental benefit.	Wildlife response packages to preposition at vulnerable sites identified through the deterministic modelling cost A$700 per package per day. The cost of having dedicated equipment and personnel available to respond faster is considered disproportionate to the environmental benefit.	This option is not adopted as the existing capability meets the need.	**No**

6.4.3 Selected control measures

Following review of alternative, additional and improved control measures, the following controls were selected for implementation for the PAP.

- alternative
  - none selected
- additional
  - none selected
- improved
  - none selected.

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6.5 Waste Management – ALARP Assessment

Alternative, additional and improved options have been identified and assessed against the base capability described in Section 5.5 with those that have been selected for implementation highlighted in green. Items highlighted in red have been considered and rejected on the basis that they are not feasible, the costs are clearly disproportionate to the environmental benefit, and/or the option is not reasonably practical. Control measures where there is not a clear justification for their inclusion or exclusion may be subject to a detailed ALARP assessment.

6.5.1 Existing Capability – 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.

6.5.2 Waste Management – 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
No reasonably practical alternative control measures identified					

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
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 OSRL. Existing arrangements meet identified need for the PAP.	Cost for increased waste disposal capability would be approx. A$1,300 per m^3. Cost for increased onshore temporary waste storage capability would be approx. A$40 per unit per day.	This option is not adopted as the existing capability meets the need.	**No**

6.5.2.3 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 response time	The access to Woodside's waste service provider's waste storage options provides the resources to store and transport waste, permitting the wastes to be stockpiled and gradually processed within the regional waste handling facilities. Bulk transport to Woodside's 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	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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	by safely securing waste. In addition, waste storage 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.				

6.5.3 Selected control measures

Following review of alternative, additional and improved control measures as outlined above, the following controls were selected for implementation for the PAP.

- alternative
  - none selected
- additional
  - none selected
- improved
  - none selected.

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6.6 Operational and Scientific Monitoring – ALARP Assessment

Alternative, additional and improved options have been identified and assessed against the base OSM capability described in Section 5 and the Woodside OSM-BIP 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.

6.6.1 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 limitations that are beyond Woodside's direct control.

6.6.2 Operational and Scientific Monitoring – Control Measure Options Analysis

6.6.2.1 Alternative Control Measures

Alternative Control Measures considered

Alternative control measures including potentially more effective and/or novel control measures are evaluated as replacements for an adopted control

Option considered	Environmental consideration	Feasibility	Approximate Cost	Assessment conclusions	Implemented
Dedicated contracted OSM vessel (exclusive to Woodside)	Would provide marginally faster mobilisation time of initial monitoring resources. However, the timescale difference would be limited when compared to the availability of in-field support vessels which are equipped with 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 first strike 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**

6.6.2.2 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
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 pre-positioned could result in a more rapid deployment of first strike monitoring. However, this option is reliant on suitable vessels being readily available at the specified location 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 would be in excess of A$3-4M per 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 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 Section C.4 Determine the OSM resourcing requirements and assess capability for the activity indicates that up to 18 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	Cost to contract an additional OSM Service Provider.	The option to contract an additional OSM Service Provider to increase the number of contracted monitoring teams during the initial stages of the spill response has been assessed and found not to be reasonably practicable due to the elevated safety and environmental risks associated with SIMOPs, including vessel collisions, anchoring impacts, and waste discharges. These risks outweigh the marginal benefit of increased early-stage monitoring coverage, particularly given the scale of the existing response and monitoring deployment already planned.	**No**

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Additional Control Measures considered
Additional control measures are evaluated in terms of them reducing an environmental impact or an environmental risk when added to the existing suite of control measures

Option considered	Environmental consideration	Feasibility	Approximate Cost	Assessment conclusions	Implemented
		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 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 water quality/ hydrocarbon sampling kits for pre-positioning on nearby support vessels and develop technical procedure for sample collection	The availability of first strike 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 first strike water quality sampling.	Implementing this additional control measure will involve time and effort to source and supply first strike sampling kits to the selected supply vessels. There will also be employee time involved in developing and conducting training to vessel crews on the technical procedure for sample collection.	Adoption of this control measure will provide an additional and quicker opportunity for first strike water quality sampling, resulting in improved situational awareness for decision making in monitoring and response teams.	**Yes**
Modify Woodside Aerial Surveillance Observer Log to enable observers to record marine fauna sightings (presence and type of fauna)	Initial aerial surveillance provides important information for decision making in response operations, but can also provide important initial environmental monitoring data. Amending the Woodside Aerial Surveillance Observer Log to include the ability to report on location, presence and type of fauna could assist in a more rapid, effective deployment of specialised OMP teams for Marine Fauna Assessment and Oiled Wildlife Response.	This control measure is considered reasonably practicable to implement.	Cost to modify the Aerial Surveillance Observer Log is minimal and is associated with time and effort of existing employees.	Adoption of this control measure is considered to be beneficial as it could assist in more effective and efficient deployment of fauna monitoring and response efforts.	**Yes**
Conduct periodical review of existing baseline data sources across receptors predicted to be contacted within 7 days at the low thresholds and a probability ≥10%	This ensures that receptors with deficient baseline data are identified. This is a consideration for initial monitoring prioritisation and the finalisation of each SMP design	This control measure is considered reasonably practicable to implement.	Cost of contract with Service Provider.	Understanding the presence or absence, suitability and quality of baseline data for receptors predicted to be contacted within 7 days, at a probability ≥10%, is an important preparatory measure. Understanding which receptors have insufficient baseline data will help quickly guide monitoring prioritisation and the finalisation of each SMP design and whether there is a need to include alternative designs.	**Yes**

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6.6.2.3 Improved Control Measures considered

Improved Control Measures considered *Improved control measures, including potentially more effective and/or novel control measures are evaluated as replacements for an adopted control*					
Option considered	**Environmental consideration**	**Feasibility**	**Approximate Cost**	**Assessment conclusions**	**Implemented**
Adoption of the OSRL OSM Supplementary Service Agreement for OSM capability provision	A Joint Industry capability provision has considerable benefits, including an improvement to industry OSM standards; improved reliability in accessing specialist personnel; efficiencies and capability growth associated with shared testing and exercising; and greater depth in Monitoring Service Provider (MSP) capability, with a centralised contract coordinating multiple consultancies and MSPs.	This control measure has already been developed by Industry and is considered reasonably practicable to implement.	Cost of annual subscription to OSRL OSM Supplementary Service Agreement	Adopting this control measure involves additional costs, but the benefits of a Joint Industry OSM capability provision outweighs the costs and therefore this additional measure has been accepted.	**Yes**
Determine the required specifications for suitable monitoring vessels, including specialised equipment for OMPs and SMPs (i.e. hiab) and the requirement of shallow draft vessels to access offshore islands and priority monitoring areas	Understanding vessel specification requirements for OSM at priority locations will result in quicker mobilisation times, and more effective monitoring, as correctly equipped vessels will be made available at the commencement the monitoring effort.	This control measure is considered reasonably practicable to implement.	Cost to determine vessel specifications is minimal and is associated with time and effort of existing employees.	This control measure would result in the correct vessels being mobilised for monitoring personnel and result in quicker implementation of monitoring.	**Yes**

6.6.3 Selected Control Measures

Following review of alternative, additional and improved control measures as outlined above, the following controls were selected for implementation for the PAP:

- alternative
  - none selected
- additional
  - purchase initial 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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6.6.4 ALARP and Acceptability Summary

<table>
<tr><th colspan="3">ALARP and Acceptability Summary</th></tr>
<tr><td colspan="3">Operational and Scientific Monitoring</td></tr>
<tr><td rowspan="4">ALARP Summary</td><td>X</td><td>Known, reasonably practicable control measures have been adopted</td></tr>
<tr><td>X</td><td>No additional, alternative and improved control measures would provide further benefit</td></tr>
<tr><td>X</td><td>No reasonably practical additional, alternative, and/or improved control measure exists</td></tr>
<tr><td colspan="2">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 OSM’s main objectives can be met, with the addition of one alternative control measures to provide further benefit.</td></tr>
<tr><td>Acceptability Summary</td><td colspan="2">• The control measures selected for implementation manage the potential impacts and risks to ALARP.

• In the event of a hydrocarbon spill for the PAP, the control measures selected, meet or exceed the requirements of Woodside Management System and industry best-practice.

• Operational and Scientific Monitoring control and activities are compliant with relevant environmental legislation and regulations, including the EPBC Act.

• Throughout the PAP, relevant Australian standards and codes of practice will be followed to evaluate the impacts from a loss of well control.

• Consultation undertaken for the PAP did not receive feedback regarding concerns for Operational and 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 Ecologically Sustainable Development (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.</td></tr>
<tr><td colspan="3">On the basis from the ALARP and acceptability summary as presented above and in Section 6 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.</td></tr>
</table>

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7 ENVIRONMENTAL RISK ASSESSMENT OF SELECTED RESPONSE TECHNIQUES

The implementation of response techniques may modify the impacts and risks identified in the EP and response activities can introduce additional impacts and risks from response operations themselves. Therefore, it is necessary to complete an assessment to ensure these impacts and risks have been considered and specific measures are put in place to continually review and manage these further impacts and risks to ALARP and Acceptable levels. A simplified assessment process has been used to complete this task which covers the identification, analysis, evaluation and treatment of impacts and risks introduced by responding to the event.

7.1 Identification of impacts and risks from implementing response techniques

Each of the control measures can modify the impacts and risks identified in the EP. These impacts and risks have been previously assessed within the scope of the EP. Refer to the EP for details regarding how these risks are being managed. They are not discussed further in this document.

- Atmospheric emissions
- Routine and non-routine discharges
- Physical presence, proximity to other vessels (shipping and fisheries)
- Routine acoustic emissions vessels
- Lighting for night work/navigational safety
- Invasive marine species
- Collision with marine fauna
- Disturbance to Seabed

Additional impacts and risks associated with the control measures not included within the scope of the EP include:

- Drill cuttings and drilling fluids environmental impact assessment for relief well drilling
- Vessel operations and anchoring
- Presence of personnel on the shoreline
- Additional stress or injury caused to wildlife
- Secondary contamination from the management of waste

7.2 Analysis of impacts and risks from implementing response techniques

The table below compares the adopted control measures for this activity against the environmental values that can be affected when they are implemented.

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Table 7-1: Analysis of risks and impacts

	Environmental Value						
	Soil and Groundwater	Marine Sediment Quality	Water Quality	Air Quality	Ecosystems/ Habitat	Species	Socio-Economic
Monitor and evaluate		✓	✓		✓	✓	
Source control		✓	✓		✓	✓	✓
Oiled wildlife response					✓	✓	
Operational and scientific monitoring	✓	✓	✓		✓	✓	✓
Waste management	✓		✓		✓	✓	✓

7.3 Evaluation of impacts and risks from implementing response techniques

Drill cuttings and drilling fluids environmental impact assessment for relief well drilling

The identified potential impacts associated with the discharge of drill cuttings and fluids during a relief well drilling activity include a localised reduction in water and seabed sediment quality, and potential localised changes to benthic biota (habitats and communities).

A number of direct and indirect ecological impact pathways are identified for drill cuttings and drilling fluids as follows:

- Temporary increase in total suspended solids (TSS) in the water column;
- Attenuation of light penetration as an indirect consequence of the elevation of TSS and the rate of sedimentation;
- Sediment deposition to the seabed leading to the alteration of the physio-chemical composition of sediments, and burial and potential smothering effects to sessile benthic biota; and
- Potential contamination and toxicity effects to benthic and in-water biota from drilling fluids.

Potential impacts from the discharge of cuttings range from the complete burial of benthic biota in the immediate vicinity of the well site due to sediment deposition, smothering effects from raised sedimentation concentrations as a result of elevated Total Suspended Solids (TSS), changes to the physico-chemical properties of the seabed sediments (particle size distribution and potential for reduction in oxygen levels within the surface sediments due to organic matter degradation by aerobic bacteria) and subsequent changes to the composition of infauna communities to minor sediment loading above background and no associated ecological effects. Predicted impacts are generally confined to within a few hundred metres of the discharge point (International Association of Oil and Gas Producers 2016) (i.e. within the EMBA for a hydrocarbon spill event).

The discharge of drill cuttings and unrecoverable fluids from relief well drilling is expected to increase turbidity and TSS levels in the water column, leading to an increased sedimentation rate above ambient levels associated with the settlement of suspended sediment particles near to the seabed or below sea surface, depending on location of discharge. Cuttings with retained (unrecoverable) drilling fluids are discharged below the water line at the MODU location, resulting in drill cuttings and drilling fluids rapidly diluting, as they disperse and settle through the water column. The dispersion and fate of the cuttings is determined by particle size and density of the retained (unrecoverable) drilling fluids, therefore, the sediment particles will primarily settle in proximity to the well locations with potential for localised spread downstream (depending on the speed of currents throughout the water column and seabed) (IOGP 2016). The finer particles will remain in suspension and will be transported further before settling on the seabed.

These conclusions were supported by discharge modelling which was undertaken by Woodside in support of the Greater Enfield Development EP Modelling results indicating that the TSS plume of suspended cuttings will typically disperse to the south-west while oscillating with the tide and diminish rapidly with increasing distance from the well locations. Maximum TSS concentrations predicted for 100 m; 250 m and 1 km distances from the wellsite were 7, 5 and 1 mg/L, respectively. Furthermore, water column concentrations below 10 mg/L

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remain within 235 m of the discharge location for each modelled well. For all well discharge locations (outside of direct discharge sites), TSS concentration did not exceed 10 mg/l. Nelson et al. (2016) identified <10 mg/L as a no effect or sub-lethal minimal effect concentration.

The low sensitivity of the deep-water benthic communities/habitats within and in the vicinity of relief well locations, combined with the relatively low toxicity of water based muds (WBM and non-water based muds (NWBMs, no bulk discharges of NWBM and the highly localised nature and scale of predicted physical impacts to seabed biota indicate that any localised impact would likely be of a slight magnitude (especially when considering the broader consequence of the loss of well containment (LOC) event a relief well drilling activity would be responding too).

Vessel operations and anchoring

During the implementation of response techniques, where water depths allow, it is possible that response vessels will be required to anchor (e.g. during operational and scientific monitoring). The use of vessel anchoring will be minimal and likely to occur when the impacted shoreline is inaccessible via road. Anchoring in the nearshore environment of sensitive receptor locations will have the potential to impact coral reef, seagrass beds and other benthic communities in these areas. Recovery of benthic communities from anchor damage depends on the size of anchor and frequency of anchoring. Impacts would be highly localised (restricted to the footprint of the vessel anchor and chain) and temporary, with full recovery expected.

Presence of personnel on the shoreline

Presence of personnel on the shoreline during shoreline operations could potentially result in disturbance to wildlife and habitats. During the implementation of response techniques, it is possible that personnel may have minimal, localised impacts on habitats, wildlife and coastlines. The impacts associated with human presence on shorelines during shoreline surveys may include:

- Damage to vegetation/habitat to gain access to areas of shoreline oiling;
- Damage or disturbance to wildlife during shoreline surveys;
- Removal of surface layers of intertidal sediments (potential habitat depletion); and
- Excessive removal of substrate causing erosion and instability of localised areas of the shoreline.

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 oil wildlife response operations
- Semi-solids/solids (oily solids), collected during oil wildlife response operations
- Debris (e.g. seaweed, sand, woods, plastics), collected during oil wildlife response operations.

If not managed and disposed of correctly, wastes generated during the response have the potential for secondary contamination similar to that described above, impacts to wildlife through contact with or ingestion of waste materials and contamination risks if not disposed of correctly onshore.

Additional stress or injury caused to wildlife

Additional stress or injury to wildlife could be caused through the following phases of a response:

- Capturing wildlife
- Transporting wildlife
- Stabilisation of wildlife
- Cleaning and rinsing of oiled wildlife
- Rehabilitation (e.g. diet, cage size, housing density)
- Release of treated wildlife

Inefficient capture techniques have the potential to cause undue stress, exhaustion or injury to wildlife, additionally pre-emptive capture could cause undue stress and impacts to wildlife when there are uncertainties in the forecast trajectory of the spill. During the transportation and stabilisation phases there is the potential for additional thermoregulation stress on captured wildlife. Additionally, during the cleaning process, it is important personnel undertaking the tasks are familiar with the relevant techniques to ensure that further injury and the removal of water proofing feathers are managed and mitigated. Finally, during the release phase it's important that wildlife is not released back into a contaminated environment.

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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) 20.1)

Presence of personnel on the shoreline

- Oversight by trained personnel who are aware of the risks (PS 20.2)
- Trained unit leader's brief personnel of the risks prior to operations (PS 20.3)

Waste generation

- Teams will segregate liquid and solid wastes at the earliest opportunity (PS13.2)

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 13.1)

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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 PAP.
Credible spill scenario	A spill considered by Woodside as representative of maximum volume and characteristics of a spill that could occur as part of the PAP.
Dependency	The degree of reliance on other systems in order for the control measure to be able to perform its intended function.
Environment that may be affected	The summary of quantitative modelling where the marine environment could be exposed to hydrocarbons levels exceeding hydrocarbon threshold concentrations.
Incident	An event where a release of energy resulted in or had (with) the potential to cause injury, ill health, damage to the environment, damage to equipment or assets or company reputation.
Major Environment Event	The events with potential environment, reputation, social or cultural consequences of category C or higher (as per Woodside's operational risk matrix) which are evaluated against credible worst-case scenarios which may occur when all controls are absent or have failed.
Performance outcome	A statement of the overall goal or outcome to be achieved by a control measure
Performance standard	The parameters against which [risk] controls are assessed to ensure they reduce risk to ALARP. A statement of the key requirements (indicators) that the control measure has to achieve in order to perform as intended in relation to its functionality, availability, reliability, survivability and dependencies.
Preparedness	Measures taken before an incident in order to improve the effectiveness of a response
Reasonably practicable	... a computation ... made by the owner, in which the quantum of risk is placed on one scale and the sacrifice involved in the measures necessary for averting the risk (whether in money, time or trouble) [showing whether or not] that there is a gross disproportion between them ... made by the owner at a point of time anterior to the accident. (Judgement: Edwards v National Coal Board [1949])
Receptors at risk	Physical, biological and social resources identified as at risk from hydrocarbon contact using oil spill modelling predictions.
Receptor areas	Geographically referenced areas such as bays, islands, coastlines and/or protected area (WHA, Commonwealth or State marine reserve or park) containing one or more receptor type.
Receptor Sensitivities	This is a classification scheme to categorise receptor sensitivity to an oil spill. The Environmental Sensitivity Index (ESI) is a numerical classification of the relative sensitivity of a particular environment (particularly different shoreline types) to an oil spill.
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
AEP	Australian Energy Producers
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
API	American Petroleum Institute
AUV	Autonomous Underwater Vehicle
BACI	Before/ After Control Impact
BAOAC	Bonn Agreement Oil Appearance Code
BIA	Biologically Important Area
BOP	Blowout Preventer
CIMT	Corporate Incident Management Team
COP	Common Operating Picture
cSt	Centistokes
DM	Duty Manager
DTMI	Western Australia Department of Transport and Major Infrastructure
DBCA	Western Australia Department of Biodiversity, Conservation and Attractions (former Western Australian Department of Parks and Wildlife)
EMBA	Environment that May Be Affected
EMSA	European Maritime Safety Agency
EP	Environment Plan
Environment Regulations	Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023
ESI	Environmental Sensitivity Index
ESD	Emergency Shut Down
ESP	Environmental Services Panel
FPSO	Floating Production Storage Offloading
FSP	First Strike Plan
GIS	Geographic Information System
GPS	Global Positioning System
HSP	Hydrocarbon Spill Preparedness
IAP	Incident Action Plan
IC	Incident Commander
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

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Abbreviation	Meaning
KBSF	King Bay Supply Facility
KEF	Key Ecological Feature
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
PAP	Petroleum Activities Program
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

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Abbreviation	Meaning
WCC	Woodside Communication Centre
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

A NEBA has been conducted to assess the net environmental benefit of different response techniques to selected receptors in the event of an oil spill from the PAP for a loss of well control scenario (Julimar condensate); a vessel collision scenario (marine diesel) and a release of NWBM from the annulus of Balnaves Deep-1 well. The complete list of potential receptor locations within the EMBA within the PAP is included in Section 4 of the EP.

The locations utilised for the NEBA were limited to open Commonwealth waters based on modelling for the PAP (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)

The detailed NEBA assessment outcomes are shown below. The Julimar-Brunello P&A preoperational NEBAs contains the full assessments.

Table A-1: NEBA assessment technique recommendations for Julimar condensate from a loss of well control scenario (CS-01)

Receptor	Monitor and evaluate	Containment and recovery	Dispersant application: sub-sea	Dispersant application: >20 m water depth and >10 km from shore/ reefs	Shoreline protection	Shoreline clean-up (manual)	Shoreline clean-up (mechanical)	Shoreline clean-up (chemical)	Oiled wildlife response	In situ burning	Mechanical dispersion	Well control and intervention
Open Commonwealth waters	Yes	No	No	No	No	No	No	No	Yes	No	No	Yes

Overall assessment

Sensitive receptor (sites identified in EP)	Monitor and evaluate	Containment and recovery	Dispersant application: sub-sea	Dispersant application: >20 m water depth and >10 km from shore/ reefs	Shoreline protection	Shoreline clean-up (manual)	Shoreline clean-up (mechanical)	Shoreline clean-up (chemical)	Oiled wildlife response	In situ burning	Mechanical dispersion	Well control and intervention
Is this response Practicable?	Yes	No	No	No	No	No	No	No	Yes	No	No	Yes
NEBA identifies response potentially of net environmental benefit?	Yes	No	No	No	No	No	No	No	Yes	No	No	Yes

Table A-2: NEBA assessment technique recommendations for marine diesel from a vessel collision scenario (CS-02)

Receptor	Monitor and evaluate	Containment and recovery	Dispersant application: sub-sea	Dispersant application: >20 m water depth and >10 km from shore/ reefs	Shoreline protection	Shoreline clean-up (manual)	Shoreline clean-up (mechanical)	Shoreline clean-up (chemical)	Oiled wildlife response	In situ burning	Mechanical dispersion	Source control (vessel SOPEP)
Open Commonwealth waters	Yes	No	No	No	No	No	No	No	Yes	No	No	Yes

Overall assessment

Sensitive receptor (sites identified in EP)	Monitor and evaluate	Containment and recovery	Dispersant application: sub-sea	Dispersant application: >20 m water depth and >10 km from shore/ reefs	Shoreline protection	Shoreline clean-up (manual)	Shoreline clean-up (mechanical)	Shoreline clean-up (chemical)	Oiled wildlife response	In situ burning	Mechanical dispersion	Source control (vessel SOPEP)
Is this response Practicable?	Yes	No	N/A	No	No	No	No	No	Yes	No	No	Yes
NEBA identifies response potentially of net environmental benefit?	Yes	No	N/A	No	No	No	No	No	Yes	No	No	Yes

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Table A-3: NEBA assessment technique recommendations for NWBM from a release from the annulus of Balnaves Deep-1 well (CS-04)

Receptor	Monitor and evaluate	Containment and recovery	Dispersant application: sub-sea	Dispersant application: >20 m water depth and >10 km from shore/ reefs	Shoreline protection	Shoreline clean-up (manual)	Shoreline clean-up (mechanical)	Shoreline clean-up (chemical)	Oiled wildlife response	In situ burning	Mechanical dispersion	Well control and intervention
Open Commonwealth waters	Yes	No	No	No	No	No	No	No	Yes	No	No	No

Overall assessment

Sensitive receptor (sites identified in EP)	Monitor and evaluate	Containment and recovery	Dispersant application: sub-sea	Dispersant application: >20 m water depth and >10 km from shore/ reefs	Shoreline protection	Shoreline clean-up (manual)	Shoreline clean-up (mechanical)	Shoreline clean-up (chemical)	Oiled wildlife response	In situ burning	Mechanical dispersion	Well control and intervention
Is this response Practicable?	Yes	No	No	No	No	No	No	No	Yes	No	No	No
NEBA identifies response potentially of net environmental benefit?	Yes	No	No	No	No	No	No	No	Yes	No	No	No

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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[11]	Potential duration of impact	Equivalent Woodside Corporate Risk Matrix Consequence Level
Positive	3P	Major	Likely to prevent: • behavioural impact to biological receptors • behavioural impact to socio-economic receptors e.g. changes to day-today business operations, public opinion/behaviours (e.g. avoidance of amenities such as beaches) or regulatory designations.	Decrease in duration of impact by > 5 years	N/A
	2P	Moderate	Likely to prevent: • significant impact to a single phase of reproductive cycle of biological receptors • detectable financial impact, either directly (e.g. loss of income) or indirectly (e.g. via public perception), for socio-economic receptors.	Decrease in duration of impact by 1–5 years	N/A

	1P	Minor	Likely to prevent impacts on:
			• significant proportion of population or breeding stages of biological receptors
			• socio-economic receptors such as:
			  ○ significant impact to the sensitivity of protective designation; or
			  ○ significant and long-term impact to business/industry.
				Decrease in duration of impact by several seasons (< 1 year)	N/A

	0	Non-mitigated spill impact	**No detectable difference to unmitigated spill scenario.**		
Negative	1N	Minor	Likely to result in: • behavioural impact to biological receptors • behavioural impact to socio-economic receptors e.g. changes to day-to-day business operations, public opinion/behaviours (e.g. avoidance of amenities such as beaches), or regulatory designations.	Increase in duration of impact by several seasons (< 1 year)	Increase in risk by one sub-category, without changing category (e.g. Minor (E) to Minor (D))
	2N	Moderate	Likely to result in: • significant impact to a single phase of reproductive cycle for biological receptors; or • detectable financial impact, either directly (e.g. loss of income) or indirectly (e.g. via public perception), for socio-economic receptors. This level of negative impact is recoverable and unlikely to result in closure of business/industry in the region.	Increase in duration of impact by 1–5 years	Increase in risk by one category (e.g. Minor (D) to Moderate (C or B))

	3N	Major	Likely to result in impacts on:
			• significant proportion of population or breeding stages of biological receptors
			• socio-economic receptors resulting in either:
			  ○ significant impact to the sensitivity of protective designation; or
			  ○ significant and long-term impact to business/industry.
				Increase in duration of impact by > 5 years or unrecoverable	Increase in risk by two categories (e.g. Minor (E) to Major (A))

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[11] NOTE: the maximum likely impact should be considered; for example, if a spill were to directly impact the behaviour that results in an impact to reproduction and/or the breeding population (such as fish failing to aggregate to spawn), then the score should be a 2 or 3 rather than a 1. Similarly, if a change in behaviour resulted in an increased risk of mortality of a population, then it should be scored as a 2 or 3

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ANNEX B: MONITOR AND EVALUATE ACTIVATION AND TERMINATION CRITERIA

Table B-1: Monitor and evaluate objectives, triggers and termination criteria

Operational Monitoring Operational Plan	Objectives	Activation triggers	Termination criteria
Predictive Modelling of Hydrocarbons to Assess Resources at Risk	Predictive modelling focuses on the conditions that have prevailed since a spill commenced, as well as those that are forecasted in the short term (1–3 days ahead) and longer term. Predictive modelling utilises computer-based forecasting methods to predict hydrocarbon spill movement and guide the management and execution of spill response operations to maximise the protection of environmental resources at risk. The objectives of predictive modelling are to: • Provide forecasting of the movement and weathering of spilled hydrocarbons • Identify resources that are potentially at risk of contamination • Provide simulations showing the outcome of alternative response options (booming patterns etc.) to inform on-going Net Environmental Benefit Analysis (NEBA) and continually assess the efficacy of available response options in order to reduce risks to ALARP	Predictive modelling will be triggered immediately following a level 2/3 hydrocarbon spill.	The criteria for the termination of predictive modelling are: • The hydrocarbon discharge has ceased and no further surface oil is visible • Response activities have ceased • Hydrocarbon spill modelling (as verified by surveillance observations) predicts no additional natural resources will be impacted

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Operational Monitoring Operational Plan	Objectives	Activation triggers	Termination criteria
Surveillance and reconnaissance to detect hydrocarbons and resources at risk	Surveillance and reconnaissance aims to provide regular, on-going hydrocarbon spill surveillance throughout a broad region, in the event of a spill. The objectives of surveillance and reconnaissance are: • Verify spill modelling results and recalibrate spill trajectory models. • Understand the behaviour, weathering and fate of surface hydrocarbons. • Identify environmental receptors and locations at risk or contaminated by hydrocarbons. • Inform ongoing Net Environmental Benefit Analysis (NEBA) and continually assess the efficacy of available response options in order to reduce risks to ALARP. • To aid in the subsequent assessment of the short- to long-term impacts and/or recovery of natural resources (assessed in SMPs) by ensuring that the visible cause and effect relationships between the hydrocarbon spill and its impacts to natural resources have been observed and recorded during the operational phase.	Surveillance and reconnaissance will be triggered immediately following a level 2/3 hydrocarbon spill.	The termination triggers for the Surveillance and reconnaissance are: • 72 hours has elapsed since the last confirmed observation of surface hydrocarbons. • Latest hydrocarbon spill modelling results do not predict surface exposures at visible levels.

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Operational Monitoring Operational Plan	Objectives	Activation triggers	Termination criteria
Pre-emptive assessment of sensitive receptors at risk	Pre-emptive shorelines assessment aims to undertake a rapid assessment of the presence, extent and current status of shoreline sensitive receptors prior to contact from the hydrocarbon spill, by providing categorical or semi-quantitative information on the characteristics of resources at risk. The primary objective of pre-emptive shorelines assessment is to confirm understanding of the status and characteristics of environmental resources, predicted by predictive modelling and surveillance, to be at risk, to further assist in making decisions on the selection of appropriate response actions and prioritisation of resources. Indirectly, qualitative/semi-quantitative pre-contact information collected by pre-emptive shorelines assessment on the status of environmental resources may also aid in the verification of environmental baseline data and provide context for the assessment of environmental impacts, as determined through subsequent SMPs. Pre-emptive shorelines assessment would be undertaken in liaison with WA DTMI as the control agency once the oil is in State Waters (if a Level 2/3 incident).	Triggers for commencing pre-emptive shorelines assessment include: • Contact of a sensitive habitat or shoreline is predicted by predictive modelling and surveillance. • The pre-emptive assessment methods can be implemented before contact from hydrocarbons (once a receptor has been contacted by hydrocarbons it will be assessed via SCAT.	The criteria for the termination of pre-emptive shorelines assessment at any given location are: • Locations predicted to be contacted by hydrocarbons have been contacted. • The location has not been contacted by hydrocarbons and is no longer predicted to be contacted by hydrocarbons (resources should be reallocated as appropriate).

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ANNEX C: PAP OSM ACTIVITY SPECIFIC ASSESSMENT

The Woodside OSM-BIP 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 Julimar-Brunello Plug and Abandonment 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 Julimar-Brunello Plug and Abandonment activity (hereafter referred to as the PAP) credible spill scenarios (as shown in Figure C - 1) fits within the Combined OSM Planning Area (Figure 2-1 in the OSM-BIP).

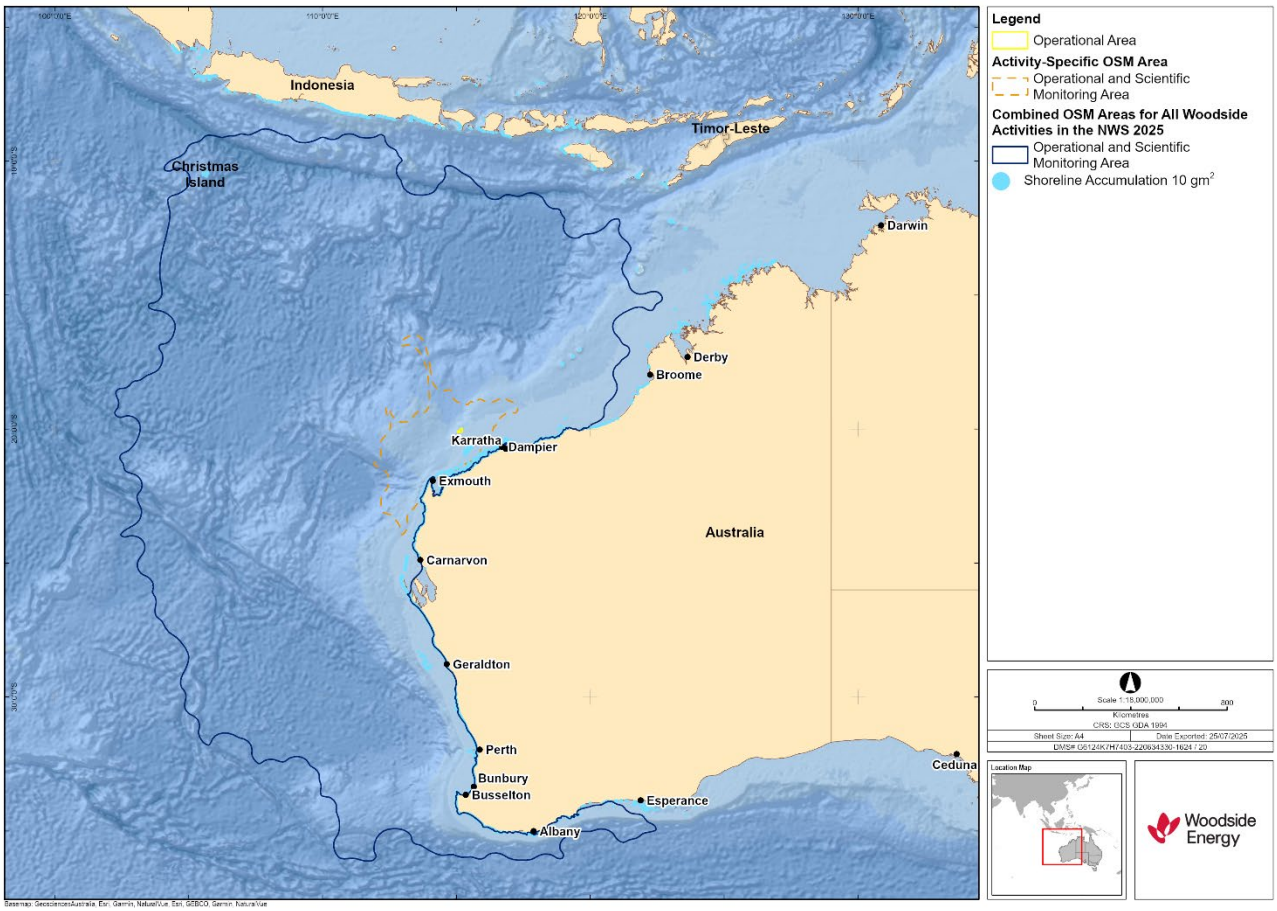

Figure C - 1: PAP OSM Planning Area based on the area potentially contacted by the low (below ecological impact) entrained hydrocarbon threshold of 10 ppb in the event of the worst-case credible spill scenario (CS-01, CS-02 and CS-04).

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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). The inclusion of entrained hydrocarbons at concentrations greater than 10 ppb is used to denote exposure to hydrocarbons, but does not necessarily imply toxicity. For entrained whole-oil droplets, the toxic fraction is small, as many hydrocarbon constituents remain sequestered and not bioavailable (French-McCay 2024).

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 the PAP (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 PAP. The following Key Ecological Features (KEFs) (and their distances to the Operational Area) are noted in Table 4-15 of the EP:

- Ancient Coastline at 125 m depth contour (overlaps Operational Area)
- Continental Slope Demersal Fish Communities (overlaps Operational Area)
- Exmouth Plateau (88 km south-west of Operational Area)
- Canyons Linking the Cuvier Abyssal Plan and the Cape Range Peninsula (148 km south-west of Operational Area)
- Commonwealth Waters Adjacent to Ningaloo Reef (191 km south-west of Operational Area)

The Ancient Coastline and Continental Slope Demersal Fish Communities KEFs overlap the PAP Operational Area, so are 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 (benthic and pelagic habitats; demersal fish communities; marine fauna aggregations) that may be at risk from subsea releases, such as the loss of containment scenario associated with the PAP (refer to Table 2-1). 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 - 8).

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, 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.

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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: PAP credible spill scenarios stochastic modelling results for receptors with a probability of contact ≥10% and <14 days

Receptor	Total contact probability (%) floating oil ≥1 g/m2	Min. arrival time floating oil ≥1 g/m2 (days)	Total contact probability (%) shoreline accumulation ≥10 g/m²	Min. arrival time shoreline accumulation ≥10 g/m² (days)	Probability (%) entrained oil at ≥10 ppb	Min. arrival time entrained oil ≥10 ppb (days)	Probability (%) dissolved oil at >10 ppb	Min. arrival time dissolved oil ≥10 ppb (days)
91-day subsurface release of 2,679 m^3 of Julimar Condensate (CS-01)								
Montebello AMP*	1	85.92	NA	NA	71	0.83	1	48.58
Instantaneous surface release of 500 m^3 of marine diesel due to a vessel collision at the Balnaves Deep-1 wellhead location (CS-02)								
Montebello AMP*	4	0.29	NA	NA	33	0.25	11.5	*Data unavailable*
Barrow Island MMA*	<0.5	NC	NA	NA	11	3.58	1.5	*Data unavailable*
Montebello Islands MP*	<0.5	NC	<0.5	NC	13	6.50	0.5	*Data unavailable*
Tryal Rocks*	<0.5	NC	NA	NC	21.5	3.92	2	*Data unavailable*
Instantaneous subsea release of 67 m^3 SBM contained from the Balnaves Deep-1 well due to a failure of the containment system (CS-04)								
Montebello AMP*	4	0.33	NA	NA	14	0.17	<1	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 to be 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
Montebello AMP*			N/A						(Locations to be determined in consultation with key stakeholders to reflect current fishing zones/effort)	(Locations to be determined in consultation with key stakeholders)
Montebello Islands				Wedge-tailed shearwater Ah Chong Island						
Barrow Island	Barrow Island Port	Barrow Island Port			Flatback turtle					
					Green & hawksbill turtle					
					Sea snake					
Reefs, shoals and banks			N/A							

Key	
	Priority survey: Current baseline data is not in place, not suitable or not sufficient
	Survey: Collectively there is substantial baseline data or on-going monitoring from within the last 5 years, meaning this is a lower priority
	N/A: not applicable

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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															
Montebello AMP	✓	✓	✓	-	✓	✓	✓	-	^	^	^	✓	✓	✓	✓
Marine Parks (MP)															
Barrow Islands MMA and Barrow Island MP (State)	✓	✓	✓	-	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓
Montebello Islands MP	✓	✓	✓	-	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓
Reefs, Shoals and Banks															
Tryal Rocks	✓	✓	✓	-	✓	✓	✓	-	^	^	^	✓	✓	✓	^
KEFs within 100 km of the Operational Area															
Ancient Coastline at 125 m depth contour	-	✓	✓	-	✓	✓	✓	-	^	^	^	✓	-	-	-
Continental Slope Demersal Fish Communities	-	✓	✓	-	✓	✓	✓	-	^	^	^	✓	✓	-	-
Exmouth Plateau	-	✓	✓	-	✓	✓	✓	-	^	^	^	✓	✓	-	-
BIAs															
Whale shark BIA	-	✓	-	-	✓	✓	-	-	-	-	✓	-	-	-	✓
Pygmy blue whale BIA	-	✓	-	-	✓	✓	-	-	-	-	✓	-	-	-	-
Dugong BIA	-	✓	-	-	✓	✓	-	-	-	-	✓	✓	-	-	-
Humpback whale BIA	-	✓	-	-	✓	✓	-	-	-	-	✓	-	-	-	-
Southern right whale BIA	-	✓	-	-	✓	✓	-	-	-	-	✓	-	-	-	-
Flatback turtle BIAs	-	✓	-	-	✓	✓	✓	-	-	✓	-	✓	-	-	-
Green turtle BIAs	-	✓	-	-	✓	✓	✓	-	-	✓	-	✓	-	-	-
Hawksbill turtle BIAs	-	✓	-	-	✓	✓	✓	-	-	✓	-	✓	-	-	-
Loggerhead turtle BIAs	-	✓	-	-	✓	✓	✓	-	-	✓	-	✓	-	-	-

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Receptor	OM1: Hydrocarbon Characterisation	OM2: Hydrocarbon in Water	OM3: Hydrocarbon in Sediment	**OM6: Shoreline Clean-up Assessment**	OM5: Rapid Marine Fauna Surveillance	SM1: Water quality impact assessment	SM2: Sediment quality impact assessment	**SM3: Intertidal and coastal habitat assessment**	SM4: Seabirds and shorebirds	SM5: Marine megafauna assessment- reptiles	SM5: Marine megafauna assessment- whale sharks, dugong and cetacean	SM6: Benthic habitat assessment	SM7: Marine fish and elasmobranch assemblages assessment	SM8: Fisheries impact assessment	SM9 & 10: Heritage and social impact assessment
Wedge-tailed shearwater BIA	-	✓	-	-	✓	✓	✓	-	✓	-	-	-	-	-	-
Fairy tern BIA	-	✓	-	-	✓	✓	✓	-	✓	-	-	-	-	-	-
Lesser crested tern	-	✓	-	-	✓	✓	✓	-	✓	-	-	-	-	-	-
Roseate tern 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
Montebello Islands	**Mangroves** Montebello Islands' mangrove communities are regarded as globally unique.	N/A	High	3	3	Medium
	Turtles Loggerhead (Vulnerable) and green (Endangered) (significant rookeries); hawksbill (Critically Endangered), flatback turtles (unknown).	Turtle nesting and breeding Nov to Mar with peak in late Dec/early Jan	High	4	3	High
	Marine mammals Pygmy blue whale (Vulnerable) and humpback whale migration area. Resident populations of bottlenose dolphins and Australian humpback dolphins (Vulnerable). Dugong (Vulnerable) foraging.	Pygmy blue whale migration: Apr to Aug Humpback whale migration: Jun to Oct	High	3	2	Medium
	Birds Significant seabird nesting and foraging areas.	Species dependant	High, with the exception of wedge-tailed shearwater on Ah Chong Island (low)	3	2	Medium
	Coral and other subsea benthic primary producers	Coral spawning: Mar & Oct	High	3	4	High
	Socio-economic Pearling (inactive/pearling zones). Very significant for recreational fishing and charter boat tourism (Marine Management Area). Social amenities and other tourism. Nominated place (National Heritage).	Year-round	High	3	2	Medium
Montebello AMP	**Coral and other subsea benthic primary producers** A prominent seafloor feature in the Marine Park is Tryal Rocks consisting of two close coral reefs. The reefs are emergent at low tide.	Coral spawning: Mar & Oct	High	3	4	High
	Turtles Biologically important internesting, foraging, mating, and nesting habitat for turtles.	Nesting green and flatback turtles: Oct to Mar (hawksbill can nest all year)	High	3	3	Medium
	Birds Biologically important breeding habitat for seabirds.	Species dependant	High	3	2	Medium
	Whale shark Biologically important habitat for whale shark.		High	3	3	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 migration area.	Jun to Oct	High	3	2	Medium
	Socio-economic Pearling (inactive/pearling zones). Very significant for recreational fishing and charter boat tourism (Marine Management Area). Shipwreck (Tryal).	Year-round	High	3	2	Medium
Barrow Island	**Mangroves**	N/A	High	3	3	Medium
	Turtles Regionally and nationally significant green (western side) and flatback turtle (eastern side) nesting beaches, Turtle Bay north beach, North and west coasts- John Wayne Beach, loggerheads and hawksbill.	Year round, peaking Oct to Jan	High, with the exception of flatback turtles (low)	4	3	High
	Marine mammals Humpback whale migration area. Resident populations of bottlenose dolphins and Australian humpback dolphins (Vulnerable). Dugong (Vulnerable) foraging.	Humpback whale migration: Jun to Oct	High	3	2	Medium
	Birds Nationally significant site for migratory shorebirds, serving both as a key staging area during migration and as a non-breeding destination. Double Island has important bird nesting sites (shearwaters and sea eagles).	Migratory shorebirds: Aug to Apr	Low	2	1	Low
	Coral and other subsea benthic primary producers	Coral spawning: Mar & Oct	High	3	4	High
	Socio-economic Significant for recreational fishing and charter boat tourism, Nominated place (National heritage), Industry – Reverse Osmosis Plant and port operations. Petroleum Activities such as Barrow Island petroleum production.	Year-round	High	5	5	High

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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 the PAP, as well as indicative timeframes for mobilisation of each OMP and SMP for key receptors. It should be noted that contact beyond day 7 is not included in this table due to modelling predicting no contact beyond that timeframe (Table C - 1). 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. Rapid Marine Fauna Surveillance teams will begin mobilisation within 48-72 hours of notification to document fauna observation. 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.	• OM1: Hydrocarbon Characterisation • OM2: Hydrocarbons in Water Assessment • OM3: Hydrocarbons in Sediment Assessment	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

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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.	• OM5: Rapid Marine Fauna Surveillance • Continue to finalise OMPs. • Continue to activate and mobilise OM personnel.			operational period. OMP is redesigned or reallocated according to the specifics of the actual spill until termination criteria are met
	SM	Activation of SMP Team Leads and finalisation of SMPs.	• Continue to activate and mobilise personnel. • Work on finalising SMPs.	• SM1: Water Quality Impact Assessment • SM2: Sediment Quality Impact Assessment • SM4: Seabirds and Shorebirds • SM5: Marine Mega-fauna Assessment – Reptiles • SM5: Marine Mega-fauna Assessment –Cetaceans, Whale Sharks, Dugong • SM6: Benthic Habitat Assessment • SM7: Marine Fish and Elasmobranch Assemblages assessment • SM8: Fisheries impact assessment • SM9: Heritage Features Assessment • SM10: Social Impact Assessment	Continued	Continue SMP implementation until termination criteria are met.
Sensitive receptors (including shorelines, reefs, banks and shoals) predicted to be contacted week 1–2	OM	-	-	• Additional Activation of OMP Team Leads. • Commence activation and mobilisation of additional OM personnel.	• Continue to finalise OMPs. • Continue to activate and mobilise OM personnel. • OM1: Hydrocarbon Characterisation • OM2: Hydrocarbons in Water Assessment • OM3: Hydrocarbons in Sediment Assessment • OM5: Rapid Marine Fauna Surveillance	As results from implemented OMPs are available, data are provided to relevant personnel in IMT (Situation Unit Leader) and used in the Incident Action Planning process for the next operational period. OMP is redesigned or reallocated according to the specifics of the actual spill until termination criteria are met

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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 • 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 requirement assessment for the PAP, the spill scenario (see Table C - 2) 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 dissolved, floating and shoreline thresholds within 14 days and at the highest contact probabilities. If a receptor is only contacted by low concentrations of entrained hydrocarbons at probability > 10%, and not by any other hydrocarbon phase, it will be considered a lower priority during the initial monitoring response as outlined in Section C.2. The instantaneous surface release of 500 m^3 of marine diesel due to a vessel collision at the Balnaves Deep-1 wellhead location (CS-02) was identified as the worst-case scenario, affecting the most locations within 14 days and determined to require the greatest OSM capability (see Table C - 1).

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 for dissolved, floating and shoreline, Woodside has grouped the monitoring priorities for the PAP into monitoring 'units' (Table C - 6). These units incorporate all of the possible receptors that may be contacted by the PAP scenarios shown in Table C - 1. These units incorporate all of the possible receptors that may be contacted by the PAP 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 Table 4-14 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 the PAP relevant to stochastic modelling results

Monitoring Unit	Receptors within Monitoring Unit
Montebello	Montebello Islands Montebello AMP* Montebello Islands MP* Tryal Rocks* Montebello Shoals* Seabird and shorebird BIAs Marine turtle BIAs Humpback whale (migration) BIA Pygmy blue whale (distribution) BIA
Offshore Environs	Ancient Coastline at 125 m depth contour* Continental Slope Demersal Fish Communities* Humpback whale (migration) BIA Pygmy blue whale (distribution) BIA Whale shark (foraging) BIA Marine turtle BIAs

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Monitoring Unit	Receptors within Monitoring Unit
	Seabird and shorebird BIAs
Control	Control sites

*Submerged receptor that has no features above the sea surface.

Stochastic modelling

OSM resourcing requirements were determined using stochastic modelling. Deterministic modelling was not undertaken, as the existing response capability (refer to Sections 9 and 10 of the OSM-BIP) provide sufficient capacity to meet or exceed the resourcing requirements for all receptors forecast to be contacted by floating, shoreline and/or dissolved hydrocarbons (at >10% probability) by stochastic modelling within the initial two weeks of the PAP 500 m^3 MDO spill at the Balnaves Deep-1 wellhead location.

The resources required to commence operational and scientific monitoring components during weeks 1–2 are presented in (Table C - 7 and Table C - 8) respectively, which are based on the locations requiring a baseline review in Table C - 2, the implementation schedule outlined in Table C - 5, and the worst-case stochastic spill results outlined in Table C - 1, including the resources required for monitoring unaffected control sites.

Woodside's OSM capability arrangements are detailed in Sections 9 and 10 of the OSM-BIP. These sections demonstrate that Woodside has established arrangements to mobilise up to 5-6 teams for most OMPs and SMPs in the initial stages of a spill, and provision for scale-up capability, confirming that despite the use of stochastic modelling (which means an overconservative estimate of capability has been used for this activity) the OSM capability requirements for the PAP activities (Table C - 7 and Table C - 8) are satisfied by the existing capability arrangements in the OSM-BIP.

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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 Montebello Unit 1 team Offshore Environs Unit **Total 3 teams**	1 team (spill site and surrounds) 1 team Montebello 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 Montebello 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 the PAP spill scenarios#

SMP	Week 1 (total)	Week 2 (total)	Arrangement
SM1: Water quality impact assessment *^	1 team (spill site and surrounds) 1 team Montebello Unit 1 team Offshore Environs Unit **Total 3 teams**	1 team (spill site and surrounds) 1 team Montebello Unit 1 team Offshore Environs Unit **Total 3 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
SM4: Seabirds and shorebirds^	1 team to conduct initial aerial surveys for Montebello Unit (2 observers per aircraft) 1 team to conduct initial aerial surveys for Offshore Environs Unit (2 observers per aircraft) **Total 2 aerial teams** 1 team to conduct vessel-based surveys for Montebello 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 initial aerial surveys for Montebello Unit (2 observers per aircraft) 1 team to conduct initial aerial surveys for Offshore Environs Unit (2 observers per aircraft) **Total 2 aerial teams** 1 team to conduct vessel-based surveys for Montebello 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**	OSRL OSM Supplementary Service Agreement Woodside Contracted Vessel Providers Laboratory arrangement
SM5: Marine mega-fauna assessment – whale shark, dugong and cetaceans^	Aerial surveys refer to SMP: Seabirds and shorebirds Vessel surveys refer to SMP: Seabird and shorebirds	Aerial surveys refer to SMP: Seabirds and shorebirds Vessel surveys refer to SMP: Seabird and shorebirds	OSRL OSM Supplementary Service Agreement Woodside Contracted Vessel Providers Laboratory arrangement
SM5: Marine mega-fauna assessment – reptiles^	Aerial surveys refer to SMP: Seabirds and shorebirds Vessel surveys refer to SMP: Seabird and shorebirds Ground based survey refer to SMP: Seabird and shorebirds (including 1 member experienced with ground turtle surveys)	Aerial surveys refer to SMP: Seabirds and shorebirds Vessel surveys refer to SMP: Seabird and shorebirds Ground based survey refer to SMP: Seabird and shorebirds (including 1 member experienced with ground turtle surveys)	OSRL OSM Supplementary Service Agreement Woodside Contracted Vessel Providers Laboratory arrangement
SM6: Benthic habitat assessment	1 team (spill site and surrounds) 1 team for Montebello Unit 1 team Offshore Environs Unit	1 team (spill site and surrounds) 1 team for Montebello Unit 1 team Offshore Environs Unit	OSRL OSM Supplementary Service Agreement Woodside Contracted Vessel Providers Laboratory arrangement

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SMP	Week 1 (total)	Week 2 (total)	Arrangement
	1 team control site(s) **Total 4 teams**	1 team control site(s) **Total 4 teams**	
SM7: Marine fish and elasmobranch assemblages assessment	1 team (spill site and surrounds) 1 team for Montebello Unit 1 team Offshore Environs Unit 1 team control site(s) **Total 4 teams**	1 team (spill site and surrounds) 1 team for Montebello 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	**18 teams**	**18 teams**	

Specific monitoring units are mentioned for planning and guidance purposes based on a worst case planning approach. In the event of an actual spill, other locations and/or receptors may be contacted and the ability to access these locations (i.e. with consideration of safety and SIMOPS) would be assessed. This would be identified and managed as part of implementation as per the guidance in Section 13 of the BIP.

* Initial co-mobilisation between SMP: Water quality impact assessment and SMP: Sediment quality impact assessment.

^ Can initially be performed by the same team as the relevant OMP. This SMP may replace the relevant OMP, if the relevant OMP's termination criteria are triggered.

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ANNEX D TACTICAL RESPONSE PLANS

TACTICAL RESPONSE PLANS
Exmouth
Mangrove Bay
Turquoise Bay
Yardie Creek
Muiron Islands
Jurabi to Lighthouse Beaches Exmouth
Ningaloo Reef – Refer to Mangrove/ Turquoise Bay and Yardie Creek
Exmouth Gulf
Shark Bay Area 1: Carnarvon to Wooramel
Shark Bay Area 2: Wooramel to Petite Point
Shark Bay Area 3: Petite Point to Dubaut Point
Shark Bay Area 4: Dubaut Point to Herald Bight
Shark Bay Area 5: Herald Bight to Eagle Bluff
Shark Bay Area 6: Eagle Bluff to Useless Loop
Shark Bay Area 7: Useless Loop to Cape Bellefin
Shark Bay Area 8: Cape Bellefin to Steep Point
Shark Bay Area 9: Western Shores of Edel Land
Shark Bay Area 10: Dirk Hartog Island
Shark Bay Area 11: Bernier and Dorre Islands
Abrolhos Islands: Pelseart Group
Abrolhos Islands: Wallabi Group
Abrolhos Islands: Easter Group
Dampier
Rankin Bank & Glomar Shoals
Barrow and Lowendal Islands
Pilbara Islands – Southern Island Group
Montebello Island – Stephenson Channel Nth TRP
Montebello Island – Champagne Bay and Chippendale channel TRP
Montebello Island – Claret Bay TRP
Montebello Island – Hermite/Delta Island Channel TRP
Montebello Island – Hock Bay TRP
Montebello Island – North and Kelvin Channel TRP
Montebello Island – Sherry Lagoon Entrance TRP
Withnell Bay
Holden Bay
King Bay
No Name Bay / No Name Beach
Enderby Island – Dampier
Rosemary Island – Dampier
Legendre Island – Dampier
Karratha Gas Plant

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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

Julimar-Brunello Plug and Abandonment – Oil Pollution First Strike Plan

Corporate HSE

Hydrocarbon Spill Preparedness

November 2025
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 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).

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's role as the Controlling Agency in State waters does not negate the requirement for Woodside to have appropriate plans and resources in place to adequately respond to a marine hydrocarbon spill incident in State Waters/ within port limits or to commence the initial response actions to a spill prior to 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 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	Handover control to AMSA and stand up CIMT to assist.
	Commence quick revalidation of the recommended strategies in **Table 2-1 t**aking 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: 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

In the event of an incident impacting live well infrastructure, also activate Julimar Operations Oil Pollution First Strike Plan

Timing	By	To	Name	Contact	Instruction	Form	Complete? (✓)
NOTIFICATIONS FOR ALL LEVELS OF SPILL							
Immediately	Offshore Installation Manager (OIM) or Vessel Master	Woodside Communication Centre (WCC)	Corporate Incident Management Team Incident Commander (CIMT IC)	[1]	Verbally notify WCC of event and estimated volume and hydrocarbon type. 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	
		Chevron Australia Pty Ltd	Chevron Perth Security Operations Centre	[2]	Verbally notify Chevron Security Operations Centre of event and estimated volume and hydrocarbon lost	Verbal	
Within 2 hours	Woodside Site Rep (WSR), CIMT IC or Delegate	National Offshore Petroleum Safety Environmental Management Authority (NOPSEMA[1])	Incident notification office	[3]	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 [3] NOPTA [4] DMPE [5]	[3]	
As soon as practicable	CIMT IC or Delegate	Woodside	Environment Unit Leader	As per roster	Verbally notify Environment Unit Leader of event and seek advice on relevant performance standards from EP	Verbal	
Within 2 hours of becoming aware of a marine pollution incident (MOP) that occurs in or may impact state waters	CIMT IC or Delegate	WA Department of Transport and Major Infrastructure	DTMI 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]	
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: [7]	Email	
Within 24 hours of Woodside reporting the incident to the appropriate authority	CIMT IC or Delegate	WA Fishing Industry Council (WAFIC)	Industry Liaison Officer	[8]	Notification to WAFIC via email within 24 hours of Woodside reporting the incident to the appropriate authority: [8]	Verbal/ email	
As soon as practicable	CIMT IC or Delegate	Department of Climate Change, Energy, the Environment and Water (DCCEEW) Director of National Parks	Marine Park Compliance Duty Officer	[9]	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	Verbal	

[1] Notification to NOPSEMA must be from a Woodside Representative.

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Timing	By	To	Name	Contact	Instruction	Form	Complete? (✓)
NOTIFICATIONS FOR ALL LEVELS OF SPILL							
					• confirmation of access to relevant monitoring and evaluation reports when available.		
As soon as practicable if there is potential for oiled wildlife or the spill is expected to contact land or waters managed by WA Department of Biodiversity, Conservation and Attractions	CIMT IC or Delegate	WA Department of Biodiversity, Conservation and Attractions (DBCA)	Duty Officer	[10]	Phone call notification	Verbal	
As soon as practicable	Public Information	Relevant persons/ organisations	To be determined	To be determined	Should it be identified that additional persons such as, but not limited to, commercial fishers or tourism operators may be affected, Woodside would, at the relevant time, engage with these parties as appropriate and in alignment with the Oil Spill Preparedness and Response Mitigation Assessment (OSPRMA) for Julimar-Brunello Plug and Abandonment. Relevant persons/ organisations will be re-assessed throughout the response period.	Verbal initially	
As soon as practicable	Public Information	Relevant cultural authorities	To be determined	To be determined	Should it be identified that relevant cultural authorities may be affected, Woodside would, at the relevant time, engage with these parties as appropriate and in alignment with the Oil Spill Preparedness and Response Mitigation Assessment (OSPRMA) for Julimar-Brunello Plug and Abandonment. Relevant cultural authorities will be re-assessed throughout the response period.	Verbal initially	
ADDITIONAL NOTIFICATIONS TO BE MADE ONLY IF SPILL IS FROM A VESSEL							
"Without delay" as per *Protection of the Sea (Prevention of Pollution from Ships) Act 1983* (Cth) s 11(1)	Vessel Master	Australian Maritime Safety Authority (AMSA)	Rescue Coordination Centre (RCC)	[11]	Verbally notify AMSA RCC of the hydrocarbon spill. Follow up with a written Harmful Substances Report (POLREP) as soon as practicable following verbal notification.	[11]	
ADDITIONAL LEVEL 2/3 NOTIFICATIONS							
As soon as practicable	CIMT IC or Delegate	AMOSC	AMOSC Duty Manager	[12]	Notify AMOSC that a spill has occurred and follow-up with an email from the **CIMT IC/ CIMT Deputy IC/ CMT Leader** to formally activate AMOSC. Determine what resources are required consistent with the AMOSPlan and detail in a Service Contract that will be sent to Woodside from AMOSC upon activation.	[12]	
As soon as practicable	CIMT IC or Delegate	Oil Spill Response Limited (OSRL)	OSRL Duty Manager	[13]	Notification for all services: Contact OSRL duty manager and request assistance from technical advisor. Send the completed notification form to OSRL as soon as practicable.	[13]	
					Mobilisation of response personnel/ equipment: For mobilisation of response personnel/ resources, send the Mobilisation Form to OSRL as soon as practicable. The mobilisation form must be signed by a nominated callout authority from Woodside i.e. **CIMT IC/ CIMT Deputy IC/ CMT Leader**. OSRL can advise the names on the call out authority list, if required.	[13]	
					Mobilisation of Operational and Scientific Monitoring service: For mobilisation of Operational and Scientific Monitoring (OSM) service, send the OSM Mobilisation Form to OSRL as soon as practicable. The mobilisation form must be signed by a nominated callout authority from Woodside i.e. **CIMT IC/ CIMT Deputy IC/ CMT Leader**. OSRL can advise the names on the call out authority list, if required.	[13]	
As soon as practicable if extra personnel are required for incident support	CIMT IC or Delegate	Marine Spill Response Corporation (MSRC)	MSRC Response Manager	[14]	Activate the contract with MSRC (in full) for the provision of up to 14 personnel depending on what skills are required. Please note that provision of these personnel from MSRC are on a best endeavours basis and are not guaranteed.	Verbal	

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2. RESPONSE TECHNIQUES

Table 2-1: Response techniques

Technique	Spill type			Level	Pre- Identified Tactics	Responsible	ALARP Commitment Summary	Link to Operational Plans for notification numbers and actions
	Cond.	MDO	NWBM					
Monitor and evaluate – tracking buoy	Yes	Yes	Yes	ALL	If a vessel is on location, consider the need to deploy the oil spill tracking buoy. If no vessel is on location, consider the need to mobilise oil spill tracking buoys from the King Bay Supply Base (KBSB) Stockpile. If a surface sheen is visible from the facility, deploy the satellite tracking buoy within two hours.	Operations	**WITHIN 24 HOURS:** Tracking buoy deployed within 2 hours.	Surveillance and Reconnaissance to Detect Hydrocarbons and Resources at Risk in Operational Monitoring Operational Plan. Deploy tracking buoy in accordance with Link.
Monitor and evaluate – predictive modelling	Yes	Yes	Yes	ALL	Undertake initial modelling using OceansMap and weathering fate analysis using Automated Data Inquiry for Oil Spills (ADIOS) or refer to the hydrocarbon information in Appendix A.	Environment	**WITHIN 24 HOURS:** Initial modelling within 6 hours using the OceansMap tool.	Predictive Modelling of Hydrocarbons to Assess Resources at Risk in Operational Monitoring Operational Plan. *Planning Section to download immediately and follow steps*
	Yes	Yes	Yes	ALL	Send Oil Spill Trajectory Modelling (OSTM) form (Appendix B, Form 7) to RPS Response ([15]). Outputs will be uploaded to OceansMap by RPS.	Environment	**WITHIN 24 HOURS:** Detailed modelling within 4 hours of RPS Response receiving information from Woodside.	
Monitor and evaluate – aerial surveillance	Yes	Yes	Yes	ALL	Aviation Unit Leader to commence aerial observations in daylight hours. Aerial surveillance observer to complete log in Appendix B Form 8.	Logistics – Aviation	**WITHIN 24 HOURS:** 2 trained aerial observers. 1 aircraft available. Report made available to the IMT within 2 hours of landing after each sortie.	Surveillance and Reconnaissance to Detect Hydrocarbons and Resources at Risk in Operational Monitoring Operational Plan. *Planning Section to download immediately and follow steps*
Monitor and evaluate – satellite tracking	Yes	Yes	Yes	ALL	Situation Unit Leader to action satellite imagery services. This may be obtained via: • AMOSC Duty Manager: [12] • OSRL Duty Manager: [13] • KSAT: [16] • Others identified by CIMT	Environment	**WITHIN 24 HOURS:** Service provider will confirm availability of an initial acquisition within 2 hours. Data received to be uploaded into Woodside Common Operating Picture.	
Revalidate pre-operational NEBA	Yes	Yes	Yes	ALL	Environment Unit Leader to revalidate pre-operational NEBA against current situational awareness from monitor and evaluate techniques.	Environment	**WITHIN 24 HOURS**: Revalidate pre-operational NEBA and incorporate into IAP	Pre-operational NEBAs
Monitor and evaluate – pre-emptive assessment of receptors at risk	Yes	Yes	Yes	ALL	Consider the need to mobilise resources to undertake pre-emptive assessment of sensitive receptors at risk.	Planning or Environment	In agreement with WA DTMI, deployment of 2 specialists for each of the Response Protection Areas (RPA) with predicted impacts.	Pre-emptive Assessment of Sensitive Receptors in Operational Monitoring Operational Plan.
Operational monitoring – shoreline assessment	Yes	Yes	Yes	ALL	Consider the need to mobilise resources to undertake shoreline assessment surveys.	Planning or Environment	In agreement with WA DTMI, deployment of 2 specialists trained in Shoreline Clean-up Assessment Technique (SCAT) for each of the RPAs with predicted impacts.	Mobilise OSM service via OSRL: [13] Refer to OSM Bridging Implementation Plan – Part B for additional implementation information: Link
Operational and Scientific Monitoring	Yes	Yes	Yes	ALL	Consider the need to mobilise OSM resources via third party service provider.	Environment	**WITHIN 24 HOURS**: Notify service provider of spill event. **OSM:** OMPs and SMPs will be activated in accordance with the initiation criteria provided in Tables 9-1 and 9-2 of the Joint Industry OSM Framework (APPEA, 2021)	Refer to Joint Industry Operational And Scientific Monitoring Plan Framework for activation criteria and additional supporting information.
Surface dispersant	No	No	No	N/A	This response strategy is not recommended.			N/A
Containment and recovery	No	No	No	N/A	This response strategy is not recommended.			N/A
Mechanical dispersion	No	No	No	N/A	This response strategy is not recommended.			N/A
In-situ burning	No	No	No	N/A	This response strategy is not recommended.			N/A

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Technique	Spill type			Level	Pre- Identified Tactics	Responsible	ALARP Commitment Summary	Link to Operational Plans for notification numbers and actions
	Cond.	MDO	NWBM					
Shoreline protection and deflection	**No**	**No**	**No**	**N/A**	This response strategy is not recommended.			N/A
Shoreline clean-up	**No**	**No**	**No**	**N/A**	This response strategy is not recommended.			N/A
Oiled wildlife response	**Yes**	**Yes**	**Yes**	**ALL**	If oiled wildlife is a potential impact, request AMOSC to mobilise containerised oiled wildlife first strike kits and relevant personnel. Refer to relevant Tactical Response Plan for potential wildlife at risk. Mobilise AMOSC Oiled Wildlife Containers. Consider whether additional equipment is required from local suppliers.	Logistics and Planning		Oiled Wildlife Response Operational Plan
SOURCE CONTROL TECNIQUES								
Subsea First Response Toolkit	**Yes**	**N/A**	**No**	**L2/3**	Debris clearance equipment to be mobilised prior to deployment of capping stack (if feasible).	Source Control	**WITHIN 48 HOURS:** Remotely Operated Vehicle (ROV) on Mobile Offshore Drilling Unit (MODU) ready for deployment within 48 hours	Source Control Emergency Response Planning Guideline Activity Source Control Emergency Response Plan
Subsea Dispersant	**No**	**N/A**	**No**	**L2/3**	This response strategy is not recommended. Modelling predicts that the LOWC scenarios for these wells will not result in any surface or shoreline oil at any RPA above threshold values. The use of subsea dispersant would therefore increase dispersed/ entrained hydrocarbon levels and exposure of subsea biota to potentially higher toxicity substances without providing a net environmental benefit.	Source Control		
Capping Stack	**Yes**	**N/A**	**No**	**L2/3**	Minimum water depth for feasible use of capping stack is acknowledged to be 100 m. A capping stack is, therefore, feasible for the Julimar East-1 and Balnaves Deep-1 wells at the discretion of the vessel master on the day, giving due regard to the safety of the vessel and crew.	Source Control	**DAY 16:** Capping stack deployed by a chartered construction vessel.	
Relief Well	**Yes**	**N/A**	**N/A**	**L2/3**	Undertake tactics per Source Control Emergency Response Plan (SCERP).	Source Control	**WITHIN 24 HOURS:** Identify source control vessel availability within 24 hours. **WITHIN 48 HOURS:** ROV on MODU ready for deployment within 48 hours. **WITHIN 21 DAYS (LOCAL MODU) OR 36 DAYS (MODU FROM SE ASIA):** MODU mobilised to location	

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3. RESPONSE PROTECTION AREAS

Action: Provide relevant Control Agency with applicable Tactical Response Plans for any Response Protection Areas (RPAs) identified during operational monitoring.

Based on hydrocarbon spill risk modelling results, there are no priority protection areas that have the potential to be contacted by hydrocarbon at or above impact threshold levels within or beyond 48 hours of the modelled spill scenarios.

If required, Tactical Response Plans for sensitive 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 if any regional sensitive receptors may be contacted beyond 48 hours of a spill.

Figure 3-1 illustrates the location of regional sensitive receptors in relation to the Julimar-Brunello Plug and Abandonment Operational Area.

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 Julimar-Brunello Plug and Abandonment Operational Area.

Table 3-1: Assets in the vicinity of the Julimar-Brunello Plug and Abandonment Operational Area

Facility or asset	Operator	Distance and direction from Operational Area (km)
Oil and Gas Facilities		
John Brookes	Santos (BOL) Pty Ltd	34 km south
Wonnich	Santos (BOL) Pty Ltd	49 km south-east
Pluto	Woodside (WEL)	15 km east
Wheatstone	Chevron (TAPL) Pty Ltd	19 km north-east
Pipelines		
Wheatstone Trunkline	Chevron (TAPL) Pty Ltd	Overlaps Operational Area
Julimar Brunello Pipeline	Woodside (WEL)	Overlaps Operational Area
Pluto LNG Gas Export Pipeline (Commonwealth)	Woodside (WEL)	Directly adjacent to Operational Area (30 m north)
Jansz-lo to Barrow Island	Chevron (TAPL) Pty Ltd	24 km west
John Brooks (Commonwealth)	Santos (BOL) Pty Ltd	34 km south
Gorgon to Barrow Island	Chevron (TAPL) Pty Ltd	43 km south
Wonnich Pipeline (Terr Sea)	Santos WA Northwest Pty Ltd	49 km south-east

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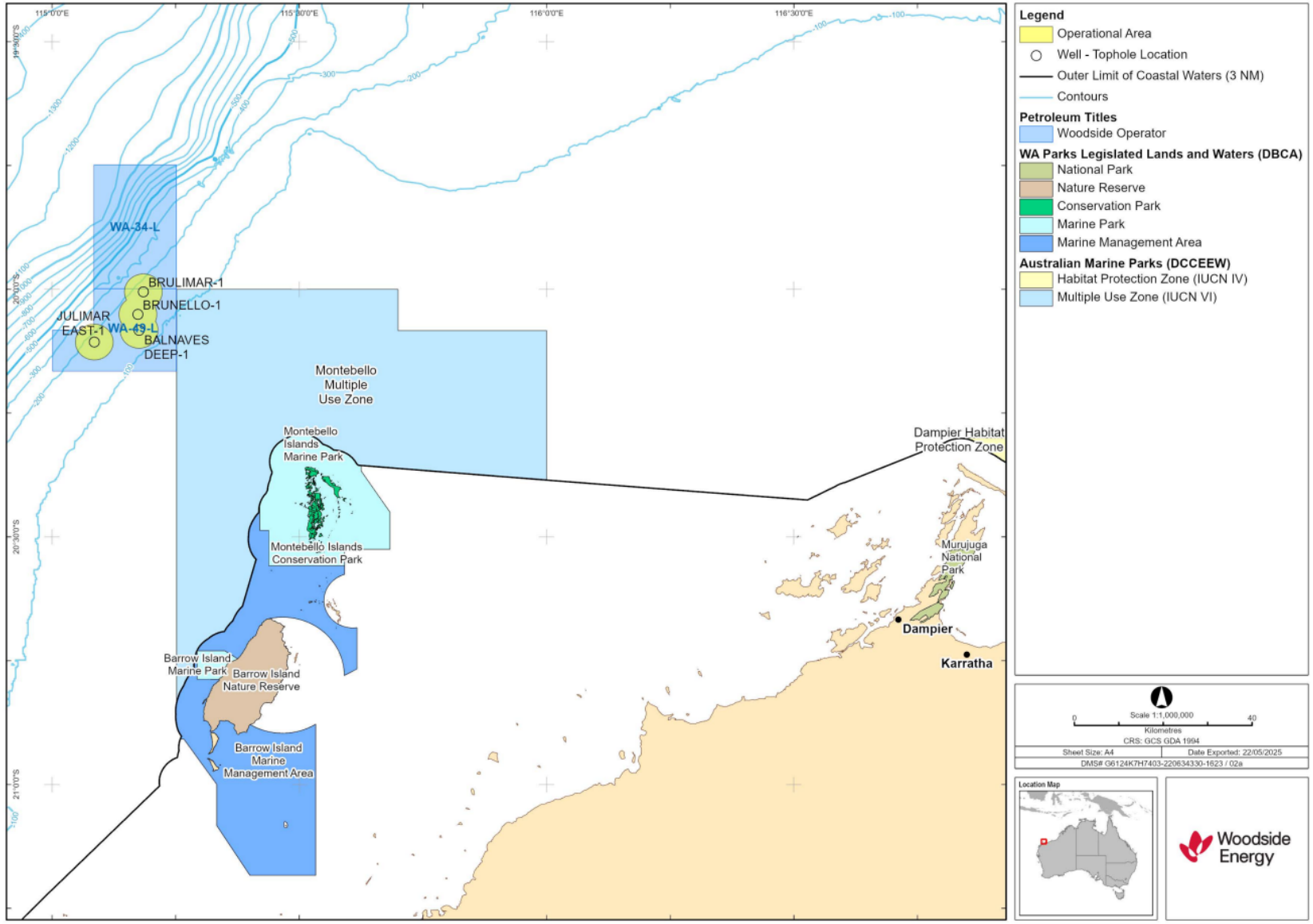

Figure 3-1: Operational area

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4. DISPERSANT APPLICATION

Dispersant is not considered an appropriate response strategy for this activity as described in the Julimar-Brunello Plug and Abandonment 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-01 (WCCS) *91-day Uncontrolled subsea release of Julimar Condensate from the Julimar East-1 well due to loss of well control[3]*	Julimar Condensate	45.7°	2,679 m^3	6.5% (174 m^3)	12 hours (BP < 180 °C)	43.6%	Cooper Basin (AD01830), API of 45.22°
					24 hours (180 °C < BP < 265 °C)	22.9%	
					Several days (265 °C < BP < 380 °C)	27.1%	
CS-02 *Instantaneous surface release of marine diesel due to a vessel collision at the Balnaves Deep-1 wellhead location (closest wellhead to Tryal Rocks).*	MDO	37.2°	500 m^3	5% (25 m^3)	12 hours (BP < 180 °C)	6%	Diesel Fuel Oil (Southern USA 1). API of 37.2°
					24 hours (180 °C < BP < 265 °C)	35%	
					Several days (265 °C < BP < 380 °C)	54%	
CS-03 *Marine fuel loss during fuel bunkering within the Operational Area*	MDO	37.2°	24 m^3	5% (1 m^3)	12 hours (BP < 180 °C)	6%	Diesel Fuel Oil (Southern USA 1). API of 37.2°
					24 hours (180 °C < BP < 265 °C)	35%	
					Several days (265 °C < BP < 380 °C)	54%	
CS-04 *Unplanned (instantaneous) subsea release of Synthetic Based Oil from the annulus of Balnaves Deep-1 well*	Shell Saraline 185V (Synthetic Based Oil)	49.8°	67 m^3	7.8% (5 m^3)	12 hours (BP < 180 °C)	1.8%	Shell Saraline 185V
					24 hours (180 °C < BP < 265 °C)	28.5%	
					Several days (265 °C < BP < 380 °C)	61.9%	

[2] Initial screening of possible ADIOS2 analogues considered hydrocarbons with similar APIs. Suggested selection is based on the closest distillation cut to the Woodside hydrocarbon. Only hydrocarbons with >380°C distillation cuts were included in selection process.

[3] Please note that 91 days has been modelled as the worst case duration for a loss of well containment where mobilisation of a MODU from southeast Australia is required for executing a relief well. Mobilisation of a locally available MODU is estimated to result in a loss of well containment duration of ~63 days and, from southeast Asia, ~78 days.

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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	[3]
3	Harmful Substances Report (POLREP – AMSA)	[11]
4	Marine Pollution Report (POLREP – DTMI)	[6]
5	AMOSC Service Contract	[12]
6a	OSRL Initial Notification Form	[13]
6b	OSRL Mobilisation Activation Form	[13]
6c	OSRL Operational and Scientific Monitoring Service Mobilisation Form	[13]
7	RPS Response Oil Spill Trajectory Modelling Request	[15]
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

NOPSEMA phone: [3]		
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	**[3]**	
NOPTA	**[4]**	
DMPE	**[5]**	

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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 it is going?		
Metocean conditions		
Currents and tides		
What is in the way?		
Resources at risk		
Time until resource contact		
What's happening to it?		
Weathering processes		
Response actions underway		

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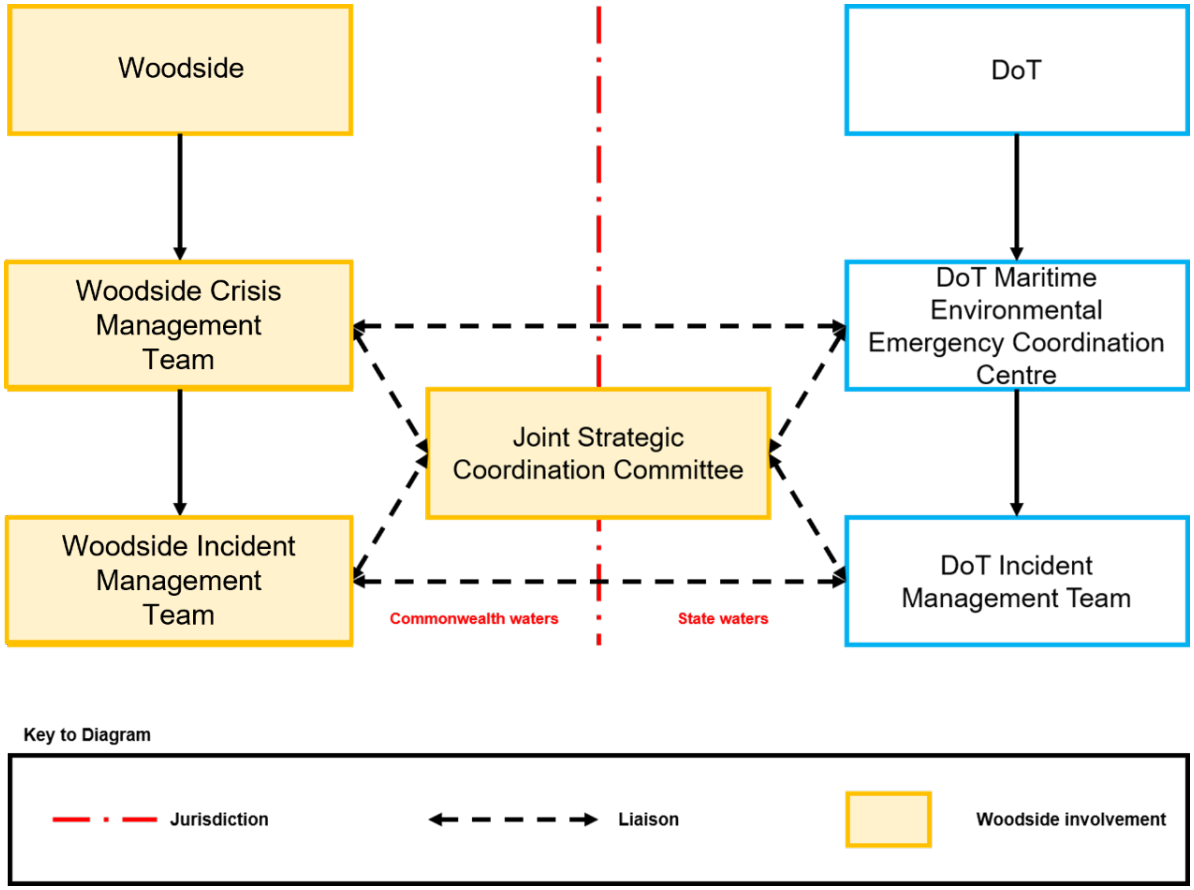
APPENDIX D – COORDINATION STRUCTURE FOR A CONCURRENT HYDROCARBON SPILL IN BOTH COMMONWEALTH AND STATE WATERS/SHORELINES[4]



The Control Agency for a hydrocarbon spill in Commonwealth waters resulting from an offshore petroleum activity is Woodside (the Petroleum Titleholder).

The Control Agency/ Hazard Management Agency (HMA) for a hydrocarbon spill in State waters/shorelines resulting from an offshore petroleum activity is DTMI. DTMI will appoint an Incident Controller and form a separate IMT to only manage the spill within State waters/shorelines.

[4] Adapted from DTMI Offshore Petroleum Industry Guidance Note, Marine Oil Pollution: Response and Consultation Arrangements July 2020. Note: For full structure up to Commonwealth Cabinet/Minister refer to Marine Oil Pollution: Response and Consultation Arrangements Section 6.5, Figure 4.

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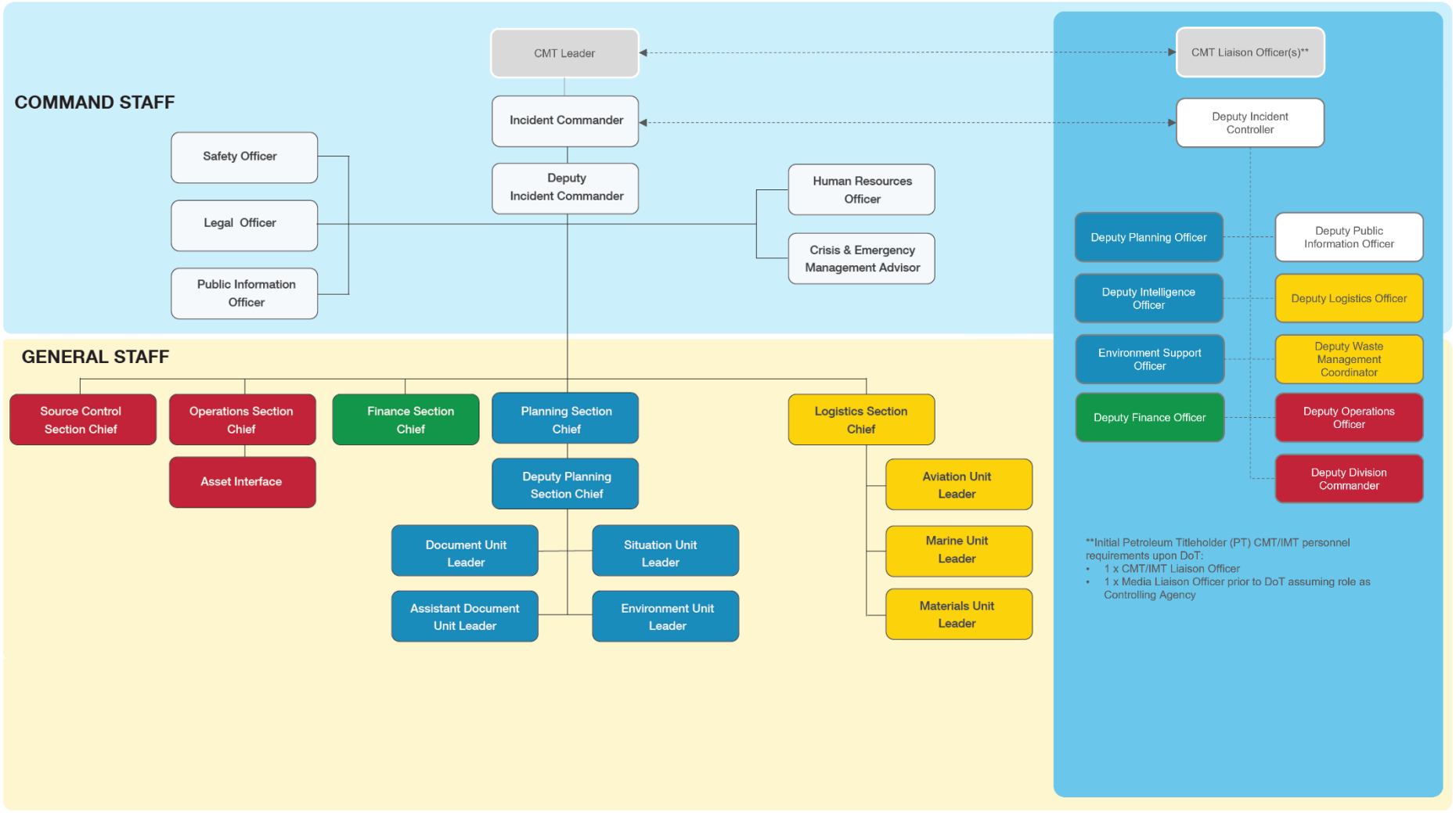
APPENDIX E – WOODSIDE INCIDENT MANAGEMENT STRUCTURE

Woodside Incident Management Structure for Hydrocarbon Spill (including Woodside Liaison Officers Command Structure within DTMI IMT if required) is shown below. Woodside's CIMT would operate from the Emergency Operations Centre (EOC) at the Woodside headquarters in Perth.



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APPENDIX F – WOODSIDE LIAISON OFFICER RESOURCES TO DTMI

In the event that DTMI is required to establish an IMT, Woodside will make available an appropriate number of appropriately qualified persons to work within the DTMI IMT.

It is an expectation that Woodside's nominated CMT Liaison Officer and the Deputy Incident Controller attend the DTMI Fremantle Incident Control Centre (ICC) as soon as possible after the formal request has been made by the State Marine Pollution Coordinator (SMPC), and that the remaining initial cohort will attend no later than 8 am on the day following the request being formally made to Woodside by the SMPC. For Woodside personnel designated to serve in DTMI's Forward Operating Base (FOB), it is expected that they arrive at the FOB no later than 24 hours from the formal request being made by the SMPC.

Area	Role	Woodside personnel[5]	Key Duties	#
DTMI Maritime Environmental Emergency Coordination Centre (MEECC)	CMT Liaison Officer	CIMT Liaison	• Provide a direct liaison between the CMT and the MEECC. • Facilitate effective communications and coordination between the CIMT Leader and SMPC. • Offer advice to SMPC on matters pertaining to PT crisis management policies and procedures.	1
DTMI IMT Incident Control	Deputy Incident Controller	Deputy Incident Commander (Deputy IC)	• Provide a direct liaison between the PT IMT and DTMI IMT. • Facilitate effective communications and coordination between the PT IC and the DTMI IC. • Offer advice to the DTMI IC on matters pertaining to PT incident response policies and procedures. • Offer advice to the Safety Coordinator on matters pertaining to PT safety policies and procedures, particularly as they relate to PT employees or contractors operating under the control of the DTMI IMT.	1
DTMI IMT Intelligence	Deputy Intelligence Officer	Situation Unit Leader (Intelligence)	• As part of the Intelligence Team, assist the Intelligence Officer in the performance of their duties in relation to situation and awareness. • Facilitate the provision of relevant modelling and predications from the PT IMT. • Assist in the interpretation of modelling and predictions originating from the PT IMT. • Facilitate the provision of relevant situation and awareness information originating from the DTMI IMT to the PT IMT. • Facilitate the provision of relevant mapping from the PT IMT. • Assist in the interpretation of mapping originating from the PT IMT. • Facilitate the provision of relevant mapping originating from the DTMI IMT to the PT IMT.	1
DTMI IMT Intelligence – Environment	Environment Support Officer	Deputy Environment Unit Leader	• As part of the Intelligence Team, assist the Environment Coordinator in the performance of their duties in relation to the provision of environmental support into the planning process. • Assist in the interpretation of the PT OPEP and relevant TRP plans.	1

[5] *These positions would be mobilised, in consultation with DTMI, to align to the actual spill scenario. The selected roles and/or individual personnel would be subject to continued evaluation to ensure continued 'best fit'. For CIMT roster arrangements, contact the WCC. During a prolonged response, additional personnel may be sourced through internal resourcing and mutual Aid agreements such as the AMOSC Core Group via [12]*

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Area	Role	Woodside personnel[5]	Key Duties	#
			• Facilitate in requesting, obtaining and interpreting environmental monitoring data originating from the PT IMT. • Facilitate the provision of relevant environmental information and advice originating from the DTMI IMT to the PT IMT.	
DTMI IMT Planning-Plans/ Resources	Deputy Planning Officer	Deputy Planning Section Chief	• As part of the Planning Team, assist the Planning Officer in the performance of their duties in relation to the interpretation of existing response plans and the development of incident action plans and related sub plans. • Facilitate the provision of relevant IAP and sub plans from the PT IMT. • Assist in the interpretation of the PT OPEP from the PT. • Assist in the interpretation of the PT IAP and sub plans from the PT IMT. • Facilitate the provision of relevant IAP and sub plans originating from the DTMI IMT to the PT IMT. • Assist in the interpretation of the PT existing resource plans. • Facilitate the provision of relevant components of the resource sub plan originating from the DTMI IMT to the PT IMT. **(Note this individual must have intimate knowledge of the relevant PT OPEP and planning processes)**	1
DTMI IMT Public Information-Media/ Community Engagement	Deputy Public Information Officer	Deputy Public Information Officer	• As part of the Public Information Team, provide a direct liaison between the PT Media team and DTMI IMT Media team. • Facilitate effective communications and coordination between the PT and DTMI media teams. • Assist in the release of joint media statements and conduct of joint media briefings. • Assist in the release of joint information and warnings through the DTMI Information and Warnings team. • Offer advice to the DTMI Media Coordinator on matters pertaining to PT media policies and procedures. • Facilitate effective communications and coordination between the PT and DTMI Community Liaison teams. • Assist in the conduct of joint community briefings and events. • Offer advice to the DTMI Community Liaison Coordinator on matters pertaining to the PT community liaison policies and procedures. • Facilitate the effective transfer of relevant information obtained from through the Contact Centre to the PT IMT.	1
DTMI IMT Logistics	Deputy Logistic Officer	Deputy Logistics Section Chief	• As part of the Logistics Team, assist the Logistics Officer in the performance of their duties in relation to the provision of supplies to sustain the response effort. • Facilitate the acquisition of appropriate supplies through the PTs existing OSRL, AMOSC and private contract arrangements. • Collects Request Forms from DTMI to action via PT IMT. **(Note this individual must have intimate knowledge of the relevant PT logistics processes and contracts)**	1

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Area	Role	Woodside personnel[5]	Key Duties	#
DTMI IMT Finance-Accounts/ Financial Monitoring	Deputy Finance Officer	Deputy Finance Section Chief	• As part of the Finance Team, assist the Finance Officer in the performance of their duties in relation to the setting up and payment of accounts for those services acquired through the PTs existing OSRL, AMOSC and private contract arrangements. • Facilitate the communication of financial monitoring information to the PT to allow them to track the overall cost of the response. • Assist the Finance Officer in the tracking of financial commitments through the response, including the supply contracts commissioned directly by DTMI and to be charged back to the PT.	1
DTMI IMT Operations	Deputy Operations Officer	Deputy Operations Section Chief	• As part of the Operations Team, assist the Operations Officer in the performance of their duties in relation to the implementation and management of operational activities undertaken to resolve an incident. • Facilitate effective communications and coordination between the PT Operations Section and the DTMI Operations Section. • Offer advice to the DTMI Operations Officer on matters pertaining to PT incident response procedures and requirements. • Identify efficiencies and assist to resolve potential conflicts around resource allocation and simultaneous operations of PT and DTMI response efforts.	1
DTMI IMT Operations – Waste Management	Deputy Waste Management Coordinator	Deputy Waste Coordinator (Materials)	• As part of the Operations Team, assist the Waste Management Coordinator in the performance of their duties in relation to the provision of the management and disposal of waste collected in State waters. • Facilitate the disposal of waste through the PT's existing private contract arrangements related to waste management and in line with legislative and regulatory requirements. • Collects Request Forms from DTMI to action via PT IMT.	1
DTMI FOB Operations Command	Deputy Division Commander	FOB Deputy Incident Commander	• As part of the Field Operations Team, assist the Division Commander in the performance of their duties in relation to the oversight and coordination of field operational activities undertaken in line with the IMT Operations Section's direction. • Provide a direct liaison between the PT FOB and DTMI FOB. • Facilitate effective communications and coordination between the PT Division Commander and the DTMI Division Commander. • Offer advice to the DTMI Division Commander on matters pertaining to PT incident response policies and procedures. • Assist the Safety Coordinator deployed in the FOB in the performance of their duties, particularly as they relate to PT employees or contractors. • Offer advice to the Safety Coordinator deployed in the FOB on matters pertaining to PT safety policies and procedures.	1
			Total	11

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APPENDIX G – DTMI LIAISON OFFICER RESOURCES TO WOODSIDE

Once DTMI activates a State waters/ shorelines IMT, DTMI will make available the following roles to Woodside.

Area	DTMI Liaison Role	Personnel Sourced from:	Key Duties	#
Woodside CIMT	DTMI Liaison Officer (prior to DTMI assuming Controlling Agency)/ Deputy Incident Controller – State waters (after DTMI assumes Controlling Agency)	DTMI	• Facilitate effective communications between DTMI's SMPC/ Incident Controller and the Petroleum Titleholder's appointed CMT Leader / Incident Controller. • Provide enhanced situational awareness to DTMI of the incident and the potential impact on State waters. • Assist in the provision of support from DTMI to the Petroleum Titleholder. • Facilitate the provision technical advice from DTMI to the Petroleum Titleholder Incident Controller as required.	1
Woodside CIMT Public Information – Media	DTMI Media Liaison Officer	DTMI	• Provide a direct liaison between the PT Media team and DTMI IMT Media team. • Facilitate effective communications and coordination between the PT and DTMI media teams. • Assist in the release of joint media statements and conduct of joint media briefings. • Assist in the release of joint information and warnings through the DTMI Information & Warnings team. • Offer advice to the PT Media Coordinator on matters pertaining to DTMI and wider Government media policies and procedures.	1
			Total DTMI Personnel Initial Requirement to Woodside	2

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APPENDIX I DEPARTMENT OF PLANNING, LAND AND HERITAGE ABORIGINAL ENQUIRY SYSTEM RESULTS

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Aboriginal Cultural Heritage Inquiry System

List of Aboriginal Cultural Heritage (ACH) Register

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Search Criteria

5 Aboriginal Cultural Heritage (ACH) Register in Shapefile - JulimarBrunello_PA_Cwth_2025_EMBA_v2. Warning: Search area complex so results may be inaccurate. Contact DPLH for assistance.

Disclaimer

Aboriginal heritage holds significant value to Aboriginal people for their social, spiritual, historical, scientific, or aesthetic importance within Aboriginal traditions, and provides an essential link for Aboriginal people to their past, present and future. In Western Australia Aboriginal heritage is protected under the *Aboriginal Heritage Act 1972*.

All Aboriginal cultural heritage in Western Australia is protected, whether or not the ACH has been reported or exists on the Register.

The information provided is made available in good faith and is predominately based on the information provided to the Department of Planning, Lands and Heritage by third parties. The information is provided solely on the basis that readers will be responsible for making their own assessment as to the accuracy of the information. If you find any errors or omissions in our records, including our maps, it would be appreciated if you provide the details to the Department via https://achknowledge.dplh.wa.gov.au/ach-enquiry-form and we will make every effort to rectify it as soon as possible.

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Terminology

ID: ACH on the Register is assigned a unique ID by the Department of Planning, Lands and Heritage using the format: ACH-00000001. For ACH on the former Register the ID numbers remain unchanged and use the new format. For example the ACH ID of the place Swan River was previously '3536' and is now 'ACH-00003536'.

Access and Restrictions:

- **Boundary Reliable (Yes/No):** Indicates whether to the best knowledge of the Department, the location and extent of the ACH boundary is considered reliable.
- **Boundary Restricted = No:** Represents the actual location of the ACH as understood by the Department..
- **Boundary Restricted = Yes:** To preserve confidentiality the exact location and extent of the place is not displayed on the map. However, the shaded region (generally with an area of at least 4km²) provides a general indication of where the ACH is located. If you are a landowner and wish to find out more about the exact location of the place, please contact the Department of Planning, Lands and Heritage.
- **Culturally Sensitive = No:** Availability of information that the Department of Planning, Lands and Heritage holds in relation to the ACH is not restricted in any way.
- **Culturally Sensitive = Yes:** Some of the information that the Department of Planning, Lands and Heritage holds in relation to the ACH is restricted if it is considered culturally sensitive information. This information will only be made available if the Department of Planning, Lands and Heritage receives written approval from the people who provided the information. To request access please contact via https://achknowledge.dplh.wa.gov.au/ach-enquiry-form.
- **Culturally Sensitive Nature:**
  - **No Gender / Initiation Restrictions:** *Anyone* can view the information.
  - **Men only:** Only *males* can view restricted information.
  - **Women only:** Only *females* can view restricted information.

Status:

- **Register:** Aboriginal cultural heritage places that are assessed as meeting Section 5 of the *Aboriginal Heritage Act 1972*.
- **Lodged:** Information which has been received in relation to an Aboriginal cultural heritage place, but is yet to be assessed under Section 5 of the *Aboriginal Heritage Act 1972.*
- **Historic:** Aboriginal heritage places assessed as not meeting the criteria of Section 5 of the *Aboriginal Heritage Act 1972*. Includes places that no longer exist as a result of land use activities with existing approvals.

Place Type: The type of Aboriginal cultural heritage place. For example an artefact scatter place or engravings place.
Legacy ID: This is the former unique number that the former Department of Aboriginal Sites assigned to the place.

Coordinates

Map coordinates are based on the GDA 2020 Datum.

Basemap Copyright

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Aboriginal Cultural Heritage Inquiry System

List of Aboriginal Cultural Heritage (ACH) Register

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ID	Name	Boundary Restricted	Boundary Reliable	Culturally Sensitive	Culturally Sensitive Nature	Status	Place Type	Knowledge Holders	Legacy ID
873	MONTEBELLO IS: NOALA CAVE.	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden; Rock Shelter	*Registered Knowledge Holder names available from DPLH	P07287
926	MONTEBELLO IS: HAYNES CAVE.	No	Yes	No	No Gender / Initiation Restrictions	Register	Sub surface cultural material; Artefacts / Scatter; Midden; Rock Shelter	*Registered Knowledge Holder names available from DPLH	P07286
6765	CAMP 17 NORTH MIDDENS	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P06176
7126	MESA CAMP	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P05792
10381	VLAMING HEAD	Yes	No	Yes	No Gender / Initiation Restrictions	Register	Ritual / Ceremonial; Creation / Dreaming Narrative	*Registered Knowledge Holder names available from DPLH	P01799

Department of **Planning, Lands and Heritage**

GOVERNMENT OF WESTERN AUSTRALIA

Aboriginal Cultural Heritage Inquiry System

Map of Aboriginal Cultural Heritage (ACH) Register

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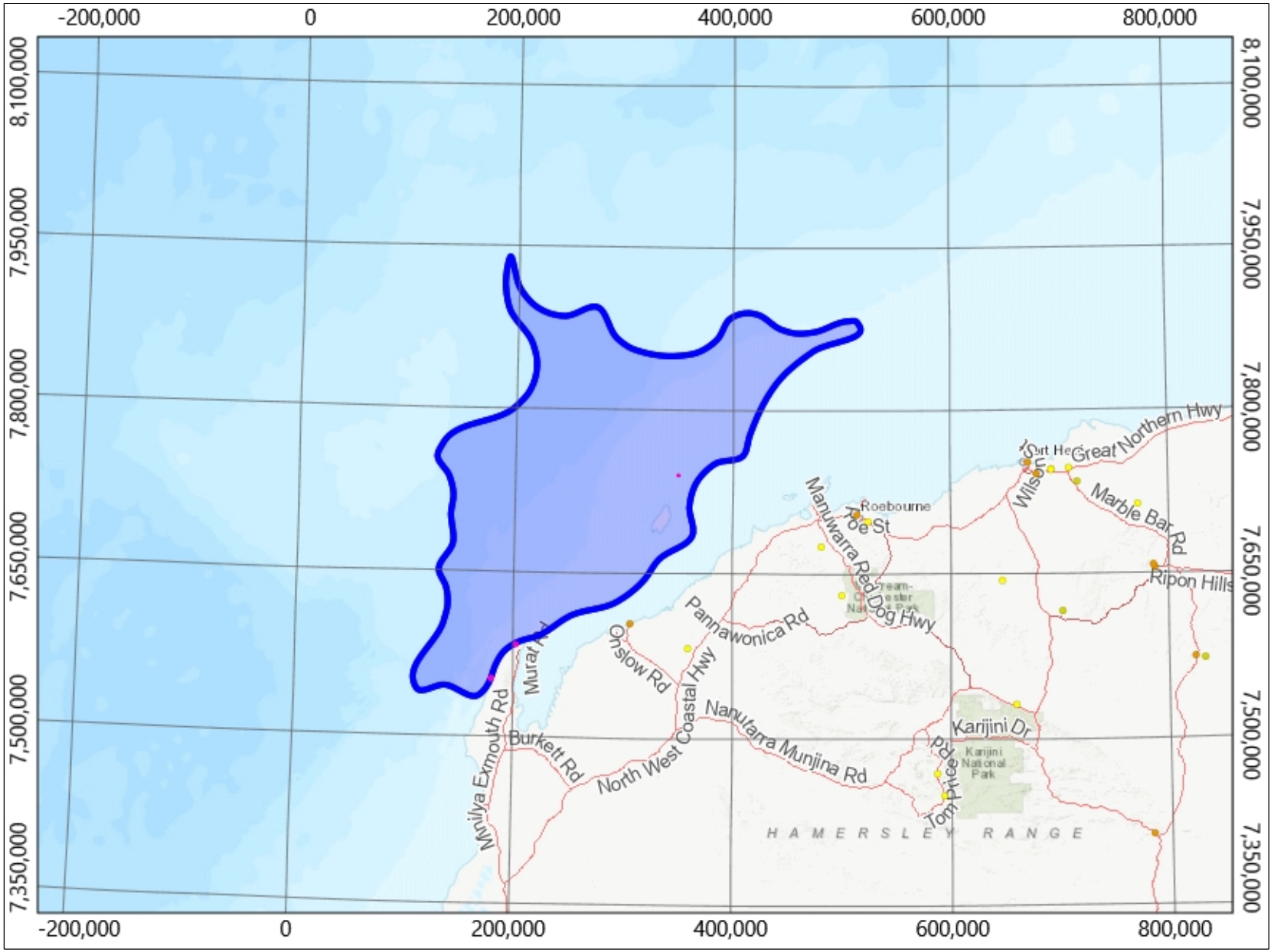

Legend

- Aboriginal Cultural Heritage (ACH) Register
- Search Area
- Aboriginal Community
  - *Permanent*
  - *Seasonal*
  - *Town Based*
- Town
- Road
- River
- Local Government Authority

187.52 kilometres

Map Scale 1 : 5,680,000

MGA Zone 50 (GDA2020)

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APPENDIX J HYDROCARBON SPILL AUSTRALIA REGULATORY FRAMEWORK

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Hydrocarbon Spill Australia Regulatory Framework

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1. INTRODUCTION

1.1 OBJECTIVE

To provide guidance on the Australian regulatory framework as it applies to hydrocarbon spill response planning in Australian Commonwealth and State jurisdictions.

This document supports the implementation of mandates in the:

- Our Expectations - Hydrocarbon Spill
- Hydrocarbon Spill Planning Standard
- Hydrocarbon Spill Planning Work Instruction – Australia

1.2 APPLICABILITY

Anyone using, following, and applying the Hydrocarbon Spill Planning Work Instruction – Australia and for persons seeking to understand the Australia legislative framework.

2. LEGISLATIVE FRAMEWORK

Marine oil pollution emergency planning, together with supporting hydrocarbon response documents, is a requirement of an Environment Plan's (EP) implementation strategy. Woodside is required to meet the following applicable regulations and regulatory agencies, as appropriate to their statutory needs:

- National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA), in accordance with Regulation 22(3), Regulation 22(8) and Regulation 22(11) of the Offshore Petroleum and Greenhouse Gas Storage Act (Environment) Regulations 2023 (Cth) (the OPGGS (E) Regulations), OPGGS (E) Regulations.
- Western Australian (WA) Department Mines, Petroleum and Exploration (DMPE), in accordance with the Petroleum and Geothermal Energy Resources (Environment) Regulations 2012 (WA).
- Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW) where the petroleum activity is required to satisfy a Ministerial Condition of approval.
- WA Department of Transport and Major Infrastructure (WA DTMI) as the Hazard Management Authority (HMA), in accordance with the Emergency Management Regulations 2006 (WA).
- Northern Territory Department of Environment, Parks and Water Security (NT DEPWS) as the HMA, in accordance with Section 9 of the Emergency Management Act 2013 and via the Territory Emergency Plan.
- Victorian Earth Resources Regulation (ERR) branch of the Department of Energy, Environment and Climate Action (DEECA) in accordance with the Victoria *Offshore Petroleum and Greenhouse Gas Storage Act 2010* and the Victoria *Offshore Petroleum and Greenhouse Gas Storage Regulations 2021*.

2.1 STATUTORY AND CONTROL AGENCY JURISDICTIONS

Woodside's facilities and permit areas are currently situated in Western Australian, Victorian, and Commonwealth waters. Depending on their location, these facilities and permit areas fall under various statutory jurisdictions[1] and nominated Control Agencies[2], as outlined in Table 1 and Figure 1 and Figure 2.

For oil and gas activities taking place in Commonwealth waters, the titleholder is the responsible Control Agency for all operational aspects of oil spill response. NOPSEMA is the jurisdictional authority with responsibility for regulating the titleholder's response to the incident (DISR, 2019).

2.1.1 Control Agency Transfer Protocols for Commonwealth Waters Response

In all instances of spills arising from Woodside's petroleum activities in Commonwealth waters, Woodside's response activities should be considered to be regulated by NOPSEMA and directed by the relevant activity-specific OPEP until such time as another control agency verifies its intention to stand up and assert control.

[1] A Statutory Authority is the agency with legislative responsibility to regulate the responsible party. The Statutory Authority oversees the response to hydrocarbon spills and may request the State or Commonwealth Control Agency to take control if deemed appropriate.

[2] The Control Agency is the agency assigned by legislation, administrative arrangements, or the relevant contingency plan to control response activities to a maritime environmental emergency. The Control Agency will have responsibility for appointing the Incident Controller (IC)

As a response grows in size and complexity, a range of other parties and agencies may become involved, either to meet legislative obligation or to provide support to a control agency. In all cases, for spills originating from Woodside assets and activities, Woodside will facilitate the provision of resources to the control agency for their use in mitigating the consequences of the spill.

The AMSA National Plan includes a guidance for change of control agencies to a third party and includes processes for:

- approval from the relevant jurisdiction, or relevant regulator within that jurisdiction
- planning for the transfer of control
- implementing a transfer arrangement.

The AMSA National Plan and supporting guidance (National plan supporting documents) provide for a jurisdiction to request that AMSA or another Control Agency assume operational control of an incident in exceptional circumstances.

Where a transfer of control is required, the Woodside Crisis Management Team Leader/ Corporate Incident Management Team Incident Commander will handover control in accordance with:

- the aforementioned guidance within the AMSA National Plan;
- the emergency and crisis management arrangements outlined in Section 5.5.2 and Section 5.5.3 of Woodside's Incident Management Team (Level 2) Guidance; and

in accordance with 'Transfer of Command' processes detailed in the Woodside Incident Management Handbook. The latest version of the incident action plan (IAP) will be shared with the external agency to assist the workflow.

2.1.2 Control Agency Transfer Protocols for State/Territory Waters/Shoreline Response

Where an incident arising from oil and gas activities impacts upon State or coastal waters, the relevant state or territory government may decide to assume the role of Control Agency (from the titleholder) for the elements of the response that take place within coastal waters and on the shoreline. Should this occur, there will be two Control Agencies, with the titleholder being the Control Agency for the response taking place in Commonwealth waters (under the guidance of NOPSEMA as jurisdictional authority – see Section 2.1) and the state or territory government as Control Agency for the response taking place in coastal waters.

Where a transfer of control is required, the Woodside Crisis Management Team Leader/ Corporate Incident Management Team Incident Commander will handover control in accordance with:

- the above guidance within the AMSA National Plan;
- the Incident Control Transfer Checklist (APPENDIX A) for incidents impacting Western Australia waters;
- the emergency and crisis management arrangements outlined in Section 5.5.2 and Section 5.5.3 of Woodside's Incident Management Team (Level 2) Guidance; and
- the 'Transfer of Command' processes detailed in the Woodside Incident Management Handbook.

The latest version of the incident action plan (IAP) will be shared with the external agency to assist the workflow.

The arrangements for incident control and handover of control to relevant Commonwealth/State/Territory agencies, if required, is shown Table 1.

Table 1: Statutory Authorities and Control Agencies relevant to Woodside activities

Location of Incident Response	Source	Statutory Authority	Control Agency[3]	
			Level 1	Level 2/Level 3
Commonwealth waters[4]	Offshore Petroleum Facility	NOPSEMA[5]	Titleholder (Woodside)	
	Shipping Sourced Spill	AMSA (& NOPSEMA)[6]	AMSA[7]	
State/ Territory waters/ shorelines [8]	Onshore Petroleum Facility	Port Authority	Titleholder (Woodside)	Port Authority[9]
	Terminals (WA Waters)	WA DMPE	Terminal Operator (Woodside)	Port Authority or WA DTMI
	Offshore Facility (State waters)	WA DTMI	WA DTMI	
		Vic DTP	Titleholder (Woodside)	DTP Victoria
	Shipping/Vessel Sourced Spill	WA DTMI	WA DTMI	
		Vic DTP / NT DEPWS	Vessel Owner	Vic DTP/ NT DEPWS
	Wildlife Response (Victoria)	DEECA	DEECA	
Port water (2)	Facility including subsea infrastructure within port limits	WA DTMI	Port Authority	Port Authority / WA DTMI
	Vessel in port limits	WA DTMI	Port Authority	Port Authority / WA DTMI
		Vic DTP / NT DEPWS	Port Authority	Vic DTP / NT DEPWS
JPDA waters	Vessels/ FPSO (in transit)	ANP[10]	AMSA	

[3] The Control Agency may request support from government and oil spill response organisations.
[4] Beyond 3 nm of the State/Territory sea baseline.
[5] NOPSEMA does not have the legislative function to perform the Control Agency role.
[6] If the Ship is a facility.
[7] Woodside (Titleholder) and the vessel owner may provide first strike response capabilities in the event of a spill under the direction of the Control Agency
[8] Within 3 nm of the State/Territory sea baseline.
[9] Port Authority may be required to respond initially as ‘‘First Response/Controlling Agency’ under State/Territory Hazard Plan or Oil Spill Contingency Plan arrangements.
[10] The JDPA does not have a Statutory Authority. The ANP is a Designated Authority, which regulates operations within the KDPA on behalf of both Australia and Timor Leste. The ANP is a Designated Authority, which regulates operations within the KDPA on behalf of both Australia and Timor Leste.

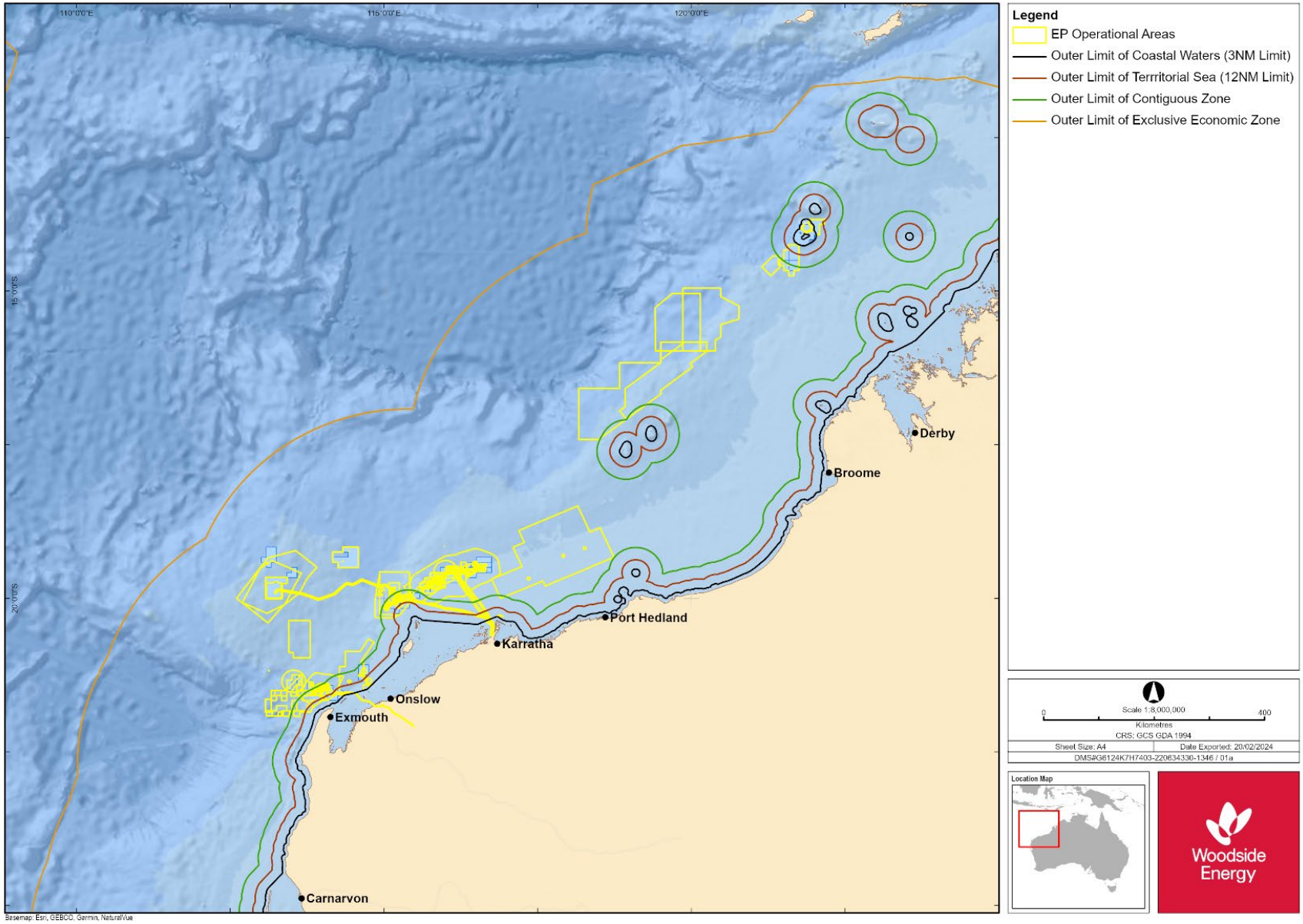

Figure 1: Western Australian oil pollution emergency jurisdictions in relation to key Woodside petroleum facilities

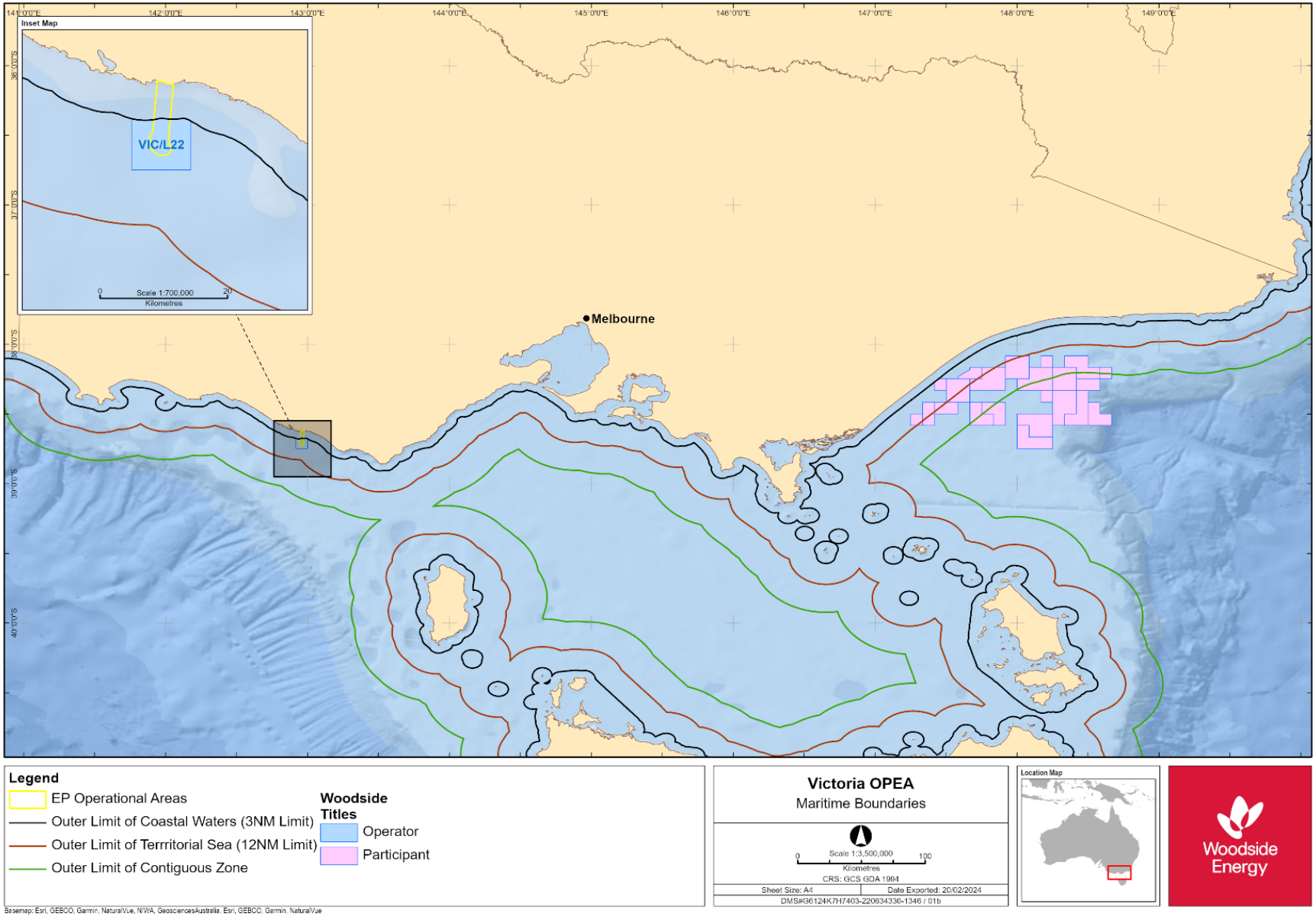

Figure 2: Victorian oil pollution emergency jurisdictions in relation to key Woodside petroleum facilities

2.2 INTERFACE WITH OTHER PLANS

Table 3 summarises how this document interfaces with the relevant hydrocarbon spill response plans of the Government and external agencies discussed within this section.

Table 2: Interface with other plans

Relevant Plans	Responsible Party	Main Content
National Plan for Maritime Environmental Emergencies (National Plan)	AMSA	The National Plan for Maritime Environmental Agencies provides a national system for responding promptly and effectively to marine pollution by hydrocarbons and other noxious and hazardous substances, by designating competent national and local authorities. The National Plan is responsible for maintaining: • a national contingency plan for preparedness and response • an adequate Level of pre-positioned marine pollution combat equipment and program for its use • a comprehensive national training program for personnel familiarisation • detailed state, local and industry contingency plans. The National Plan provides for AMSA to be the Australian Government's Control Agency in the event of vessel-based spills for the purposes of the National Plan.
State Hazard Plan: Maritime Environmental Emergencies (MEE)	WA DTMI	The State Hazard Plan for Maritime Environmental Emergencies (SHP-MEE) (the Plan) provides an overview of arrangements for the management of marine oil pollution and marine transport emergencies in Western Australia and contains information on prevention, preparedness, response and recovery. Collectively these two hazards are referred to as Maritime Environmental Emergencies. The Plan refers to a range of existing plans and documents relating to Maritime Environmental Emergencies but does not duplicate the information contained in these, instead providing directions to websites or other sources where further information can be obtained if required. The Director General, WA DTMI, is the Hazard Management Agency (HMA) for marine oil pollution and marine transport emergencies.
Broome Port Authority OSCP	BrPA	BrPA's OSCP is a sub-plan of the Port's ERP and is activated as the primary plan to combat pollution of the Port from oil. The ERP requires that all personnel who may be involved in the management of oil spills in the Port are conversant with the content of the National Plan. The current version of BrPA OSCP can be obtained from the BrPA Harbour Master.
Pilbara Ports' Port of Dampier Marine Pollution Contingency Plan	Pilbara Ports	The Pilbara Ports' Port of Dampier Emergency Response Plan (ERP) provides guidelines for actions to be taken during an emergency to minimise the potential for loss of life, injury to people, and damage to the environment and property by covering foreseeable incidents and outlining remediation. The latest versions of the Pilbara Ports' Port of Dampier ERP and the Marine Pollution Contingency Plan are available on the Emergency Preparedness and Response page of the Pilbara Ports' Port of Dampier website.
NT OSCP	NT DEPWS	NT DEPWS is responsible for the NT Oil Spill Contingency Plan, which supports the Territory Emergency Plan, and is the Hazard Management Agency (HMA) for marine oil pollution and marine transport emergencies.
Darwin Port Corporation Oil Spill Contingency Plan (DPC OSCP)	Darwin Port Corporation	The DPC OSCP sets out the response to spills of oil and hazardous and noxious substances within the Port of Darwin. This includes hydrocarbon spills from vessels or land based activities that enter Port waters. More information is available on the Emergency & Cyclone Plans page of the Darwin Port Authority website. The Port of Darwin Harbourmaster is the Incident Controller for all spills within the harbour.

Relevant Plans	Responsible Party	Main Content
AMOSPlan	AMOSC	AMOSPlan covers the spill response and training activities of AMOSC and the company- to- company mutual assistance arrangements administered by AMOSC. The AMOSPlan is underpinned by a Principal and Agency Agreement signed between AMOSC and each Participating Company that sets out the basis on which personnel and company-owned equipment can be loaned by each Company to AMOSC. A Master Services Contract is also signed between these parties. This contract also covers the entities of Member Companies. In the event that a company is involved in a hydrocarbon spill incident necessitating activation of its Contract, a supplementary Service Contract specifies the equipment and/or personnel to be hired. The specified equipment will vary depending on the nature and location of the oil spill incident. AMOSPlan is activated by a company when the response to an oil spill incident is regarded by the company as requiring resources beyond those of the company itself. The AMOSPlan also outlines the agreement between AMOSC and AMSA that enables AMSA to hire equipment and personnel from AMOSC on behalf of the National Plan. The AMOSPlan divides into several response regions with Mutual Aid Contacts (MACs) identified in each region.
Victorian State Emergency Management Plan (SEMP) State Maritime Emergencies (non-search and rescue)	Department of Energy, Environment and Climate Action (DEECA) Department of Transport and Major Infrastructure and Planning (DTP)	DEECA retains responsibility for titles administration, well integrity and environment within state water (located within 3 nautical miles of the Victorian coast). In accordance with the *Victorian Marine (Drug, Alcohol and Pollution Control) Act 1988 (the Act),* Emergency Management Act 2013 and the *Emergency Management Manual Victoria*, DTP is the control agency for marine pollution incidents in state waters, up to 3 NM offshore. The Maritime Emergencies (NSR) Subplan prescribes the emergency management arrangements for preparedness and response to marine pollution from vessel, offshore petroleum activities and other sources in state waters.

2.3 GOVERNMENT AND EXTERNAL AGENCIES

2.3.1 NOPSEMA

NOPSEMA is the Statutory Authority responsible for the oversight of response actions to pollution events from offshore petroleum activities in areas of Commonwealth jurisdiction. It administers the OPGGS (E) Regulations.

NOPSEMA has National Plan Statutory Responsibility for the offshore petroleum industry. During a spill incident, NOPSEMA's role will be to:

- Implement regulatory processes to monitor and secure compliance with the OPGGS(E) Regulations 2023 and the Offshore Petroleum and Greenhouse Gas Storage Act 2006 (Cth) (the OPGGS Act), including issuing directions as required.
- Investigate accidents, occurrences, and circumstances involving deficiencies in environment management as required.
- Provide management, operational, technical, and environmental advice, as required to the Titleholder.

Although NOPSEMA is the Statutory Authority for hydrocarbon spill incidents from offshore petroleum activities, it does not have the legislative capacity to undertake the role of Control Agency and, as such, the Titleholder remains responsible (as Control Agency) for all Levels of hydrocarbon spill incidents from offshore petroleum activities. NOPSEMA will, however, provide support for a whole-of-government approach to incident coordination by providing advice and issuing directions to Titleholders and/or operators during an offshore petroleum incident.

2.3.2 Australian Maritime Safety Authority (AMSA)

AMSA is the national shipping and maritime industry regulator and was established under the Australian Maritime Safety Authority Act 1990 (Cth). AMSA manages the National Plan to Combat Pollution of the Sea

by Oil and other Noxious and Hazardous Substances on behalf of the Australian Government, working with State and the Northern Territory governments, emergency services, and private industry to maximise Australia's marine pollution response capability[11]..

Legislatively, AMSA is responsible for protecting the marine environment from pollution from vessels and other environmental damage caused by vessels. AMSA functions are to:

- combat pollution in the marine environment
- provide a search and rescue service
- perform other functions conferred on it by or under any other Acts.

As part of this national plan, a National Response Team (NRT) and the National Response Support Team (NRST) were established to provide support to control agencies in the event of a major marine oil pollution incident.

Each State/Territory is to nominate to AMSA suitably qualified personnel to fill designated roles, including:

- Planning Officer
- Operations Officer
- Logistics Officer
- Response Team Leader.

Each of these roles is filled in each State/Territory as part of the NRT.

AMSA is to be notified immediately through the Rescue Coordination Centre (RCC) of all ship-sourced incidents. When AMSA is the Control Agency, AMSA will assume control of the incident and respond in accordance with the AMSA's Marine Pollution Response Plan. AMSA's Marine Pollution Response Plan is the operational response plan for the management of vessel-sourced spills (as per Section 8 of the Memorandum of Understanding between Woodside and AMSA). AMSA is Control Agency for hydrocarbon spills, as per Table 1.

Woodside will undertake first strike response on behalf of AMSA for vessel-sourced spills, in line with the relevant Oil Pollution First Strike Plan.

For marine pollution incidents from offshore petroleum facilities arising in Commonwealth Waters where Woodside is the Control Agency, Woodside would enact its hydrocarbon spill arrangements per the activity-specific Oil Pollution First Strike Plan. For events requiring regional or national level support AMSA, as managers of the National Plan, will coordinate the resources under its direct control. This may include technical and response advice, services, equipment, personnel and contractors.

2.3.2.1 National Plan

The National Plan implements Australia's obligations as a State Party under the United Nation's Convention on the Law of the Sea 1982, the International Convention on Oil Pollution Preparedness, Response and Cooperation 1990, and the Protocol on Preparedness, Response and Cooperation to Pollution Incidents by Hazardous and Noxious Substances (HNS) 2000. AMSA works with the State/Northern Territory governments, emergency services, and private industry to maintain Australia's marine pollution response capability. Central to this capability is the Inter-Governmental Agreement on the National Plan that outlines AMSA and State/Northern Territory Government responsibilities.

As part of the National Plan, a Marine Pollution Controller will be appointed to an incident. As outlined within the National Plan, the duties of the appointed Marine Pollution Controller may include:

- Assisting the Control Agency with strategic communications, including:
  - primary spokesperson for the multi-agency response
  - primary point of contact for the briefing of government(s).
- Providing the common operating picture and situational awareness at the strategic Level.
- Strategic coordination, including:
  - resolution of strategic multi-jurisdictional policy and legislative issues on behalf of the Control Agency

[11] http://www.amsa.gov.au/forms-and-publications/Publications/national_plan.pdf

- facilitating collaboration between all parties and resolving multi-jurisdictional-agency conflicts
- facilitating national and international assistance through the National Plan and Australian Emergency Management arrangements.

2.3.2.2 AMSA equipment

AMSA maintains strategic equipment stockpiles of marine pollution response equipment around the Australian coastline. Stocks of dispersant are stored at these stockpiles as well as other key locations. Woodside may request access to these resources via AMOSC.

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

Under the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (the EPBC Act), actions that may have a significant impact on a matter of national environmental significance (MNES) require referral to the Australian Commonwealth Minister for Environment (the Minister). The Minister will decide whether assessment and approval is required under the EPBC Act.

Important for hydrocarbon spill response, an exemption from Part 3 of the EPBC Act was granted in March 2014 and remains in place for agencies acting in accordance with the National Plan. This exemption allows for the implementation of hydrocarbon spill response options, without the need for Part 3 approvals, provided that the actions taken are in accordance with the National Plan.

Although the use of chemical dispersant may be consistent with the National Plan, the dispersant type is required to be on the list of accepted National Plan Oil Spill Control Agents (OSCA list) or comply with the transitional arrangements for existing dispersants stocks accepted prior to 1 December 2012, in order for its use to be exempt from Part 3 of the EPBC Act.

An exemption from Part 13 of the EPBC Act was also granted in March 2014. Where response actions are taken in accordance with the National Plan, those actions are exempt from the Part 13 contraventions that would otherwise apply.

2.3.4 Port Authority Arrangements

Woodside operates out of several ports in the Australian states and territories. The Port Authorities house and maintain some oil spill equipment.

State/Territory authorities can also access the AMSA National Plan equipment for incident response if required.

Each Port Authority maintains its own OSCP as a subset of the State/Territory Plan. These plans are summarised in Table 3. Port Authorities may also be involved in the following tasks in relation to hydrocarbon spill preparedness:

- Operator training.
- Regular exercises (including deployment).
- Coordination of committees, such as quarterly meetings of the Dampier Port Authority Marine Oil Pollution (MOP) Committee of Port Users and the Regional Response Team, which is a collaboration between adjacent port authorities and ports (as defined by the Shipping and Pilotage Act 1967 (WA).
- Risk assessments.

2.3.4.1 AMOSC and AMOSPlan

AMOSC was established through the support of members of the Australian Institute of Petroleum (AIP), including Woodside. The Centre maintains a 24-hour stand-by status and can respond quickly to a major incident.

Arrangements between AMOSC and its participating members are outlined in a Master Services Contract signed between AMOSC and the participating Member Company. When activating AMOSC as a service (i.e. hydrocarbon spill response or training) a Service Contract is executed. Woodside also has contractual arrangements with the AMOSC to access the Australian Subsea First Response Toolkit (SFRT) equipment and dispersant stockpiles.

AMOSC administers the AMOSPlan, which outlines arrangements for mutual aid between members. Mutual aid support is available from the member companies of AMOSC and the AMOSC Core Group response team and may comprise response equipment and personnel employed by another AMOSC member company.

AMOSC Core Group members are a group highly skilled in the discipline of hydrocarbon spill response, which includes approximately 120 experienced member company personnel who can be made available to support and assist with spill response activities. The request for assistance is made directly between companies via each company-nominated Mutual Aid Contact (AMOSC should be consulted for the most up-to-date Mutual Aid Contacts). AMOSC will also activate the Service Contract of the lending company and will coordinate the signing of a Service Contract for the borrowing company or companies.

2.3.5 Western Australian Agency Arrangements and the WA Department of Transport and Major Infrastructure

The Emergency Management Act 2005 (WA) designates Agencies within the State as Statutory Authority for hazards. In Western Australia, the hazard management agency for Marine Oil Pollution is the WA DTMI.

Under the Act, the Statutory Authorities are required to produce and administer Plans for the hazards assigned to them.

They are responsible not only for the oversight of a response, but also for responding, should the party responsible for the spill not be able to control the situation.

For oil pollution to the marine environment in State waters/shorelines the WA DTMI has produced and administer the SHP-MEE.

In the event of a spill where Woodside is the responsible party and the spill may impact State waters/shorelines, Woodside will notify WA DTMI.

For all levels of spill in State waters/shorelines, WA DTMI is the Control Agency. WA DTMI will appoint an Incident Controller and form a separate Incident Management Team.

The WA DTMI coordinates the State Response Team (SRT). SRT is part of Western Australia's commitment to ensure the effective preparedness and response to marine pollution incidents. The SRT members are primarily frontline responders. Members of the team are from government agencies, port authorities, and industry, all of whom have a vested interest in marine oil pollution.

For any Level 2 or 3 Marine Oil Pollution (MOP) incident, Woodside will immediately notify WA DTMI and conduct initial response actions in State waters as directed and in accordance with the WA OSCP/ Oil Pollution Emergency Plan (OPEP). Woodside will continue to manage those operations at WA DTMI direction until formal incident control can be established by WA DTMI.

Initially, Woodside will be required to make available an appropriate number of suitably qualified persons to work in the WA DTMI Incident Management Team (IMT). WA DTMI's role as the Controlling Agency for spills in State waters/shorelines does not negate the requirement for Woodside to have appropriate plans and resources in place to adequately respond to a Marine Oil Spill incident in State waters/shorelines, or to commence the initial response actions to a spill prior to WA DTMI establishing incident control in line with the WA DTMI Offshore Petroleum Industry Guidance Note, Marine Oil Pollution: Response and Consultation Arrangements.

A list of roles and key duties for Woodside personnel working in the WA DTMI IMT and the response structure can be found in an approved Oil Pollution First Strike Plan on Corporate Hydrocarbon Spill SharePoint.

To assist WA DTMI in assuming formal incident control, the nominated WA DTMI Incident Controller will establish contact with the Woodside Incident Controller and work through the Controlling Agency Transfer Checklist at APPENDIX A.

Upon establishment of incident control by WA DTMI, Woodside will continue to provide planning and resources in accordance with their OSCP/OPEP. This will include response assets and contracts specified in the OSCP/OPEP, such as those pertaining to waste management, transport, and personnel, as well as response arrangements with the Australian Marine Oil Spill Centre (AMOSC) and other third-party responders.

In performing the Controlling Agency function, WA DTMI will use Woodside's approved/accepted OSCP/OPEP as a starting point for all aspects of a response. WA DTMI reserves the right to deviate from the OSCP/OPEP in circumstances where there is a justifiable cause, in consultation with Woodside.

By arrangement with WA DTMI, within designated port limits the relevant Port Authority is responsible for hydrocarbon spills in port waters.

In the case where a spill for which Woodside is responsible has, or will, enter State waters/shorelines, the WA DTMI will send a State Marine Pollution Coordinator (SMPC) Liaison Officer and a Media Liaison Officer to Woodside's CIMT. The role of the WA DTMI Liaison Officer will be to:

- Facilitate effective communications between WA DTMI's SMPC and Incident Controller and Woodside's appointed Crisis Management Team (CMT) Leader and CIMT Incident Commander.
- Provide enhanced situational awareness to WA DTMI of the incident and the potential impact on State waters.
- Assist in the provision of support from WA DTMI to Woodside.
- Facilitate the provision technical advice from WA DTMI to the Woodside Incident Controller as required.

Additional information on marine oil pollution coordination arrangements in WA State waters is included in Section 2.3.14.

2.3.6 WA Department of Water and Environment Regulation (DWER)

The DWER has responsibilities associated with State environmental regulation, approvals and appeals processes, and pollution prevention. The DWER primarily administers the Environmental Protection Act 1986 (WA).

The DWER's Pollution Response Unit has operational waste management responsibilities in accordance with the Environmental Protection Act 1986 (WA). This includes approving temporary waste storage areas. The DWER may send an Officer to a spill site and can provide an External Liaison role in Woodside's IMT.

The DWER Pollution Response Unit will be notified directly of any spill incident that requires temporary waste storage outside existing Woodside Lease boundaries.

2.3.7 WA Department of Biodiversity, Conservation and Attractions (DBCA)

The DBCA has responsibilities associated with wildlife and activities in national parks, reserves, and State marine parks.

The Biodiversity Conservation Act 2016 (WA) (which replaced the Wildlife Conservation Act 1950 (WA)) provides the Department of Parks and Wildlife (DPaW) with the responsibility and Statutory Authority to treat, protect, and destroy wildlife. The DPaW does not provide oiled wildlife operational response support. Industry is expected to have access to their own oiled wildlife capability.

DBCA, together with AMOSC, have developed the Western Australia Oiled Wildlife Response Plan (WAOWRP) and the Western Australia Oiled Wildlife Response Manual, which align with the SHP-MEE and address requirements for oiled wildlife response in both State and Commonwealth waters. The WAOWRP details the legislative responsibilities, relationships to other plans, roles and responsibilities, emergency management structure, and procedures for OWR.

2.3.8 Northern Territory Arrangements

Authority for the regulation of marine pollution, powers of investigation, and appointment of authorised officers in the Northern Territory (NT) is derived from the *Marine Pollution Act, 1999* (NT) (the Act). NT DEPWS is responsible for administering the Act.

The Territory Emergency Plan (TEP) describes the NT emergency management principles for response and recovery operations, and the control and coordination roles and responsibilities across multiple hazards.

The TEP is established by the *Emergency Management Act, 2013* (NT) (EM Act) and administered by the Department of Police, Fire and Emergency Services (PFES). Administrative authority for the TEP is held by the Territory Emergency Controller. The NT OSCP is listed as a hazard-specific emergency plan within the TEP.

NT DEPWS is the Hazard Management Authority and is responsible for maintaining currency of the NT OSCP and providing strategic oversight and technical advice for marine oil spill incidents.

Where Woodside believes a spill may cross into Territory coastal waters, Woodside will notify NT DEPWS.

2.3.9 Northern Territory Environment Protection Authority (NT EPA)

The NT EPA is an independent corporation established under the Northern Territory Environment Protection Act 2019. The NT EPA is responsible for regulatory services to provide for effective waste management, pollution control and sustainable practices. The NT EPA will be informed verbally and by email as soon as practicable via notification through a 24-hour pollution hotline and email, in the event of a hydrocarbon spill which is predicted to enter NT coastal waters.

2.3.10 Northern Territory Department of Environment, Parks and Water Security (NT DEPWS)

The NT DEPWS is the regulatory authority responsible for protecting the NT's environment and natural resources while providing advice and support to enable the responsible use and development of the Territory's land and waters within three nautical miles of the coastline. NT DEPWS will be responsible for wildlife response if a spill tracks towards NT coastal waters. NT DEPWS will also provide advice on waste management and clean-up of NT shorelines, if required.

2.3.11 Victorian Arrangements

In accordance with *Victorian Marine (Drug, Alcohol and Pollution Control) Act 1988* (the Act), *Emergency Management Act 2013* and the Emergency Management Manual Victoria, Department of Transport and Major Infrastructure and Planning (DTP) is the control agency for marine pollution incidents in state waters, up to three nautical miles offshore.

The State Controller Maritime Emergencies (SCME) has overall responsibility for ensuring there is an adequate response to a marine pollution incident in state waters; this includes marine pollution arising from a petroleum activity originating in either state or Commonwealth waters. In these circumstances, the provision of an adequate response will be primarily achieved through the coordinated employment of the titleholders' resources. Department of Energy, Environment and Climate Action (DEECA) retains responsibility for titles administration, well integrity, and environment within state waters.

In the event of a marine pollution incident originating in Commonwealth waters that impacts or threatens Victorian state waters, DTP assumes jurisdictional control for such incidents within coastal waters (only) from a state consequence management perspective.

2.3.12 Victoria Department of Transport and Major Infrastructure and Planning (DTP) & State Controller Maritime Emergencies (SCME)

The Victorian DTP is the regulatory authority responsible for Level 2 and Level 3 marine pollution incidents in coastal waters, up to three nautical miles from land.

The SCME has overall responsibility for ensuring there is an adequate response to a marine pollution incident in state waters; this includes marine pollution arising from a petroleum activity originating in either state or Commonwealth waters. During an actual or impending marine (petroleum) pollution incident in state waters, the SCME provides overall strategic management of the response and executive level support and guidance to the Incident Controller. DTP's Resilience and Emergency Coordination (REC) team assists the SCME and the DTP to fulfil their statutory obligations in response to a marine pollution incident in state waters.

2.3.13 Australian Government Coordination Arrangements for Maritime Environmental Emergencies

2.3.13.1 Purpose

The purpose of the Australian Government Coordination Arrangements for Maritime Environmental Emergencies (Coordination Arrangements) (NP-GUI-020) is to provide a framework for the coordination of Australian Government departments and agencies to respond to a maritime environmental emergency.

2.3.13.2 Objectives

The objectives of the Coordination Arrangements are to:

- provide whole-of-government management of maritime environmental emergencies
- establish the roles and responsibilities of Australian Government departments and agencies in the management of maritime environmental emergencies

- protect the strategic interests and reputation of the Australian Government
- provide for the effective and timely briefing, reporting and engagement across the Australian Government and to the community
- coordinate the commitment of the Australian Government's resources to combat a maritime environmental emergency.

2.3.13.3 Scope

Maritime Environmental Emergencies

The Coordination Arrangements apply to all maritime incidents as defined by the National Plan for Maritime Environmental Emergencies.

Geographic Scope

This includes incidents occurring:

- within the Commonwealth marine area
- on the High Seas or within the marine area of a neighbouring country and that has the potential to impact the interests of the Australian Government or
- within the jurisdiction of a state or the Northern Territory and has the potential to impact the interests of the Australian Government.

The Coordination Arrangements may also be applied through the National Plan within the jurisdiction of a state or Northern Territory for significant incidents that require the support of the Australian Government.

Relevant supporting and legal arrangements are detailed within Sections 1.4 and 1.5 of the Coordination Arrangements.

2.3.13.4 Governance

The Coordination Arrangements work within the governance arrangements of the National Plan for Maritime Environmental Emergencies (the National Plan). Under the National Plan, sit a number of Committees, including the Australian Government National Plan Committee (AGNPC), which is responsible for ensuring Australian Government departments and agencies are prepared to respond to maritime environmental emergencies. Figure 3 describes the Governance model.

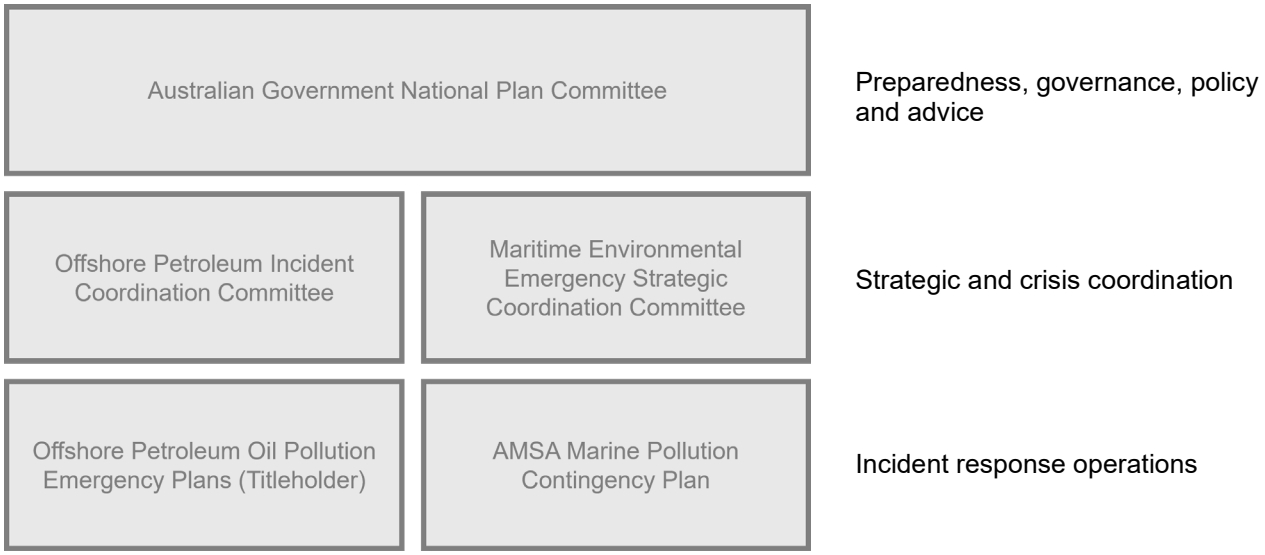

Figure 3: Governance model for the Australian Government Coordination Arrangements

2.3.13.5 Incident management

The Coordination Arrangements address three areas of response to a maritime environmental emergency:

- strategic and crisis coordination
- emergency response
- recovery.

They do not replace existing plans and response systems but help to draw them into a single coordinated framework.

2.3.13.6 Strategic Coordination

Strategic and crisis coordination, within the context of these Arrangements, refers to bringing together Australian Government departments and agencies to manage the strategic and reputational interests of the Government as well as effectively and efficiently resource operational responses to incidents where relevant. This may include:

Australian Government Crisis Management Framework – The Australian Government Crisis Management Framework (AGCMF) defines the Australian Government's approach to crisis management. The Framework outlines Ministers and senior official's roles and responsibilities when preparing for, responding to and recovering from crisis, and sets out the arrangements that link ministers and the work of key officials, committees and facilities. For a maritime environmental emergency, this Framework stipulates that the Australian Government Coordinating Agency will be the Department of Industry, Science and Resources (DISR). A key responsibility of this agency is harnessing capabilities and resources in line with coordination requirements from within the portfolio, and from other agencies when portfolio-managed options are insufficient which, for a maritime environmental emergency, may include requesting Australian Government (AMSA) support with National Plan resources if required.

Maritime Emergency Strategic Coordination Committee – A Maritime Emergency Strategic Coordination Committee (MESCC) may be formed in the event of a significant maritime incident involving a ship within the Commonwealth marine area, or where the Australian Government is supporting a state or Northern Territory under the National Plan arrangements. The MESCC is led by AMSA and is constituted by the membership of the AGNPC.

Offshore Petroleum Incident Coordination Committee – An Offshore Petroleum Incident Coordination Committee (OPICC) (see additional detail in Section 2.3.13.7) may be formed in the event of a significant offshore petroleum incident in Commonwealth waters, as set out in the AGCMF and Offshore Petroleum Incident Coordination Framework. OPICC draws together expertise and capability from across government to guide a coordinated Commonwealth Government strategic response to an offshore petroleum incident in Commonwealth waters. In these circumstances, DISR is the lead Commonwealth agency providing support to OPICC as the primary mechanism to facilitate coordinated strategic leadership.

Incidents involving offshore petroleum activities and ships – Offshore petroleum activities are regulated by the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA). If an event occurs in Commonwealth waters that incorporates both a significant offshore petroleum incident and a maritime environmental emergency involving a ship, together DISR/ NOPSEMA and Department of Infrastructure, Transport, Regional Development, Communications, Sport and the Arts (DITRDCSA)/ AMSA will make an early decision on whether the OPICC will manage the Commonwealth Government's involvement and coordination, or the Maritime Emergency Strategic Coordination Committee will manage the incident.

Figure 4 outlines the AGCMF arrangements and the intersect with the MESCC and OPICC.

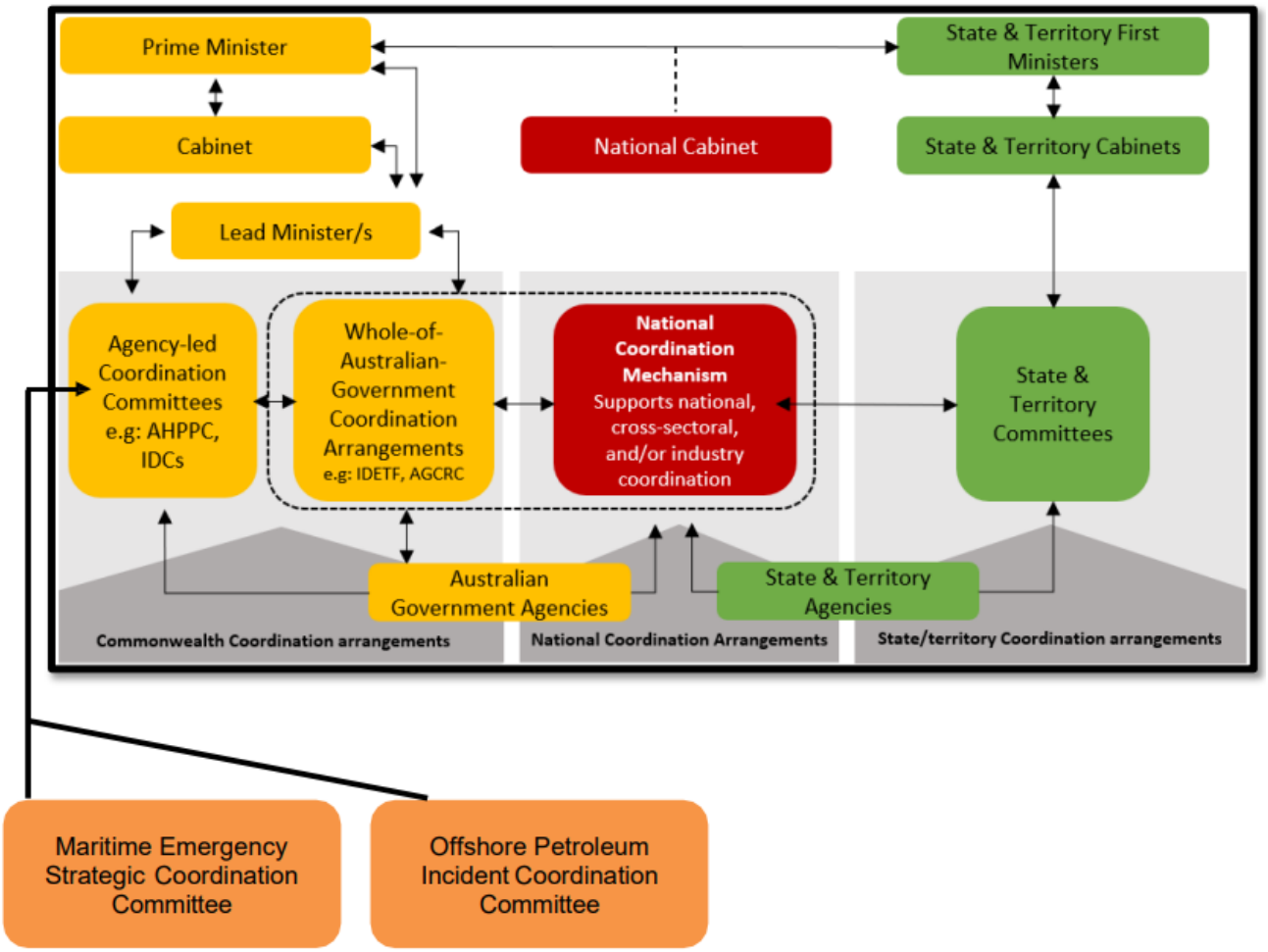

Figure 4: The Australian Government Crisis Management Framework and the intersect with the Maritime Emergency Strategic Coordination Committee and Offshore Petroleum Incident Coordination Committee[12]

2.3.13.7 Offshore Petroleum Incident Coordination Committee

The purpose of the Offshore Petroleum Incident Coordination Committee (OPICC) is to draw together expertise and capability from across government to guide a coordinated Commonwealth Government response to a significant offshore petroleum incident in Commonwealth waters. Significant Incident Arrangements are defined in the Offshore Petroleum Incident Coordination Framework.

The OPICC is not responsible for leading the operational response to an incident and does not have decision-making powers to allocate funding to any activities occurring in response to a significant incident

The OPICC has the following responsibilities:

- **Situational awareness**: provide an accurate and unified picture of the significant incident and the Commonwealth Government's, state and territory governments' and industry's capacity to respond
- **Advice**: inform and align advice to ministers, through portfolio agencies, on the status of the incident and possible response option
- **Public information**: ensure a coordinated approach to communications management to support consistent messaging
- **Leadership**: provide strategic direction from the Commonwealth Government during and following an incident
- **Assistance**: liaise with the titleholder to provide advice on Commonwealth Government capabilities and regulatory processes
- **Evaluation**: to monitor and evaluate the effectiveness of the OPICC's activities in relation to public and ministerial expectations

[12] Australian Government Coordination Arrangements for Maritime Environmental Emergencies (June 2024) (NP-GUI-020)

OPICC composition

The OPICC is activated by the Chair, the General Manager of the Offshore Strategy Branch, DISR.

Members include senior representatives from relevant Australian Government agencies, State/Territory Government(s) impacted or potentially impacted by the significant incident, and industry representatives where appropriate.

The composition of the OPICC may vary and will be determined by the Chair depending on the nature of the significant incident. Agencies central to the OPICC include:

- DISR (Chair)
- NOPSEMA
- AMSA
- DITRDCSA

Other agencies may be included in the OPICC as needed.

Trans-national incidents

In accordance with Coordination of International Incidents: Notification Arrangements Guidance (NP-GUI-007), in the event a pollution incident is affecting or is likely to affect another country, the Control Agency (in the case of pollution from a ship or unknown source) will contact the Department of Foreign Affairs and Trade (DFAT) as soon as practicable through the contact point advised by DFAT.

In the event a pollution incident originates from an offshore facility, DISR will contact DFAT as soon as practicable through the contact point advised by DFAT.

In relation to pollution of the marine environment occurring from petroleum activities in the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) in the Timor Sea:

a. The operator will inform the Autoridade Nacional do Petroleo (ANP) (as the Designated Authority for the JPDA, in its delegated capacity as the regulator on behalf of the Timor-Leste and Australian Governments) and may also inform the Australian Government.

b. If informed of such an incident, DISR will contact DFAT as soon as practicable.

c. Should DFAT become aware of such an incident, DFAT will notify DISR.

d. In the event that a pollution incident occurs within Australian waters and the pollution may spill into the JPDA, DISR, through the Australian Joint Commissioner, will notify the Timor-Leste Government through the Timorese Joint Commissioner, in addition to notifying DFAT.

Woodside's response operations across trans-national boundaries will be determined in conjunction with DFAT and in consultation with local authorities.

2.3.14 Western Australia Coordination Arrangements for Maritime Environmental Emergencies

Marine oil pollutions incidents originating from offshore petroleum activities that impact State Waters require a high level of coordination between WA DTMI (see Section 2.3.5), the Australian Government (see Section 2.3.13) and the respective Petroleum Titleholder. The interrelationships between Commonwealth, State/ Territory and industry are illustrated in Figure 5. Response by WA DTMI as HMA and Controlling Agency, and relevant obligations for the Petroleum Titleholder, are detailed in Section 2.3.5.

To facilitate effective coordination between the two Controlling Agencies and their respective IMT's, a Joint Strategic Coordination Committee (JSCC) will be established. The JSCC will be jointly chaired by the SMEEC and the Petroleum Titleholder's nominated Crisis Management Team (CMT) Leader and will comprise of individuals deemed necessary by the chairs to ensure an effective coordinated response across both jurisdictions. As the relevant Jurisdictional Authority in Commonwealth Waters, NOPSEMA may opt to participate in the JSCC as they see fit.

Key functions of the JSCC include:

- Ensuring that the key objectives set by multiple IMTs in relation to the marine oil pollution incident are consistent and focused on achieving an effective coordinated response.
- De-conflicting competing priorities between multiple IMTs.
- De-conflicting competing requests for resources between the multiple IMTs, including those managed by AMSA, such as national stockpile equipment, dispersant aircraft, and the National Response Team.

- Resolution of significant strategic issues as they arise during the incident response.
- Ensuring that there is a single shared understanding of the concept of operations for the response and resolution of any controversial actions.
- Ensuring that there is a shared understanding of the incident situation and its meaning among all key stakeholders.
- Ensuring there is agreement on how information is communicated to the public, particularly those issues that have actual or perceived public health implications.
- Ensuring adequate coordination and consistency is achieved in relation to access and interpretation of intelligence, information, and spill modelling to promote a common operating picture.

It is important to note that the JSCC is a committee, not a team operating from a specified location. The JSCC will be administered by the Controlling Agency.

In WA waters, the inaugural JSCC meeting will be convened by the SMPC, once both the Petroleum Titleholder and WA DTMI formally assume the role of Controlling Agency.

Additional information on the role of WA DTMI as Controlling Agency for spill arising in or impacting WA State waters is provided in Section 2.3.5.

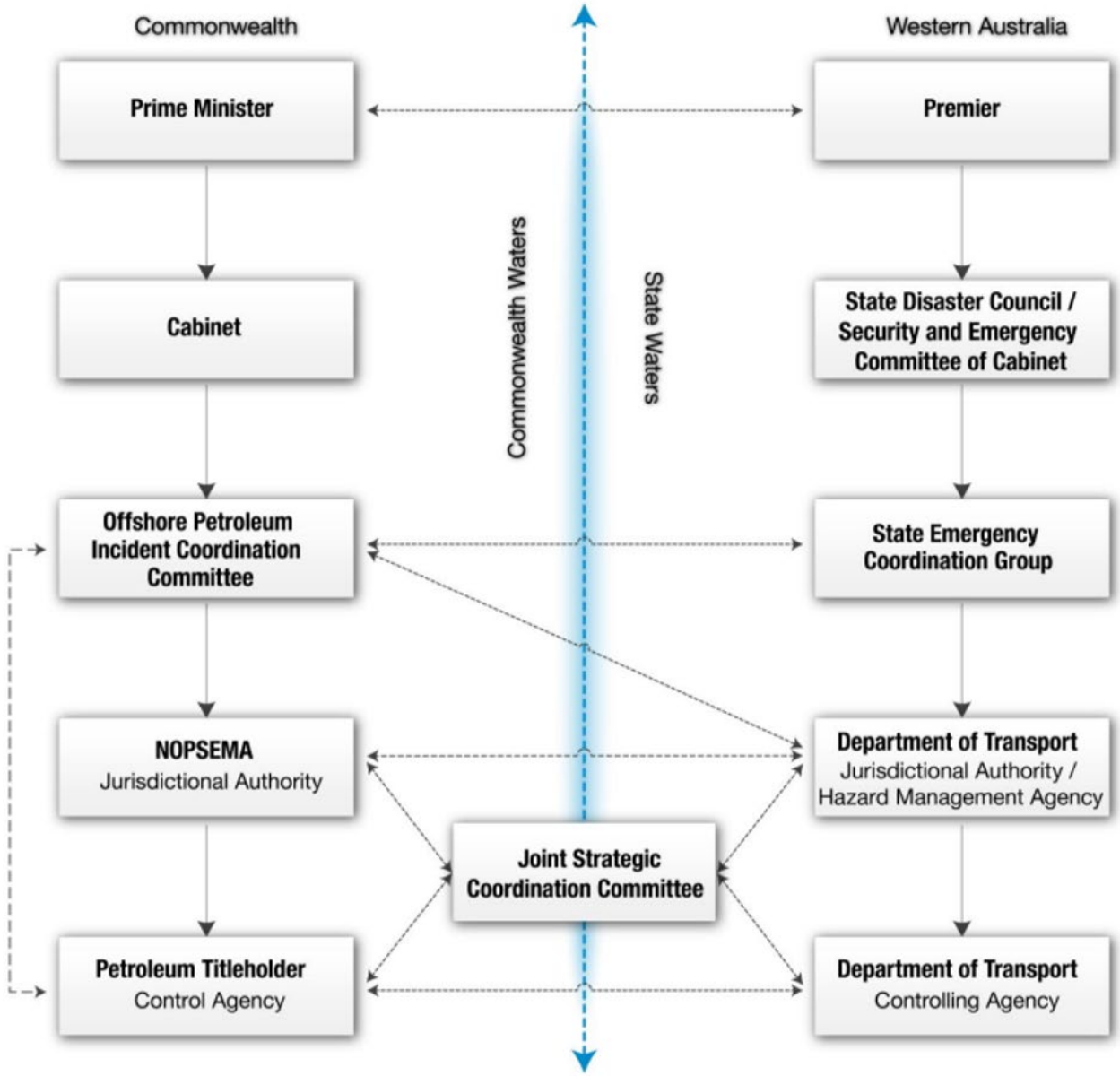

Figure 5: Overall Coordination Arrangements – Cross Jurisdiction[13]

[13] WA Department of Transport and Major Infrastructure Offshore Petroleum Industry Guidance Note - Marine Oil Pollution: Response and Consultation (July 2020)

APPENDIX A – WESTERN AUSTRALIA DEPARTMENT OF TRANSPORT AND MAJOR INFRASTRUCTURE INCIDENT CONTROL TRANSFER CHECKLIST

☐	Confirm date and time of formal transfer of Incident Control in State Waters
☐	Confirm respective Incident Controller lines of communication arrangements (including exchange of Liaison Officers in IMT.
☐	Confirm respective On-Scene Commander lines of communication arrangements (including exchange of Liaison Officers in FOB)
☐	Confirm the location of any Woodside FOB and Staging Areas.
☐	Confirm the details of all current response operations being conducted by Woodside in State Waters
☐	Confirm the composition and status of all response resources, both personnel and equipment, currently being controlled by Woodside that relate to response operations in State Waters.
☐	Confirm the composition and status of all response resources, both personnel and equipment that has been mobilised by Woodside and in transit to the spill site that will contribute to future response operations in State Waters.
☐	Confirm the composition and status of all response resources, both personnel and equipment that is in the process of being mobilised by Woodside to contribute to future response operations in State Waters.
☐	Confirm current level of incident and the predicted level in the future
☐	Confirm existence and adherence to an OPEP/OSCP and secure a copy for the relevant OPEP/OSCP plan, EP and OSMP.
☐	Secure a copy of the current Situation Report and incident prognosis.
☐	Secure a copy of the Product Material Safety Data Sheet (MSDS)
☐	Notification of significant Safety Risks
☐	Secure a copy of the latest spill trajectory modelling
☐	Secure a copy of the latest actual spill monitoring and surveillance information.
☐	Confirm GIS lines of communication arrangements
☐	Secure a copy of the current IAP as it relates to State Waters response operations specifically the details of all immediate and future response operations planned by Woodside in State waters.
☐	Secure a copy of the most recent media statements.
☐	Secure a summary of all community / stakeholder engagement activities undertaken to date and those planned in the immediate future that pertain to state waters impact.
☐	Confirm deployment of initial Woodside personnel to DoT IMT and DoT FOB
☐	Reconfirm date and time of formal transfer of Incident Control in State Waters
DoT Incident Controller_____ Date_____ Time_____	

3. REFERENCES

Title	Reference
Our Expectations - Hydrocarbon Spill	Latest Edition
Hydrocarbon Spill Planning Standard	Latest Edition
Hydrocarbon Spill Response Standard	Latest Edition
Hydrocarbon Spill Capability & Competence Standard	Latest Edition
Compliance and Assurance	No standard required. Refer to GRC and WiRCS
Hydrocarbon Spill Planning – Australia Work Instruction	Latest Edition

External References

Title	Reference
AMOSPlan	Link
Australian Institute of Disaster Resilience – Australian Emergency Management Arrangements Handbook (2023)	Link
Australian Government Crisis Management Framework (September 2024)	Link
Australian Maritime Safety Authority	Link
Australian Maritime Safety Authority – Equipment	Link
Australian Maritime Safety Authority – Australian Government Coordination Arrangements for Maritime Environmental Emergencies (June 2024) (NP-GUI-020)	Link
Australian Maritime Safety Authority – National Plan – Coordination of International Incidents: Notification Arrangements Guidance (February 2021) (NP-GUI-007)	Link
Darwin Ports - Emergency & Cyclone Plans	Link
Department of Industry, Science and Resources – Offshore Petroleum Incident Coordination Framework (March 2019)	Link
Department of Transport and Major Infrastructure (WA) Offshore Petroleum Industry Guidance Note – Marine Oil Pollution: Response and Consultation Arrangements (July 2020)	Link
Equipment for Karratha	Link
International Convention on Civil Liability for Bunker Oil Pollution Damage, 2001 (Protection of the Sea (Civil Liability for Bunker Oil Pollution Damage) Act 2008	Link
International Convention on Civil Liability for Oil Pollution Damage 1992	Link
International Maritime Organisations (IMO)	Link
IPIECA - Oil spill exercises good practice guide	Link
National Plan for Maritime Environmental Emergencies (“National Plan”)	Link
OSRL - Equipment Stockpile Status Report	Link
OSRL Australia Country Plan (COVID-19 Response Plan)	Link
PBA - Emergency Preparedness and Response	Link

Title	Reference
CEM Competency Dashboard	Link
Signed Memorandum of Understanding – Mutual Assistance [AEP] To Facilitate the Transfer of Drilling Units and Well-Site Services between Operators in Australian and Timor Leste-administered Waters to Overcome Emergency Conditions	Link
Territory Emergency Plan (NT)	Link
Tiered Preparedness and Response	Link
Victorian Joint Industry and State Oil Pollution Responses	Link
WA State Hazard Plan for Maritime Environmental Emergencies (August 2024)	Link
Western Australia Oiled Wildlife Response Manual	Link
Western Australia Oiled Wildlife Response Plan	Link

Legislation

Title	Reference
Australian Maritime Safety Authority Act 1990 (Cth)	Link
Biodiversity Conservation Act 2016	Link
Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act)	Link
Emergency Management Act 2013 (NT)	Link
Emergency Management Act 2005 (WA)	Link
Emergency Management Regulations 2006 (WA)	Link
Environmental Protection Act 1986 (WA)	Link
Marine Pollution Act 1999 (NT)	Link
Northern Territory Environment Protection Authority Act 2012	Link
Offshore Petroleum and Greenhouse Gas Storage Act 2006 (Cth)	Link
Offshore Petroleum and Greenhouse Gas Storage (OPGGS) Regulations (Environment) Regulations 2023 (Cth)	Link
Petroleum and Geothermal Energy Resources (Environment) Regulations 2012 (WA)	Link
Shipping and Pilotage Act 1967 (WA)	Link
Wildlife Conservation Act 1950 (WA)	Link
Victoria Offshore Petroleum and Greenhouse Gas Storage Act 2010	Link
Victoria Offshore Petroleum and Greenhouse Gas Storage Regulations 2021	Link

4. DEFINITIONS

Term	Meaning
Control Agency	The agency or company assigned by legislation, administrative arrangements or within the relevant contingency plan, to control response activities to a maritime environmental emergency.
First Strike	The prompt initial response to a spill by a Control Agency or on behalf of a control agency (i.e. by a Person in Charge (PIC) or Vessel Master) to protect the environment and is intended to limit the effect of an incident, until such time as other supporting resources can be deployed.
Support Agency	An agency or company that provides essential services, personnel, material or advice in support of the Control Agency during the response to a maritime environmental emergency.
Statutory Authority	An agency authorised by law to enforce legislation on behalf of the relevant country or state.

5. ABBREVIATIONS

Abbreviation	Term
AEP	Australian Energy Producers
AGCMF	Australian Government Crisis Management Framework
AGNPC	Australian Government National Plan Committee
AIP	Australian Institute of Petroleum
AMOSC	Australian Marine Oil Spill Centre
AMOSPlan	A voluntary oil industry mutual aid plan intended to supplement the National Plan, administered by Australian Institute of Petroleum through AMOSC.
AMSA	Australian Maritime Safety Authority
ANP	Autoridade Nacional do Petróleo e Minerais – Timor-Leste National Petroleum Authority (Designated Authority of the JPDA)
BrPA	Broome Port Authority
CIMT	Corporate Incident Management Team
CMT	Crisis Management Team
DBCA	Department of Biodiversity, Conservation and Attractions (Western Australia)
DEECA	Victorian Department of Energy, Environment and Climate Action
DEPWS	Northern Territory Department of Environment, Parks and Water Security
DISR	Department of Industry, Science and Resources
DITRDCSA	Department of Infrastructure, Transport, Regional Development, Communications, Sport and the Arts
DMPE	Western Australian Department Mines, Petroleum and Exploration
DTP	Victorian Department of Transport and Major Infrastructure and Planning
DWER	Western Australian Department of Water and Environment Regulation

EM Act	Emergency Management Act (Northern Territory)
EPA	Environmental Protection Authority
ESC	Environmental Scientific Coordinator
EP	Environment Plan
ERR	Victorian Earth Resources Regulation
ERP	Emergency Response Plans
FOB	Forward Operations Base
FPSO	Floating Production, Storage and Offloading Vessel
FSP	Oil Pollution First Strike Plan
GIS	Geographical Information System
HMA	Hazard Management Agency
IC	Incident Controller
IGA	National Plan Inter-Governmental Agreement
IMT	Incident Management Team
JPDA	Joint Petroleum Development Area
JSCC	Joint Strategic Coordination Committee
MACs	Mutual Aid Contacts (under AMOSPlan)
MEE	Maritime Environmental Emergencies
MESCC	Maritime Emergency Strategic Coordination Committee
MNES	Matter of National Environmental Significance
MOP	Marine Oil Pollution
MoU	Memorandum of Understanding
MSDS	Material Safety Data Sheet
NEMO	National Environmental Maritime Operations System
NOPSEMA	National Offshore Petroleum Safety and Environmental Management Authority
NRT	National Response Team
NRST	National Response Support Team
NT EPA	Northern Territory Environment Protection Authority
National Plan	National Plan for Maritime Environmental Emergencies
OPEP	Oil Pollution Emergency Plan
OPGGS	Offshore Petroleum and Greenhouse Gas Storage
OPICC	Offshore Petroleum Incident Coordination Committee

OSCA	Oil Spill Control Agent
OSCP	Oil Spill Contingency Plan
OSR	Oil Spill Response
OWR	Oiled Wildlife Response
PFES	Police, Fire and Emergency Services (Northern Territory)
PT	Petroleum Titleholder
RCC	Rescue Coordination Centre (AMSA)
SMPC	State Maritime Pollution Coordinator
SHP-MEE	State Hazard Plan – Maritime Environmental Emergencies
TEP	Territory Emergency Plan (Northern Territory)
WA DTMI	Western Australian Department of Transport and Major Infrastructure
WA DTMI OSCP	Western Australian Department of Transport and Major Infrastructure Oil Spill Contingency Plan
WAOWRP	Western Australia Oiled Wildlife Response Plan